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21st Century Boy by Mitch Griffiths. Mitch Griffiths is exhibiting at the Halcyon Gallery now (www.halcyongallery.com)

ecologist
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SUBSCRIPTIONS/RENEWALS
www.theecologist.org; 01582 520037

Retail Distribution: Book and food shops, Central Books
Tel +44 (0) 20 8986 4854; sasha@centralbooks.com
Newsstand COMAG Specialist
Tel +44 (0) 1895 433 800; Fax +44 (0) 1895 433 801
North America only: IPA/ Indy Press Newsstand Services
Tel 415-445-0230 ext. 123; Fax 415-445-0237

The Ecologist's international Serial Number is ISSN 0261-3131 North America: Periodicals Postage Paid at Rahway, NJ. Postmaster: Send address corrections to: The Ecologist, c/o Mercury Airfreight International Ltd., 365 Blair Road, Avenel NJ 07001.

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Printed on Emerald FSC made from up to 75% recycled post-consumer waste and at least 17.5% certified pulp from well-managed forests independently certified in accordance with the rules of the Forest Stewardship Council, supplied by Paperback under chain of custody SGS-COC-0621. FSC Trademark 1996 Forest Stewardship Council A.C.

EDITORIAL



In truth, the Stern report hasn't told us anything we don't already know. Even President Bush's advisors now tell him that climate change is happening, and that we are almost certainly to blame. And the insurance industry has been warning for years about the cost of not taking climate change seriously. The insurers for the United Nations Environment Programme (UNEP), as well as Munich-re and the giant Swiss-re, have all separately told us that we will not be able to afford the costs of climate change – that our economies will be ruined if we fail to reduce our emissions in time.

But what Stern has done is to force the debate into a new, faster gear. He has provided the economic case for action – as an economist – and in a language that his peers, the business world and the Treasury can understand. He has quantified the dangers. And in doing so, he has effectively removed the last real excuse for ignoring climate change. The cost of action, he says, is small. And in many ways it represents not a cost, but an investment in an exciting new low-carbon world. But if we fail to act, he says, we will lose 20 per cent of our wealth.

But, suffering as I do from an allergy to the language of economists, I couldn't help wondering where the figures actually come from. What does the loss of our breadbaskets actually cost? When China's glaciers disappear – and the 250 million people who depend on meltwater in China's dry seasons suddenly find themselves without – what will be the financial cost? What will it actually cost to relocate Holland's 17 million people after a mere half-metre rise in sea levels?

The International Red Cross produces an annual Disaster Report. A recent one tells us that in the 1970s, the number of people whose lives were affected by natural disasters was about 275,000. In the 1990s, the figure jumped to 18 million – a 65-fold increase. The organisation reports that there are 5,000 new so-called environmental refugees created each day.

And it's not just victims of the more shocking, visible disasters. Klaus Toepfer, Director of UNEP has predicted that by 2010, the number of people on the move to escape the effects of 'creeping environmental destruction' will reach 50 million. The Intergovernmental Panel on Climate Change believes that number will swell to 150 million by 2050. According to Stern, 200 million people will be permanently displaced from their homes by rising sea levels if temperatures rise by two degrees.

It's not hard to see how it might happen. Roughly 100 million people live in areas below sea level; and, given that the vast Greenland ice sheet is shrinking by 11 cubic miles each year, their prospects aren't good. The World Glacial Authority meanwhile has told us that 79 of the 88 glaciers it has studied are retreating. But it's not just people in low-lying lands who should be alarmed. In Iran, 124 villages have been abandoned in recent years as a result of soil erosion. In China, the Gobi Desert is growing by 10,000 square km each year. The UN calculates that worldwide, a quarter of a billion acres of good land are lost each year, affecting the food security of more than a billion people.

Environmental refugees now outnumber conflict refugees – and as a result, there is a campaign afoot to require the international community to formally recognise their status. It's a nice idea, but we have only to look at the social tensions created by a few hundred thousand immigrants to this country to understand that the movement of hundreds of millions – if not billions – of people across borders is simply not possible.

There is no downside to dealing with climate change, and Stern is right to have made that point so emphatically. But 20 per cent of our GDP if we let it continue? Let's not even pretend you can put a price on it.



letters

ERA OR ERROR?

Re: the 'Archives' piece headed 'Pollution by Tourism' (November). While Edward Goldsmith's article itself made many valid points, the intro line 'More than 30 years before the era of cheap flights' is patently absurd, since it was the dawn of the era of cheap flights that led to the very blight of mass-market tourism that is lamented in the 1974 article. Certainly there was no Ryanair in those days, but those with longer memories will know that cheap package-holiday flights became commonplace during the 1960s thanks to the likes of Sir Freddie Laker. From 1971, short winter breaks were offered at giveaway prices to fill empty hotel rooms off-season. In 1973 bargain advance-booking fares to USA and Canada were introduced – I could go on.

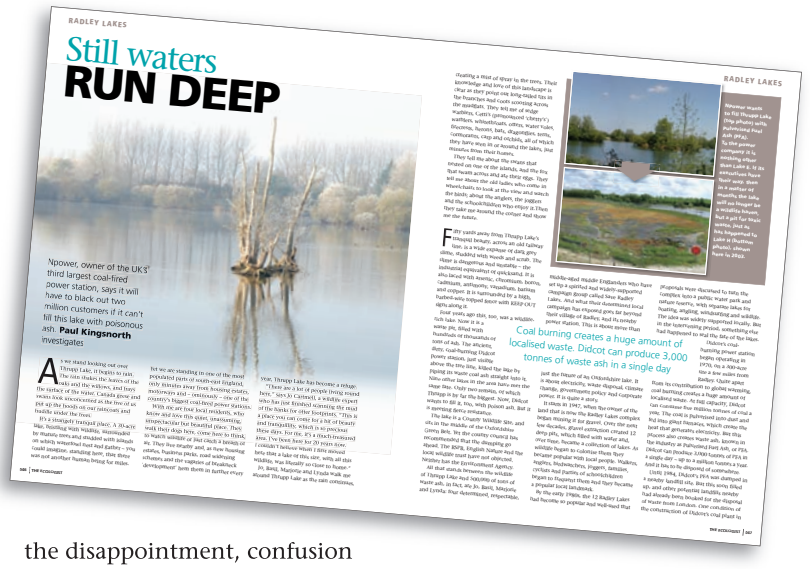
Dave Kruger, South Cheshire

RABBITING OFF

I was delighted with Pat Thomas's article 'Love: batteries not included' (November). I threw away my vibrator a year ago and do not regret it. Yes, the vibrator induced orgasm, but out of context. In sex, context is more important than orgasm.

The direct commodification of sex is prostitution. This is not acceptable to the majority, so consumers are instead presented with an array of 'sexy' products – underwear, shoes, jewellery, chocolates, holidays, cosmetics, advice books etc. The relationship between these products and sex is, at best, tenuous. When was the last time you enjoyed sex whilst dressed, eating or reading? I'm not advocating total boycott or prohibition, but would suggest taking the time and space to make free decisions. That way you avoid the disappointment, confusion and frustration of buying-in under the illusion that 'sexy' products are admission tickets to sex at its best.

Name and address withheld


RADLEY LAKES

Still waters
RUN DEEP

'Npower, owner of the UK's third largest coal-fired power station, says it will have to black out two million customers if it can't fill this lake with poisonous ash. **Paul Kingsnorth** investigates

Coal burning creates a huge amount of localised waste. Didcot can produce 3,000 tonnes of waste ash in a single day

RADLEY LAKES

RADLEY RADICALS

Re: Paul Kingsnorth's article about the proposed dumping of PFA from Didcot Power Station into the lakes at Radley (November). We in Radley, together with residents of neighbouring Abingdon, have been fighting this battle with 'big business' in the form of RWE nPower for nearly two years. We understand the position of the local planning authority, Oxfordshire County Council, in their care not to risk council taxpayers' money were they to refuse the application and be taken to an appeal.

The Save Radley Lakes campaign team has made tremendous efforts to bring this debate to public attention and to convey the results of their researches clearly, to the public and the County Council. In this regard we are very disappointed in the recommendations of those bodies on whose advice and evidence the officers' report to the council was based. It is no secret that its obligations regarding Landfill Tax have been used over past years to support, and thus gain the gratitude of, many projects in this area, such as the local athletics club, a council Front Gardens Competition, and the nature reserve run on its own land by the local wildlife trust.

Our Parish Council has fortunately been able to look beyond such contributions to our project and has supported the Save Radley Lakes campaign throughout. Unfortunately not all of the beneficiaries of nPower's largesse have been able to be quite so altruistic.

Jenny Standen, member, Radley Parish Council

BAG LADEN

Supermarkets often counter criticism regarding the use of plastic carrier bags by referring to their recycling schemes. The schemes operated by Tesco, Sainsbury's and Asda all involve old bags being sent to China for sorting and

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ECOLOGIST POLL

Should environmental studies be made a core subject in schools? Go to www.theecologist.org to cast your vote. In last month's vote, 85 per cent of you felt that the publishers of free newspapers should be compelled to pay to collect them all up each day.

reprocessing – which results in each bag going once around the world between use and reuse. Supermarkets do not sort and reuse carrier bags deposited in recycling bins – a far more environmentally friendly option. As Matthew Carmichael suggests ('Plastic Amnesia', November 2006), a bag tax is the only way to suppress our voracious appetite for plastic.

Bernie Doeser, Cheshire

FLUORIDE RISK

I have been an Executive Member of the National Pure Water Association (NPWA) since 1996. The Association has since 1960 opposed artificial fluoridation. There may be a clearer association between artificially fluoridated water and obesity (November cover story) due to fluoride's ability to reduce thyroid function.

Artificial fluoridation occurs mainly in the West Midlands and North-East of England but there are smaller schemes in Lincolnshire and Cumbria. A Risk List appears at www.npwa.freeserve.co.uk/risk.htm but more Bedfordshire postcodes are to be added to this. Since the passage of the Water Act 2003, Manchester and Southampton have become targets for new schemes. The feasibility study for fluoridating London's water was carried out in 1997. There is a great deal of rhetoric about the need to maintain astronomic spending on the NHS when we should be reducing demand. The current policy on diet and fluoridation shows we have a great capacity for getting it wrong.

John Graham, National Pure Water Association



LIFE CHANGES

I urge Sonja Belchere (Letters, October issue) not to throw away the unenvironmental contents of her cupboard just because they don't fit with her new way of life. Trying to consume less is a part of going green. Using things up rather than throwing them away is an important part of developing such a mentality.

Abigail Woodman, by email

It is probably more effective to return the product to the manufacturer explaining why I would never buy it again. At least this way I feel I am not the only one paying a price.

Laura Valverde, by email

GROWTH ILLUSION

The editorial to the November issue echoes the Stern Report, Gordon Brown and David Cameron in calling for ongoing 'green [economic] growth'. GHG emissions will not go down unless the juggernaut of economic growth and corporate greed is stopped. We in the green movement need to talk about replacing globalisation with localisation, and about not needing (nor being able) to 'grow' any more, to lead higher quality, happier lives.

With the popularisation of concepts such as ecological footprinting, and the realisation that we would need several Earths to continue our current rate of resource-throughput, let alone an increased rate after yet more 'growth', people are at last grasping that the planet is finite and already overstretched. Let us not be timid. We must call for an end to economic growth, which no longer correlates with happiness.

Cllr Rupert Read, Norwich Green Party

ROLLS OVER

I work for Rolls Royce. I am concerned about the energy that gets wasted every day. Most of the machines get left on for days on end even when they are not producing. I dare not bring this to the manager's attention as I am afraid that I will be marked as a trouble maker. These machines use an awful lot of electricity and the amount wasted is unbelievable. As a company that is helping to pollute the world on such a large scale, you would have thought they would look into saving energy.

They have recently built a new factory in Derby and the original RR factory at the main works (Nightingale Road) will, I hear, be demolished. If and when this happens, this is going to be a major pollution issue. The amount of differant oils and chemicals that have soaked into the ground over the years is unbelievable.

Name and address withheld

Readers are encouraged to alert us to any unenvironmental practices they might encounter in their workplace or elsewhere. We will always respect your privacy.

DUNK THE JUNK

I heard recently that the rules on junk mail are to be relaxed and that we can expect an increase in junk mail delivered by Royal Mail. I am already a member of the Mail Preference Service but this does not stop the piles of junk addressed to 'the homeowner' or 'the car driver' etc. landing on my doormat. I regard this as a trespass. There is not much I can do about leaflets delivered directly; but those delivered by Royal Mail, I mark 'return to sender, not known at this address' and put them back in the post box. If we all do this, eventually the mailing companies and Royal Mail will get the message.

Mrs Ivory, Essex

NOTES

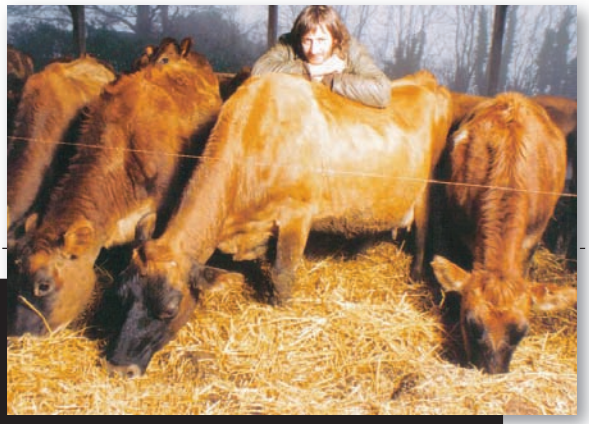
The following correction was printed in *The Observer*'s 'For the record' column, Sunday 22 October 2006. 'In the review below, we suggested that Zac Goldsmith had lied to friends and guests to raise money for the Conservative party. This was completely false. We accept that money raised by the recent charity poker event will go towards work on environmental causes and the Shane Warne Foundation. We apologise unreservedly to Mr Goldsmith.'

ERRATA

In our article 'What a load of rubbish' (November) we wrote that free newspapers in the UK have a daily usage of newsprint of a little over 107,000 tonnes. We meant 107,000 kilos, or 107 tonnes.

The photographs on page 50 of the November issue were incorrectly labelled. The caption should have read (from top to bottom): Common Blue Butterfly, Water Vole, Bee Orchid, Common Blue Damselfly and Common Frog.

up front



Obituary: Mark Purdey

Organic farmer, scientist and former agricultural adviser to Prince Charles, Mark Purdey has died at the age of 52.

Purdey was most famous for his work on BSE, in which he demonstrated a link between the organophosphate pesticide, Phosmetz, and the cattle disease.

His findings, which challenged the dominant view of BSE as an infectious disease, were attacked by a government scientist who was later revealed to be in the pay of ICI.

Purdey's bravery in publishing research that ran contrary to the official line was not without its costs. He was consistently denied funding to support his research, his work was attacked by a lobby group of drug companies, his lawyer was mysteriously forced off the road and killed in a car accident while working on BSE litigation, and Purdey's own house was set ablaze.

He died peacefully at his home in Somerset on Sunday, 12 November. His daughter, Petra, described him as a 'dedicated' father who 'never taught us to tie our shoelaces, but made sure we knew about the dangers of organophosphates from the age of five.' He is survived by his wife and eight children.

For more information on Mark Purdey's life and work, visit www.markpurdey.com

Splendasucks.com

Tate & Lyle, manufacturers of the artificial sweetener Splenda, still find criticism a bitter pill to swallow.

Since the publication of articles in *The Ecologist* (Sept 2005 and May 2006), we have discovered that T&L, as well as Johnson and Johnson (co-developers of Splenda) have been buying up unique URLs that could be used by campaigners critical of Splenda.



We have found nearly 300 websites with the names Splenda and sucralose in them. T&L own the URLs:

- sucralosepoison.com, .net, .info and .org
- sucralosekills.com, net, .info and .org:
- sucralosesucks.com, .net, .info and .org

Johnson & Johnson own:

- splendasucks.net, .org and .info.
- splendakills.net, .org and .info
- splendatruth.com, .net , .org and .info
- thesplendatruth.com, .net, .org and .info

Amazingly our favourite URL asplendawaytodie.com is still available

THAT WAS THE YEAR THAT WAS

Heart-sick Herceptin

Criticisms of the breast cancer drug Herceptin (see *The Ecologist* July/August 2006) have not stopped manufacturers Roche from seeking approval for the drug in yet another group of women. Herceptin, which is appropriate for only the 25 per cent or so of women whose tumours test positive for a protein known as HER-2/neu, was first approved in 1998 for late stage breast cancer. In 2006 it was approved for early stage breast cancer. By the time you read this, the US FDA will have approved it for use after breast cancer surgery and UK approval can't be far behind.

The most recent trials show that around 28 per cent of users will develop some sort of heart problem while taking the drug. Doctors say this level of risk is 'acceptable' because the damage to the heart is usually reversible by putting the women on heart drugs, usually angiotensin converting enzyme (ACE) inhibitors and beta-blockers, and taking her off Herceptin.

But how does a woman benefit from Herceptin if she must be taken off this 'life saving' cancer drug and put, instead, on heart drugs that carry their own unique health risks? Beta blockers, for instance, can trigger slowed heart rate, asthma, and insomnia; ACE inhibitors induce low blood pressure, heart palpitations, a dangerous rise in potassium levels, kidney malfunction, muscle cramps, jaundice and mood swings.

And...

- Actimel rapped by Britain's Advertising Standards Authority (ASA), over misleading health claims for their probiotic drink (see *Ecologist*, October 2006).
- Environment minister Ben Bradshaw has called for shoppers to leave excess packaging at supermarket checkouts, five months after the Women's Institute and *The Ecologist* made this call (see July/August 2006).
- Whistleblowing scientist Aubrey Blumsohn is pursuing P&G over manipulated drug trial results (see *Ecologist*, May 2006).





Return of the finger

Wooden road signs made from sustainable Spruce are replacing PVC-coated metal variants on rural roads in Wiltshire. The signs, made by a local carpenter, are not only an aesthetic improvement but are saving the local council roughly £75 each.

'We've got no intention of going back to the metal ones,' said Graeme Hay, the council's Highway Manager, 'they keep getting ripped off and they cost too much.'

Wiltshire has over 1,000 finger signposts, which are being slowly replaced by the wooden versions in a three-year rolling programme of renovation. The carpenter responsible is able to hand-craft 10 signs each month.

'The reception from the community has been extremely positive,' said Hay, who explained that the smaller size and typeface used on wooden signs forced motorists to drive more slowly, increasing safety on rural roads. 'It's about making the countryside more accessible and attractive to people who travel sustainably,' he explained.

Oil aid

The World Bank has paid more than $5 billion in subsidies to the oil industry since 1992 and allocated only five per cent of its energy budget to renewable energy, environmental groups have revealed. The 'End Oil Aid' coalition took out a full page of the *Financial Times* to draw attention to the role of the Bank in increasing debt and oil dependence in developing countries. For more information, visit www.endoilnow.org

'Alarming' erosion of press freedom

Freedom of press in the US, France and Japan has fallen dramatically in the past year, according to the annual Press Freedom Index compiled by Reporters Without Borders.

The decline in freedom in the US was blamed on the federal courts' refusal to recognise the right of the media not to reveal its sources, which has resulted in journalists being imprisoned for failing to surrender information.

In France, there has been an increase in the number of searches of media premises and journalists' homes.

In Japan, the threat of nationalism, the creation of exclusive 'press clubs', known as 'kishas', and the firebomb attack on the Nihon Keiza newspaper further compromised press freedom.

See, www.rsf.org

COURAGEOUS THAIS CONFRONT TESCO

200 shopkeepers in Thailand defied martial law and marched through Bangkok, to call for a halt in the expansion of multi-national retailers for five years. The protest was sparked by announcements that Tesco plans to build 100 new stores in the country before the end of the year. In a letter to the Thai prime minister, Surayud Chulanont, the shopkeepers said that they were being 'driven out of business'.

'The expansion of foreign retailers is like a fire that is burning local markets across the nation,' the letter stated.

Sustainability by memo

The NHS has signed a £3.7 billion deal with couriers DHL which contains no requirement for reducing carbon emissions. Under the 10-year deal, DHL will run NHS Supply Chain, responsible for delivering medical goods and services to 600 hospitals and health centres in England.

In 2005, the government pledged that the UK would be an EU leader in sustainable procurement by 2009. A Department of Health spokeswoman said, 'The sustainability of the contract will be spelt out in a memorandum between the NHS Business Services Authority and DHL.' She could not specify when this would take place.

$1

TRILLION

The amount spent annually worldwide on armaments

DIGITAL CARBON

The government's campaign to get the viewing public to switch to digital TV is to continue despite the urgent need to reduce greenhouse gas emissions, highlighted by Sir Nicholas Stern's review of the economic costs of climate change (see page 10).



Official figures have revealed that the switch is causing hundreds of thousands of extra tons of CO_2 to be released into the atmosphere. The growing habit of 'viewers' using their TV sets to listen to digital radio to avoid buying expensive digital radios is releasing an extra 190,000 tonnes of CO_2 each year.

The media industry body Rajar has released figures showing that 22 per cent of Britons now listen to radio in this way. A fifth of the population listening to radio in this way for two hours a week produces around 210,000 tonnes of CO_2 each year. The problem is set to worsen as the sale of plasma screen TVs increases: in August it was reported that if half of all British homes were to own a plasma screen TV, two new nuclear power stations would be required to meet the extra electricity demand.

According to the government, the switch to digital is part of a programme to 'free up spectrum that can be used to provide new innovative services for consumers.'

THE STERN REVIEW

Edited by Jon Hughes

In July 2005, economist Sir Nicholas Stern was asked by Chancellor Gordon Brown to review the economic impact of climate change. Stern delivered his 700-page review on October 30. Its core message is inescapable: the end of the world is nigh. Global warming is happening and we are in a race against time to avert climate catastrophe. Whatever its faults – and there are many – the review should be celebrated by environmentalists, as it has broken down the last barriers to change. The science of climate change, Stern concludes, is incontrovertible and we ignore it at our peril. He also destroys the fallacious economic arguments against taking action. Business as usual, he says, is the economics of genocide.

Here we review the science, economics, proposed solutions and political response. Nick Robins assesses the potential of carbon pricing and Joss Garman looks at the future of aviation. Finally, Pat Thomas looks at how we can face this desperate truth.

The science of climate change

The world is warming up. We face ecological, social and economic meltdown, famine, drought, disease and turf wars. For real? **Anna da Costa** reports

For years, scientists have been grappling with climate model after climate model, trying to fully understand the causes, and predict the progression of what has come to be known as global climatic change. In 2001, the Intergovernmental Panel on Climate Change (IPCC) provided irrefutable evidence that the overriding cause of climate change is the human-induced increase of greenhouse gases in our atmosphere. Ever since, as models have increased in their sophistication and complexity, so the true horrors of what climate change holds for our future have been revealed.

What generates our climate?

'Climate', simply described, is the average weather over a certain period of time and space. With recorded surface temperatures today ranging from +58°C to -89°C, Earth's regional climates are highly variable from equator to poles, and across its latitudes. These great variations are brought about by the uneven fall of the Sun's parallel rays across the Earth's curved surface, which heat it more at the equator than at the poles, as well as the lack of physical uniformity of our planet, with land, water and ice distributed non-symmetrically across its surface, each with differing reflective properties.

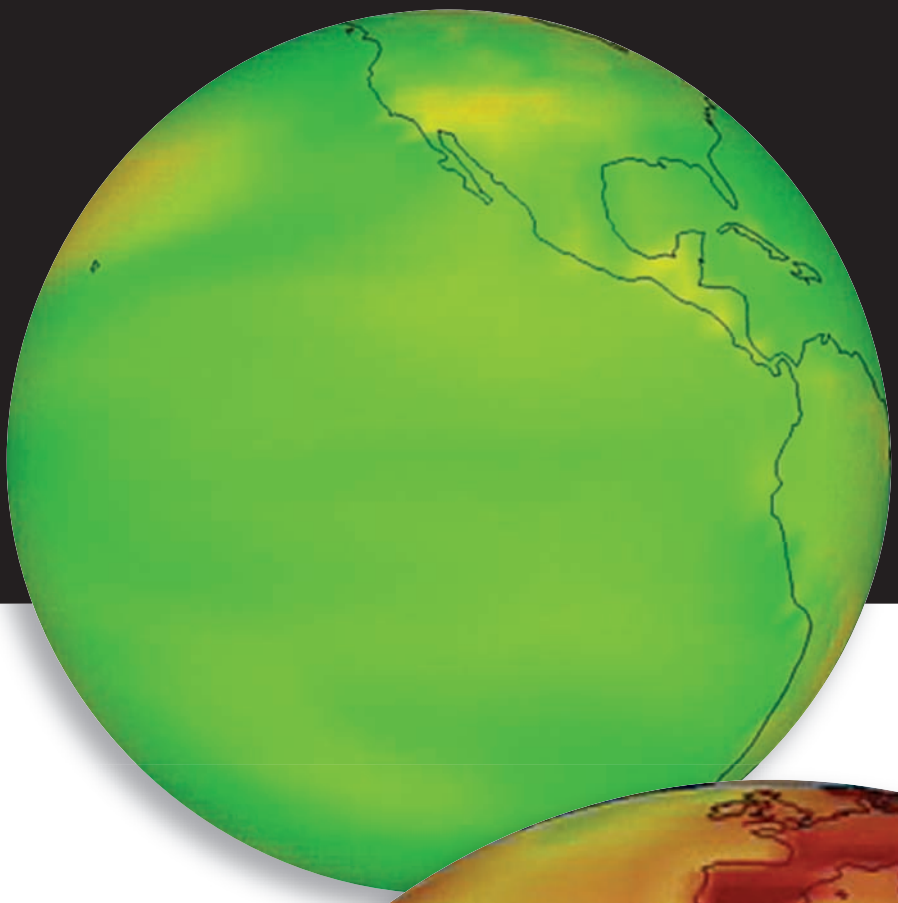
These two factors influence the way that heat is distributed around the globe, and bring about large-scale movements of air and water, which in turn dictate local patterns of rainfall and nutrient availability. This regional climatic diversity has given rise to a great plethora of life forms, all adapted to their own particular conditions with incredible finesse. There are rainforests, deserts, savannah, coral reefs and mangroves in the tropics; deciduous forests, rich grasslands, chaparral, salt marshes and kelp forests in more temperate climes; taiga, tundra and alpine biomes towards the poles and dizzy heights, and icy wilds at the poles themselves.

Yet Earth's global climate – the average of all its climatic regions – is something quite different. This is far less variable, changing only over a scale of thousands to millions of years. Looking back into Earth's 4.6-billion-year history, it has fluctuated between a 'snowball Earth' and steamy hothouse, with many stages in between, and with these changes there have occurred both great mass extinctions and explosive innovations, shaping life's winding evolutionary path. In this context, modern Man, who finally appeared about 200,000 years ago, has existed but a moment in evolutionary time.

Determined by the relationship between the amount of energy received and lost from its system, Earth's global climate depends on the amount of energy received from the Sun, and the amount of energy trapped at its surface. Although simple in principle, these basic parameters are influenced by a host of factors, which operate on a wide range of temporal and geographical scales, and interact with one another.

The amount of solar energy received by the Earth – the energy input – is affected by fluctuations in solar activity, small variations in Earth's orbit around the Sun (Milankovitch cycles), and any processes that influence the amount of particulate matter in the Earth's atmosphere (which can reduce the amount of solar energy ▶

THIS IS WHAT WE ARE FIGHTING TO AVERT

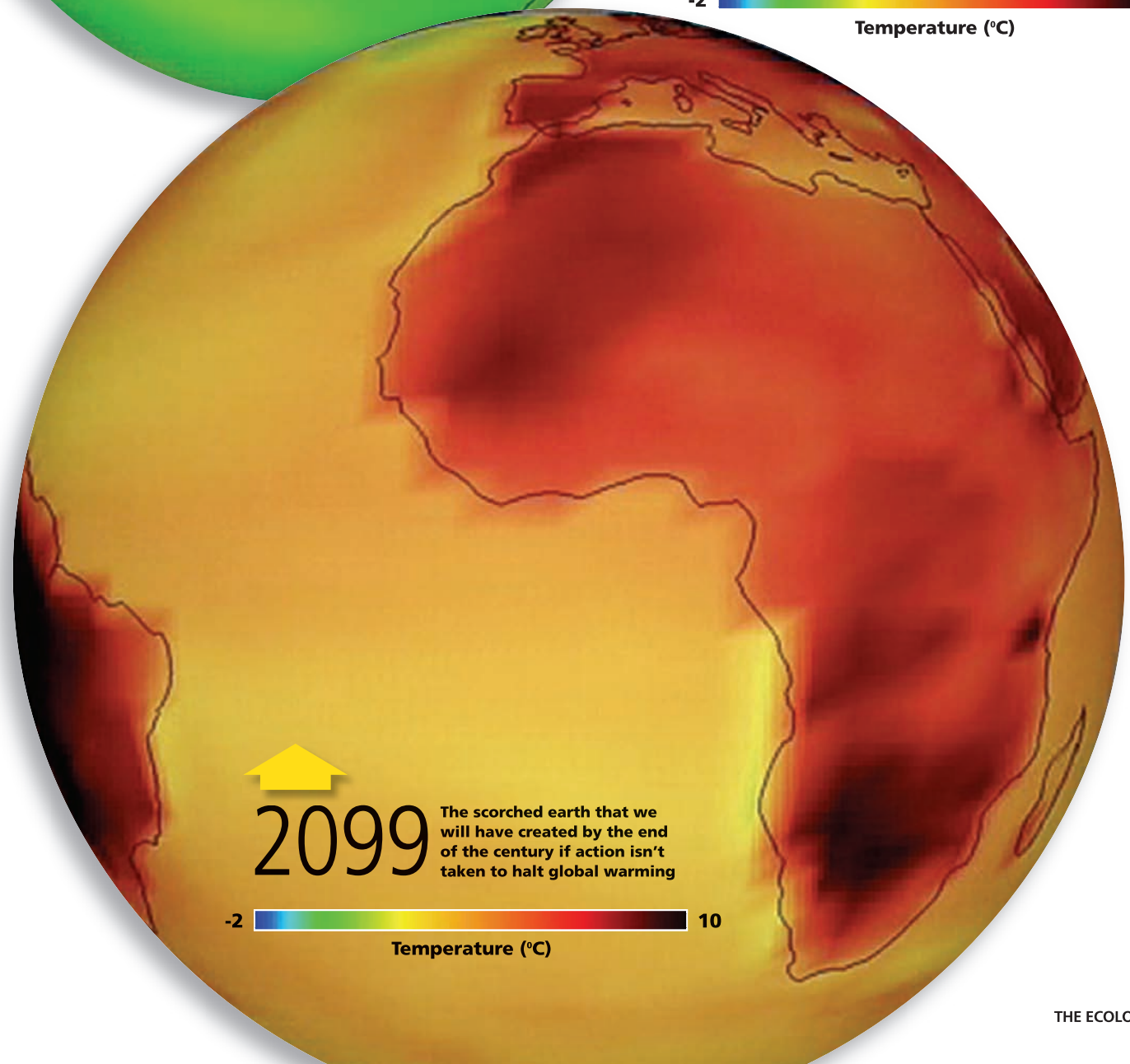


2007

The temperate world as we know it today, where the temperature is 0.7°C above pre-industrial temperatures

-2 10

Temperature (°C)



2099

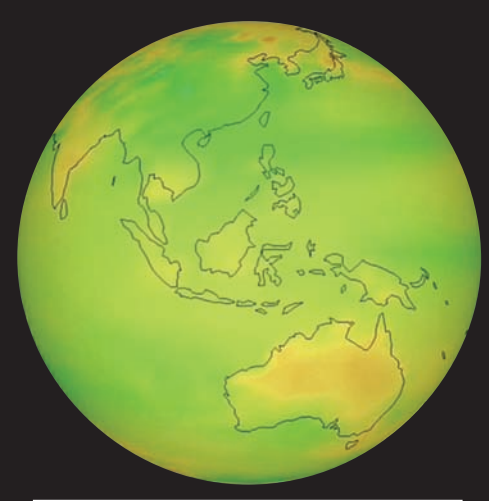
The scorched earth that we will have created by the end of the century if action isn't taken to halt global warming

-2 10

Temperature (°C)

Why Stern's timeline is wrong

This sequence of images from the Met Office's Hadley Centre for Climate Change clearly show that Stern's timeline for action is wrong. Far from having two decades to take action, by 2020, unless dramatic cuts in greenhouse gas emissions have been achieved, parts of the globe will be experiencing temperatures 3°C above pre-industrial levels – the rise that is referred to as the economics of genocide. These pictures are the results of the most up-to-date modelling, prepared for presentation at the party political conferences.

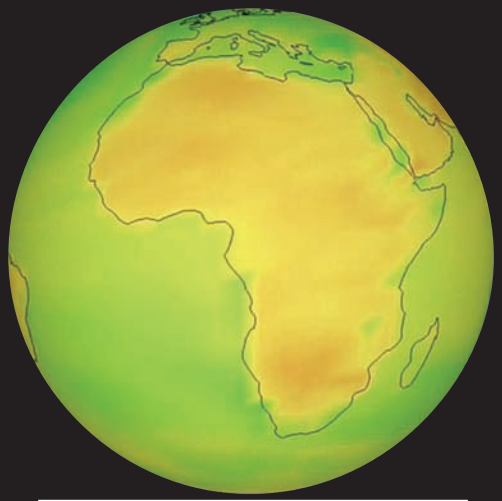


-2 10

Temperature (°C)

2020

The eastern tip of Russia reaches 2°C above pre-industrial temperatures



-2 10

Temperature (°C)

2030

Parts of Africa and southern Europe reach at least 3°C above pre-industrial temperatures

reaching the Earth), such as volcanic activity, asteroid impact or, most recently, flying at high altitudes.

The amount of energy trapped at the Earth's surface is determined by a special property of its atmosphere. The Earth's atmosphere is made up of a number of gases, each with different properties, which are held close to its surface by the forces of gravity. Some, known as the greenhouse gases (GHGs), have a particular structure that enables them to absorb and re-emit heat. These include water vapour (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3) and the halocarbons (eg CFCs), and they perform a crucial function in maintaining the Earth's climate by trapping heat at its surface. They all have different strengths; methane, for example, having 23 times the ability to trap heat compared to CO_2, and nitrous oxide 296 times.

The presence of GHGs in the atmosphere is essential to life on Earth, allowing it to maintain an average surface temperature between the boiling and freezing point of water. If they did not exist, the Earth's surface would be 30°C cooler, and similar to the moon.

As the Sun's rays, made up primarily of visible light, reach the Earth's surface, some are absorbed, and some reflected, dependent on what they meet. Those that are absorbed are re-emitted as infra-red radiation (heat). The loosely bound atomic formation of GHG molecules causes them to absorb this reflected heat energy, which they then re-radiate in all directions, where it is likely to be reabsorbed by other GHG molecules. This process of absorption, emission and reabsorption – now known as the Greenhouse Effect – traps heat energy, like a planetary duvet, significantly reducing the amount of heat that is re-radiated out to space. GHGs are kept in a delicate balance in the atmosphere by the natural elemental cycles – for example the carbon and nitrogen cycles – that take place between all living organisms and their environment.

> "We take it for granted, yet our reliance on a stable climate is fundamental to the structure of our modern society. Our climate has warmed by 0.7°C and already we can see significant changes"

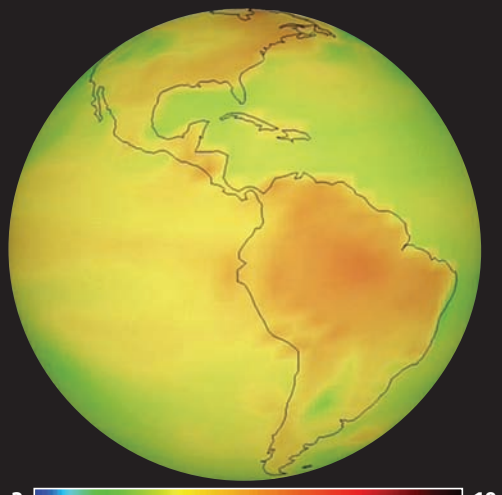
Consequently our climate is mediated not only by numerous physical forces, both external and internal to the Earth, but also by multifaceted life itself. This multitude of interactions is what makes climate science and climate predictions so very complex and so very sensitive.

What is causing climate change?

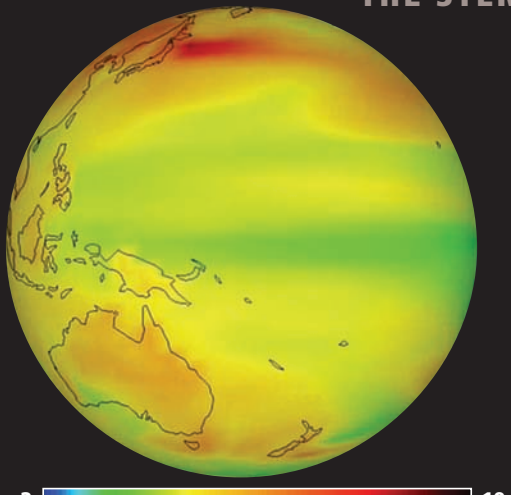
It is now beyond any reasonable doubt that climate change is happening, it's happening fast, and it is caused by the human input of GHGs into the atmosphere. It is true that the Earth's climate has changed in the past. However, these changes were either slow enough to allow life to move on and adapt to the conditions, or they brought about large-scale extinctions.

The past century has seen a massive shift upwards in average global temperature, to levels not experienced in the previous 650,000 years of Earth's history, and which are almost certainly beyond the evolutionary experience of modern Man. Global temperatures have risen by 0.7°C in the last century, and they are still rising (with a commitment to 1.6°C already, due to a time lag in the effects of GHGs). This temperature rise tightly correlates with increasing concentrations of GHGs in our atmosphere.

Atmospheric levels of CO_2 have been constant, at around 280 parts per million (ppm) for the last 1000 years, but since the dawn of the industrial revolution, in the early 1800s, they have risen by a third, to 380ppm today. CO_2 is not the only



2040 Most of South America experiences a 4-5°C rise in pre-industrial temperatures



2052 The Pacific ocean off the coast of Japan reaches 7°C above pre-industrial temperatures

"By 2030, unless dramatic cuts in emissions have been achieved, parts of Africa will be experincing a 3°C rise in temperature – the rise that is referred to as the economics of genocide"

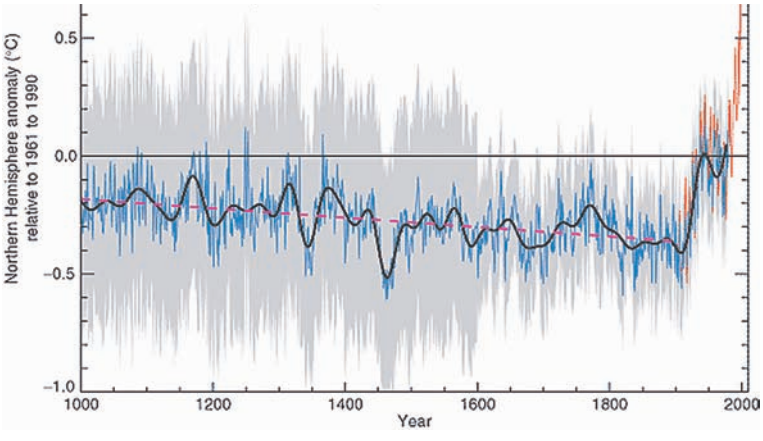
GHG that has increased in atmospheric concentration either. Others, particularly methane and nitrous oxide have also increased. Methane emissions currently account for around 15 per cent of all GHG emissions, but are predicted to increase to 50 per cent by 2100. Thus the warming effect is far greater than that simply produced by CO_2, and is currently equivalent to 430 parts per million (ppm) CO_2e (ie CO_2equivalent).

This rate of increase is unprecedented during at least the past 20,000 years, according to IPCC scientists, and the present CO_2 concentration has not been exceeded during the past 420,000 years and is likely (66-90 per cent chance) not to have been during the past 20 million years.

As was firmly established in the 2001 IPPC report, and is supported by Stern's recent review, this increase in atmospheric GHG concentration is the result of human activity. Crucially, Stern notes that while natural factors (such as orbital variation and solar activity) could have explained some of the early-19th-century trends, we would then have expected a slight cooling over the past 50 years if they were due to natural factors alone, and this strongly contrasts with the observed rise.

It is therefore irrefutable that this build-up of GHGs in our atmosphere is driving global climate change, and that this is due to human activity.

This accumulation of GHGs is primarily driven by the burning of fossil fuels, to serve the ever-growing energy needs of the human population. As the sheer scale of the human enterprise grows, as we continue to industrialise, and the world becomes an ever more global economy, GHG emissions keep on rising. Fossil fuel burning, however, is not the only source of emissions. Deforestation, current farming practices, mining, and poor waste management are also key contributors.



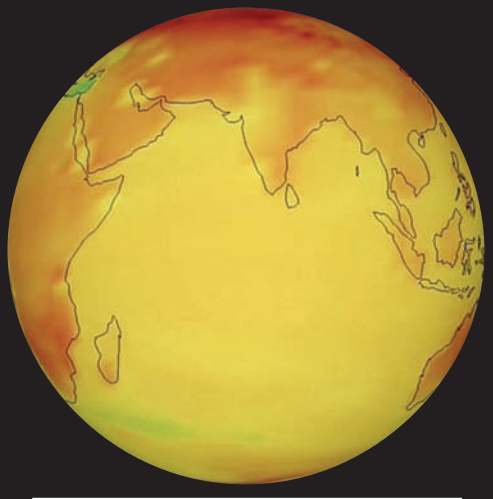
The seminal 'hockeystick' graph featured in the 2001 IPCC report that clearly shows the dramatic increase in greenhouse gases since the Industrial Revolution

What are the implications?

For the past 8,000 years, our planet has been enjoying a remarkably stable climate. This has allowed agriculture to commence, cities to swell, cultures to flourish and hence human civilisation to blossom. Prior to this period of climatic stability, man existed, for the previous 140,000 years, as a hunter-gatherer, unable to settle anywhere for long in a fluctuating and harsh climate. We take it for granted, yet our reliance on a stable climate is fundamental to the structure of our modern society.

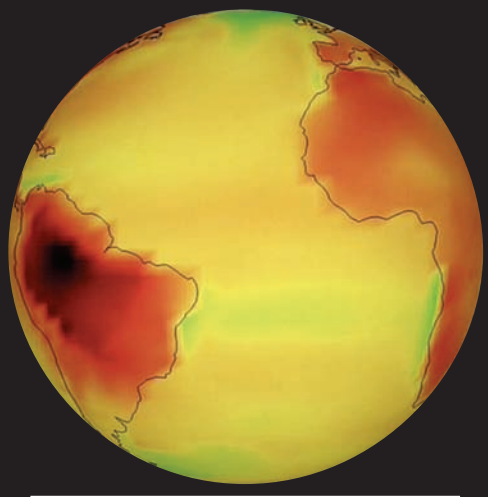
Our climate has already warmed by 0.7°C above pre-industrial levels, and even with this seemingly small rise we can see significant changes occurring across the planet. Earth's polar ice caps and land glaciers are melting, which along with the thermal expansion of water has contributed to a sea level rise of 0.2m; worldwide weather patterns are becoming increasingly unpredictable and violent, Hurricane Katrina wreaking havoc in New Orleans in 2005; heatwaves, droughts and flooding are ever more frequent, with the ▶

These images, which have not been made public outside the 'climate clinics' for MPs and invited guests, show the climate rapidly reaching tipping point. By 2060, parts of the globe are experiencing a 7°C rise in temperature – including Siberia. This will cause the melting of the permafrost that holds 500 gigatons of methane. The question that has to be asked is: why didn't Stern, who is working for the Treasury, use these models being prepared simultaneously by the Met Office?



2060

Parts of Siberia and South Africa reach 7°C above pre-industrial temperatures



2070

North-west Brazil hits 9°C above pre-industrial temperatures, while Africa hovers around 7°C

2003 heatwave in Europe alone claiming an estimated 35,000 lives; and ecosystems are struggling, as the wilting coral reefs in the Indian and Pacific Oceans serve to remind us. These changes, however, are a mere whisper of what may come if we do not act swiftly and decisively.

At current projections, the IPCC predict atmospheric GHG concentrations to rise to 550-700ppm CO2e by 2050, and 650-1,200ppm by 1200, which will mean a global climatic warming of 2.5°C or more by 2050. It is crucial to note that these rises in temperature won't be uniform, with some regions – primarily the polar regions and mid-latitudes – experiencing far more severe levels of warming. Furthermore, as Stern points out, these figures assume that emissions stay at current levels. As they are currently increasing every year, these are highly conservative estimates.

Yet even with this degree of warming, the impacts will be enormous (see fig, p18). Sea levels are expected to rise by more than 0.5 metres, affecting tens to hundreds of millions of people each year.

The water cycle will further intensify, increasing rainfall and flooding in some areas, and droughts and heatwaves in others. Some estimates suggest that these changes, in combination with rising sea levels, will result in 200 million people becoming permanently displaced, and up to four billion people experiencing growing water shortages. Furthermore, melting glaciers will increase flood risk during the wet season, and strongly reduce dry season water supplies to one-sixth of the world's population.

These changes to water supplies, in combination with higher temperatures, will result in declining crop yields, which are likely to leave hundreds of millions, particularly in Africa, without the ability to produce or purchase sufficient food. Meanwhile, continued ocean acidification – a direct result of rising CO_2 levels – will have major effects on marine ecosystems, with possibly adverse consequences on fish stocks, which are already pushed to the brink of collapse by overfishing.

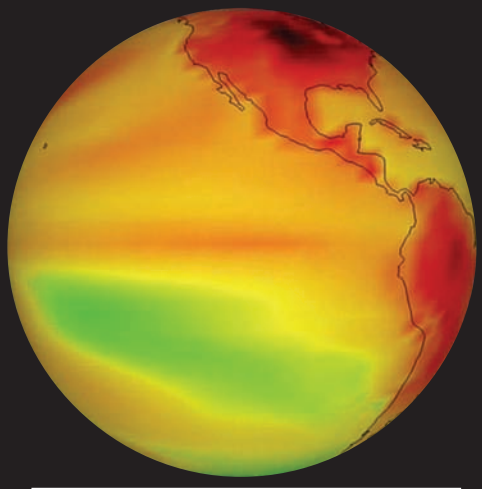
> "Large-scale losses of biodiversity put the continued functioning of Earth's ecosystems under great threat. Crucially we have neither the technology nor the funds to replace the services they provide"

In terms of human health, not only will there be an increase in worldwide deaths from malnutrition and heat stress; vector-borne diseases, such as malaria and dengue fever, could become more widespread as temperatures rise in the temperate zones.

Already, the number of extreme weather events of all kinds has quintupled since the 1950s, and the frequency of very intense hurricanes and typhoons has doubled since the 1970s. Continued climate change is likely to increase the intensity of storms further. Peak wind speeds of tropical storms are a strongly exponential function of temperature, increasing by 15-20 per cent for a 3°C increase in tropical sea surface temperatures. Storms and associated flooding are already the most costly natural disaster today, making up 90 per cent of total losses from natural catastrophes in 2005.

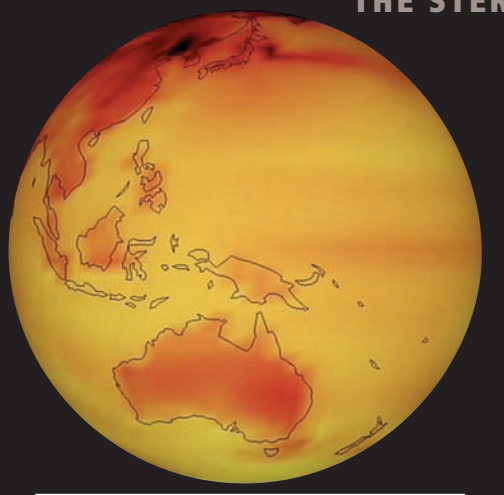
However, perhaps the least well known, yet most important, impact of such levels of climatic change, are its effects on our struggling global eco-systems. As the climate changes, we are losing an ever-increasing degree of biodiversity, as species flail under the strains of foreign climates that they are not adapted to weather. One study estimates that with only 2°C of warming, around 15-40 per cent of species face extinction, as climate change is occurring too fast for species to adapt.

Apart from being a source of innumerable direct and irreplaceable benefits such as food, medicine, materials, recreation and information, biodiversity both ▶



2079

Parts of the Pacific warm up by 5°C; the US corn belt by 9°C above pre-industrial temperatures



2090

The entire Pacific heats up by 2°C; land mass is uniformally up by more than 6°C

> The Hadley depictions stare us in the face. The need to reduce emissions while simultaneously conserving the world's rainforests is of paramount importance. We have time only if we act now

COMMENT

PETER BUNYARD SCIENCE EDITOR

Imagine a scorched earth right across the planet, from Africa to Asia and beyond to South America; imagine the surface waters of the ocean warm from the tropics to the poles; imagine a world in which Bangladesh and big chunks of expensive real estate in Florida had largely disappeared beneath the waves; imagine hurricanes with many times the energy of a Katrina; imagine millions upon millions of environmental refugees fleeing from the droughts of Africa, India and South America and equally from flooding on an unimaginable scale; imagine too, the great corn-belt of the Mid West turned into a hot, unpleasant dust bowl, and the Amazon Basin, once home to the world's greatest tropical forests, little more than a burning desert.

Could that be the fate of the Earth within less than a century? Could humanity, as we know it, become a thing of the past, extinguished because of runaway climate change?

All that may seem the worst kind of scaremongering, the exaggerated mutterings of a sensation-seeking magazine. But what if such predictions come from the UK Met Office's prestigious Hadley Centre? As it happens, *The Ecologist* has laid its hands exclusively on a set of the Hadley Centre's simulations of the Earth's temperature from the year 1870 until 2099. They are what we have to expect, were we to turn a blind eye to business-as-usual emissions of greenhouse gases.

No images could be more striking of the future we face from global warming than this set of projections. For more than a century, until the late 1980s, we see small variations in surface temperature, all within the normal bounds of a complicated, highly interactive climate system.

But from then on, and with ever-increasing intensity, the Earth warms up, until by the end of this century, average surface temperatures over Africa, South America, parts of the United States, Europe and Asia have soared by a massive 10°C, compared to the early years of the 20th century.

The Hadley Centre projections were kept back from publication simply because of their unpalatability, of the frightening message they contain. Certainly, they have put paid to the notion that we have time to fiddle with our greenhouse gas emissions before the Earth burns. On that basis, even though the Stern Report gives a good enough account of the nature of climate change, it fails to go far enough, and certainly nowhere near enough to prevent the looming catastrophe predicted by the Hadley Centre. Nor is the Hadley Centre alone in its predictions.

In September, the Tyndall Centre for Climate Change Research reported that a 90 per cent cut in greenhouse gas emissions, and no less, was needed by 2050, rather than the 60 per cent advocated by Stern.

That means, says the Tyndall Centre, that we can't just wait around for technology or emission trading to offer a smooth transition to a low carbon future. Instead, we need worldwide to reduce our greenhouse gas emissions by 'an unprecedented nine per cent a year for up to 20 years.'

Climatologists, including those of the UK Met Office, are warning that a rise in average global surface temperatures of between 2°C and 3°C will cause havoc, with up to four billion people affected by water scarcity, major losses in agricultural productivity that will wipe out the world's grain reserves, and loss of ecosystems, including the rainforests of the Amazon and most coral reefs. The Hadley Centre's projections stare us in the face. The need to reduce greenhouse gas emissions, while simultaneously conserving the world's rainforests, is of paramount importance. We have time only if we act now ■

CROWN COPYRIGHT/HADLEY CENTRE

underpins and supports a wealth of life-sustaining processes that are provided by ecosystems across the globe.

These include the regulation of our global climate and atmosphere, the cycling of nutrients, the purification and retention of fresh water, and the formation and enrichment of soil, to name but a few. These services have been conservatively valued at two times global GDP, the most horrifying market externality yet. Such large-scale losses of biodiversity put the continued functioning of Earth's eco-systems under great threat, diminishing both their resilience and efficiency. Crucially, we have neither the technology nor the funds to replace the services they provide, and, as they become increasingly ragged, Earth becomes ever more vulnerable to change.

Even more disturbing, and so poorly understood that it has been omitted from most climatic models, is the danger of so-called 'positive feedbacks' (or 'non-linear' changes in the climate). Because of the interconnected nature of the climate system, any changes to one aspect ricochet through it and affect many more. These feedbacks can have either a warming or cooling effect on the climate trend. As our climate warms, there is an increasing risk that natural processes could be set in motion that could drive atmospheric GHG concentrations far higher than human activity alone ever would, either by reducing natural absorption of CO_2 or releasing stores of CO_2 and methane.

Weakening the natural world

These processes include weakening the ability of natural carbon sinks, such as the forests and oceans, to absorb CO_2 from the atmosphere; a reduction of forest biomass through drought, which would release tonnes of CO_2 into the atmosphere and leave it vulnerable to forest fires (as in Indonesia in a poor *el Niño* year); the thawing of Arctic permafrost and warming of wetlands, which hold (in the form of methane and CO_2) more than double the total cumulative emissions of fossil fuels so far; the release of huge quantities of methane from its cold hydrate stores in the ocean floor; and a reduction in the reflectivity of the polar regions (albedo) as polar ice melts.

Worryingly, there are signs that these changes are already occurring. Substantial thawing of permafrost has begun in some areas, and methane emissions in Northern Siberia have increased by 60 per cent since the mid 1970s. The Amazon is suffering the worst drought in more than a century, and the Met Office has warned that by 2030, the total carrying capacity of the biosphere to absorb carbon will have reduced from the current 4 billion tonnes a year, to 2.7 billion.

It is predicted that these climatic feedbacks could drive Earth's climate up by a staggering 10°C by 2100. This would melt the Antarctic and Greenland ice sheets, causing rises of up to 12m in sea levels over centuries or millennia, would slow or stop the North Atlantic Thermohaline Circulation (from which the Gulf Stream arises), throwing a large part of the Northern Hemisphere into Siberian weather conditions and, perhaps most crucially, would spell catastrophe for the various biota across the planet upon which we rely for our oxygen, water, food and materials. In no uncertain terms, such changes would precipitate the sixth mass extinction of life that our planet has witnessed.

> We, as all life, rely on air, water, food and warmth to survive and without these things our mirage of social constructs will turn to dust. Every irresponsible decision now made amounts to genocide

It is a sobering thought that such runaway processes are known to have precipitated mass extinctions in the past. The end-Permian extinction, 251 million years ago, involved a 6°C global temperature rise, thought to have been precipitated by climatic feedbacks following an initial volcanic eruption or meteorite impact. It resulted in a loss of as much as 95 per cent of the species on the planet, almost bringing an end to life itself. As Stern notes in his report, a warming of 5°C on a global scale would be far outside the experience of human civilisation and comparable to the difference between temperatures during the last ice age and today.

Scientists have predicted that a rise of more than 2°C is the point at which some of the most dangerous runaway processes could become irreversible. Furthermore, given that climatic predictions are highly conservative, we must err on the side of caution as to what will be safe CO_2 concentrations to reach. As the current atmospheric concentrations of GHGs mean we are already committed to a rise of 1.6°C, global action needs to be rapid, bold and unified.

So what can be done?

Data from 11 separate studies indicates that, stabilising at 450ppm CO_2e, the probability of exceeding a 2°C rise, relative to pre-industrial levels, is 26-78 per cent. This probability sharply increases from this point, to 63-99 per cent with stabilisation at 550ppm CO_2e.

We have already passed 400ppm CO_2e (we are now at 430ppm CO_2e), and stabilising at 450ppm CO_2e, without overshooting, will require immediate and substantial cuts. Overshooting this level carries many inherent dangers, from which Stern warns it may not be possible to recover. According to Stern, in order to meet this target, global emissions would need to peak in the next 10 years, and then fall at more than 5 per cent per year, reaching 70 per cent below current levels by 2050. Yet if global citizens are all to be entitled to an equal emissions quota, reaching this level requires cuts of 87 per cent for UK citizens. However, emission levels are still rising.

Climate science plainly states that the degree of warming that occurs profoundly affects the impacts we experience. Every small incremental rise in temperature bears the burden of many more deaths and suffering, and carries an ever-increasing threat of further change. Although significant challenges in the process of climate modelling clearly remain, the evidence is strong enough to dictate that any rise above 2°C should be avoided at all costs. Climate change is the greatest threat mankind has ever faced. Every irresponsible decision now made amounts to genocide.

In an evolutionary context, our society and our economy are mere spiders' threads against the blowing gales of the elemental forces. We rely – as does all life – on air, water, food, and warmth to survive; and without these fundamental things, our mirage of social constructs will turn to dust. We are at the mercy of the elements, as we always have been.

Not in my name

Sir Nicholas Stern was asked to find out what way of averting climate change was economically feasible. A loaded question that has allowed him to find a perverse solution to a fatal problem.

Economists are not generally associated with emotive language, which is what makes the Stern Review at first seem so striking. Sir Nicholas Stern is one of the world's leading economists – a former chief economist with the World Bank and now chief economic adviser at the Treasury – and is steeped in the market language and form of his profession. So when his report employs phrases such as 'averting catastrophe', 'urgent action is required', and, most tellingly of all, 'the greatest and widest-ranging market failure ever seen', we can be left in no doubt as to how severe he thinks the problem we face is.

In July 2005, the Chancellor of the Exchequer, Gordon Brown, commissioned Stern to provide an economic assessment of the impacts of climate change, to be used as a basis for policy making. Stern presented his findings on October 30, 2006. In the review he studies three scenarios: firstly, business as usual; secondly, stabilising carbon dioxide (CO_2) in the atmosphere at 450 parts per million (ppm); and lastly, stabilising CO_2 somewhere between 500 and 550ppm.

The outcome of carrying on with business as usual is, he says, 'catastrophic', occasioning an economic collapse akin (in today's money) to the cost of fighting the two World Wars and the 1930s stock market crash combined.

Stabilising atmospheric CO_2 at 450ppm is what the science tells us we have to do. This is the only reasonable 'safe' option. The one that gives us a 50-50 chance of stopping climate temperature rising by more than 2°C, sending the polar caps and Antarctic ice sheets into terminal meltdown, the rainforests perishing or sea levels rising to levels that would drive two hundred million people from their homes.

The third option is to stabilise atmospheric CO_2 at somewhere between 500 and 550 ppm, where collapse is not inevitable, only considerably more likely.

The report then looks at what would be needed to achieve these latter two targets and at what economic cost, and concludes that two courses of action need to be started 'urgently'. One is mitigation – acting to prevent the situation becoming worse; the other, adaptation – modifying the way we behave as a society in light of the changes we already know are on their way as a result of climate change. Both of these need to be started without delay, warns Stern.

> Correct economic reasoning or not, this is a conclusion devoid of humanity, without conscience. But Stern has shown us the perversity of the economic principles that have brought us to this point

It is at this point that the review was destined to become controversial. Putting a price on the cause and effect of climate change and biosphere couldn't be anything but, as Stern himself acknowledges. How much is a life worth? What level of climate shocks are we prepared to accept to maintain the convenience and consumer culture in the developed world for a little while longer? How much of the world's peoples and species and habitats can we 'afford' to save? How much are we prepared to lose?

In some quarters, Stern has been accused of being morally repugnant for attempting to do this. This is erroneous and a smear. Stern is the messenger. If there is a criticism to be levelled about addressing a predominantly moral issue in economic terms, it should be against Gordon Brown, who posed the question. Stern simply gave the answer he was asked to provide.

To which end, Stern has given us a cost. The gross domestic product (GDP) of a country, or in this case the world, is defined as the market value of all final goods and services produced within the specified area in a given period of time. As it incorporates the sum of value added at every stage of production of all goods and services, including wages and consumption, transportation etc, it is often used as a crude measure of per capita income and therefore wellbeing. To head off and hopefully halt the worst ravages of climate change (stabilising CO_2 at 550ppm), says Stern, will cost $1 trillion annually from world GDP, which equates to one per cent.

How has he arrived at his figure? Stern has factored in the social and environmental consequences of benchmark temperature rises associated with the three scenarios (see fig, p18). So any rise above 2°C threatens agriculture across the globe and will lead to food shortages; there will also be mass epidemics of diseases such as malaria and dengue fever in Africa; up to 10 million will be affected by coastal flooding. Sea levels and temperatures will rise, causing climate shocks and homelessness, as witnessed after Hurricane Katrina, and water shortages will become more severe, occasioning desertification; and so starts an uncontrollable vicious cycle.

These fatal events will all impact on world GDP by reducing productivity and output. With each rise in temperature the devastation gets worse. At above 2°C we are entering the realms of what has been termed 'the ▶

economics of genocide'. Essentially, the whole of Africa becomes scorched and famines and disease caused by water and food shortages will increase in intensity by 60 per cent. Quite simply, millions upon millions of people will die. Bangladesh will disappear under the sea, as will East Anglia – the bread-basket of the UK.

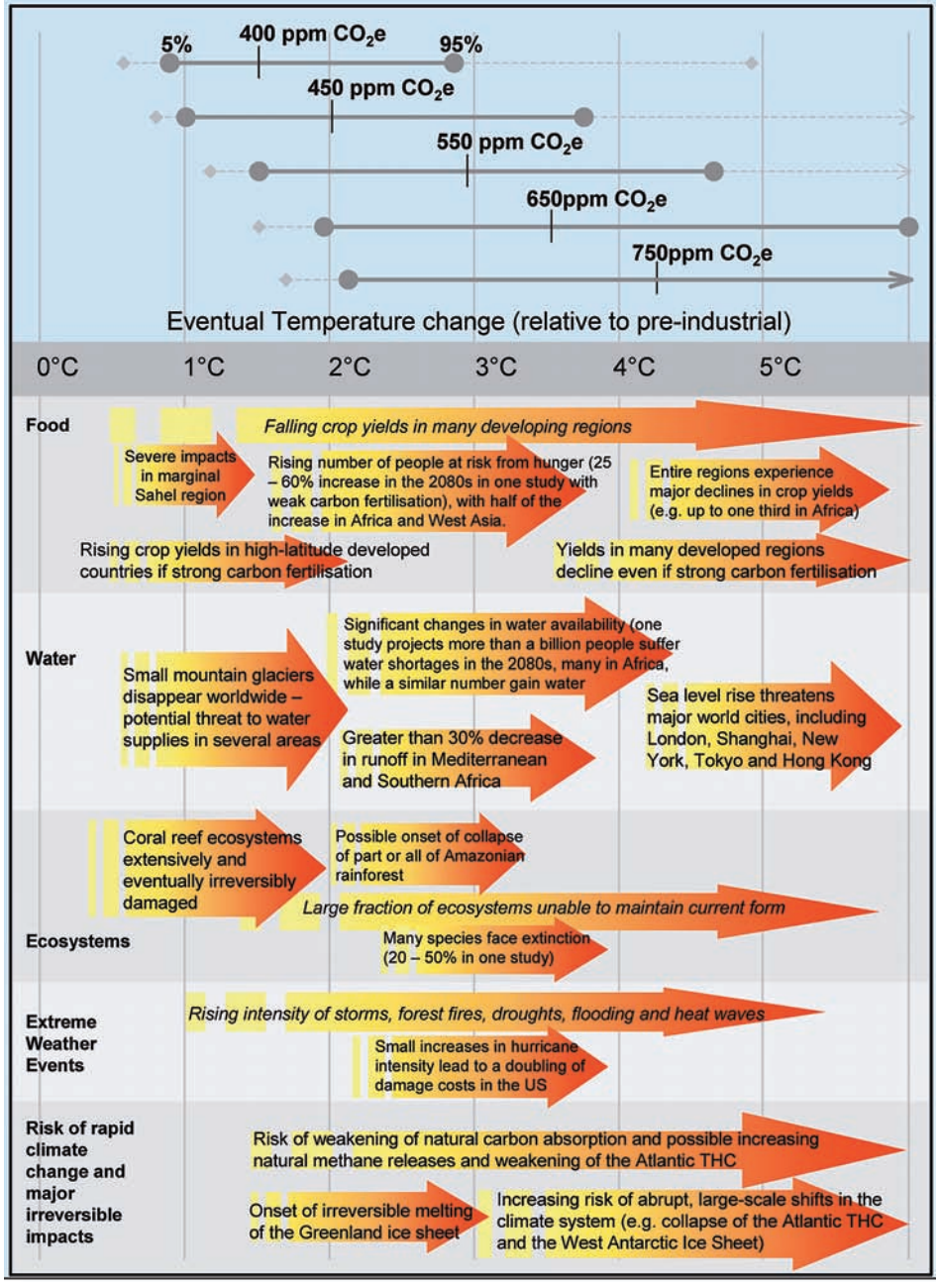
With each incremental rise in temperature, Stern gives a corresponding GDP cost, culminating in a 5°C rise in temperature costing in the region of 10-20 per cent of annual world GDP.

The analysis has sparked furious debate among economists. For example, if (say some) the economy grows at current levels, the cost of mitigation in the future will be less than Stern estimates – therefore we would be paying more to act now. We could save money by addressing the issues as and when they erupt. This is a fallacious argument. Firstly, it presupposes business will continue as usual. And secondly, by delaying the efforts to reduce the levels of CO_2 in the atmosphere, it means that when we do finally tackle the issue we will be dealing with a far greater total volume.

As Stern says, 'the risks are too high', adding, 'Delay in taking action on climate change would make it necessary to accept both more climate change and, eventually, higher mitigation costs. Weak action in the next 10-20 years would put stabilisation even at 550ppm CO_2e (equivalent) beyond reach.'

That's not to say we can take his figures at face value. As Stern himself is at pains to make clear, the figures are illustrative as it is impossible to give fixed economic forecasts. It is also impossible to give fixed climate change forecasts. These were changing even as Stern created his own models (as can be seen from the most up-to-date pictures from the Met Office's Hadley Centre for Climate Change, pages 10-14). While he has endeavoured to factor in elements such as positive feedbacks – eg permafrost melting, releasing methane, and the loss of the Greenland ice sheet – he can't predict intervening climate shocks such as Katrina. But, as the Government's chief scientist Sir David King recently warned at the Mexico G8 summit on energy, even if we stabilised at the level of CO_2 in the atmosphere now, we're in for 30 years of these kind of unpredictable events.

Neither has Stern put a price on the degradation of the biosphere. What value can you put on the icecaps, which regulate temperature and rainfall? What price on the lungs of the world, the Amazon rainforest, which starts to die off if temperature rises hit 3°C?



This table from the Stern Review highlights the possible climate impacts for each 1°C rise

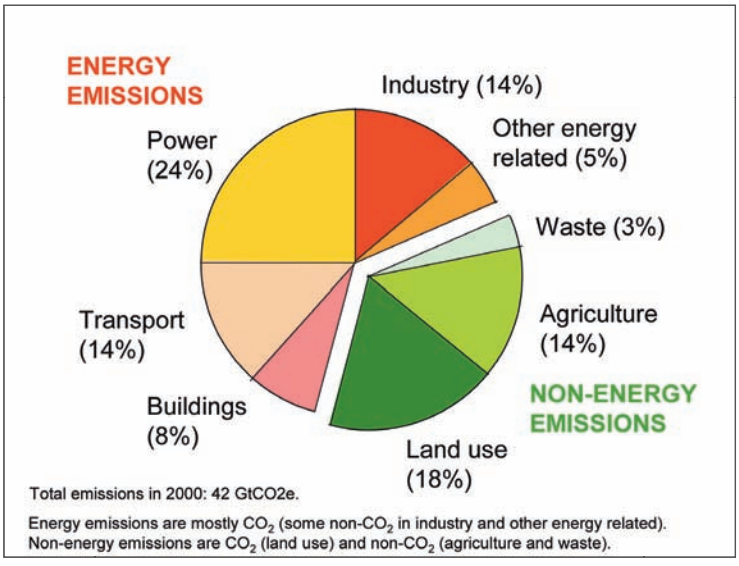
Your money, or your life

The current level of greenhouse gases (GHG) in the atmosphere is 430ppm, and rising at 2.3ppm annually. To stabilise at 450ppm, Stern says, would then require global emissions to peak in the next 10 years and then fall at more than five per cent per year, reaching 70 per cent below current levels by 2050. 'Stabilisation at 450ppm CO_2 is already almost out of reach,' he says, 'given that we are likely to reach this level within 10 years and that there are real difficulties of making the sharp reductions required with current and foreseeable technologies. Costs rise significantly as mitigation efforts become more ambitious or sudden.'

He says aiming for 450ppm would cost three per cent of world GDP annually to achieve. This is the economist's cold hard stare. Stern is a man who knows about the

major capital investments around the world from his time at the World Bank. For instance, he will instantly know that the Bank currently has $US25 billion tied up in carbon-emitting projects. This is the same bank that in 1992 signed the Climate Convention calling for the backing of such projects to be phased out. Stern, more than most, will know the consequences of pulling the plug, as countries will have opened their books to secure these investments.

So his review takes the realpolitik view that we should aim for somewhere between 500-550ppm, as it is more politically achievable. His 'one per cent plan' is costed on this upper target. Yet this will take the climate beyond tipping point in all probability. The increase in climate temperature will be hovering around the 2.5°C range – the increase that Stern makes plain carries 'significant risk' of an environmental apocalypse, but less risk of economic meltdown.



UK Greenhouse gas emissions by sector, 2000

> It is baffling why the Government response to Stern has been so muted. There is plenty in the report that could have been used to say we stand at the gates of a second industrial revolution

You can't blame Stern. Economic orthodoxy largely dictates that he has to reach this conclusion. Stern, like an insurer, is measuring risk. Business as usual will cost 20 per cent of annual world GDP and more, as in terms of climate change this takes us into the unknown. The 450ppm CO_2 stabilisation target will cost three per cent, 550ppm, one per cent.

This is a hell of a bet against a scenario that the science says has a 63-99 per cent chance of failure; a 63-99 per cent probability of sending the climate irreversibly over the edge.

It boils down to this: we can't 'afford' to carry on as we are, because the cost of letting the environment collapse will be too much. We can't 'afford' the most effective and intensive action to stop this happening, because the cost to our wallets will be too much. The safest option – economically speaking – is to play a game, lasting decades or more, where we risk a 63-99 per cent chance of environmental collapse, but at a cost of only one per cent to our GDP.

Put in crude human terms, and it's worth repeating again and again and again. If we lose this game, we lose Africa, Bangladesh, the Amazon, the Maldives and most of the Netherlands. We see agriculture collapse, water shortages and floods. Two hundred million migrants on the march from coastal areas at first rendered brackish by the onrush of the sea and then submerged. A large, angry march, exacerbated by higher temperatures and met with resistance at every turn.

Correct economic reasoning or not, this is a conclusion devoid of humanity, without conscience. Stern may have shown the economists of the Treasury that it is economically feasible to tackle climate change. But in so doing he has shown the rest of us the perversity of the economic principles that have brought us to this point.

'The greatest and widest-ranging market failure ever seen,' is how Stern describes it.

How do we get there?

One of the key policy changes he promotes to mitigate the looming catastrophe is that of carbon pricing, which is designed to end this cavalier economic approach and put the social and environmental impacts of business activity on the balance sheet.

If (and it's a big if) carbon is priced at a level to make this effective, this policy could act as the catalyst to the kind of change that is required (see Nick Robins', p22). Its impact would be evident on world GDP, realigning the values of all final goods and services produced. It could serve to break the chains of global production and supply, and open the door to local sourcing, as items produced close to the point of consumption, using non-carbon intensive methods, would benefit most from such a scheme. A strict carbon pricing regime would be a first step to relocalising the economy.

It would also naturally impact on energy production, encouraging diversified, localised, non-polluting sources of power. However, there could be an unwanted downside, and this needs to be protected against. If carbon is priced at a level to be an effective weapon against polluters, it increases the economic viability of nuclear power.

As the Dow reported in the days after Stern was released: 'Every €5/ton increase in long-term CO_2 prices increases the British Energy value target by 17 per cent.' The world, however, does not need nuclear power to meet the energy challenges of climate change, although in the coming years we can expect its case to be made with ever- growing urgency by its supporters.

Stern's other key initiative rests on new technologies delivering the goods in the next decade or two. He is not explicit about what these might be. They could be wind or wave power, they could be nuclear. They could be carbon scrubbers or carbon capture. They could be GM food expansion to counteract the changing climate and loss of moisture in soils, which in the UK alone is predicted to decline by 20 per cent over the next few decades. He doesn't tell us.

These currently abstract and long-term policy initiatives, Stern says, need to be embarked on 'urgently', and underpinned ▶

by a programme of behaviour modification, which means we have to be taxed and incentivised to become more energy-efficient (in all its forms: household, transportation, consumerism and so forth).

So we have a job on. The end of the world as we know it is nigh. We need a wartime-type effort, to be galvanised with urgency to stop this cataclysmic event occurring. But what do we get? A vague and rushed Climate Change Bill that sets targets to cut carbon emissions not to even the minimum required level of 70 per cent but 60 per cent; not on an annual basis but on a five-year basis. This is the wartime leadership of a Chamberlain when what is required is a Churchill.

It is baffling why the government response to Stern has been so muted. There is plenty in the report that could have been used to say we stand at the gates of a second industrial revolution and we should grasp this opportunity with both hands, for the good of mankind – as the following extract clearly shows.

'There are also significant new opportunities across a wide range of industries and services. Markets for low-carbon energy products are likely to be worth at least $500bn per year by 2050, and perhaps much more. Individual companies and countries should position themselves to take advantage of these opportunities.

'Climate-change policy can help to root out existing inefficiencies. At the company level, implementing climate policies may draw attention to money-saving opportunities. At the economy-wide level, climate-change policy may be a lever for reforming inefficient energy systems and removing distorting energy subsidies, on which governments around the world currently spend around $250bn a year.

'Policies on climate change can also help to achieve other objectives. These co-benefits can significantly reduce the overall cost to the economy of reducing greenhouse-gas emissions. If climate policy is designed well, it can, for example, contribute to reducing ill-health and mortality from air pollution, and to preserving forests that contain a significant proportion of the world's biodiversity.'

But instead of delivering Stern's message with such a positive spin, the government has been timid and negative and shown a paucity of ambition.

It has left the door open for siren voices to wail about stealth taxes and say that whatever we do to effect change and reduce emissions will be negated by China in 10, 20, 60 days, depending what sector is being discussed. This is not leadership but an abdication of responsibility, tantamount – in government terminology – to 'maladministration'. It seems that we are waiting for China to take the lead. Or India. Or Brazil. America even.

Why should China and India curb their development when our political leadership is so palpably resistant to change? Brazil is entering a period of prosperity that was unthinkable 20 years ago. Are they going to put the brakes on when we won't? And America? There might be a chance in two years, but for now we are left clinging to the dim hope that after the thumping the Republicans took in the mid-term elections, George Bush embraces the issue of climate change as a clear and present opportunity to salvage his party's hopes of re-election in 2009.

> "Ask yourself this: are you willing to risk genocide in Africa, Bangladesh, Southern America and beyond? Staying silent – to your family and friends – media and MPs makes you a collaborator"

Carbon pricing is the one tangible policy initiative from Stern that can, if introduced in double-quick time, help to avert this problem. For it to be successful, it requires an international consensus. The imperative is to sell the message Stern has clearly given and not stand like shy schoolboys on the edge of the disco, knowing what needs to be done but being too scared to take the first step onto the dancefloor.

By November 1, two days after it was released to the press, Stern's review had slipped off the media radar. So too had the issue of climate change. Why else would the media have practically ignored another report, released just a week after Stern's, that shows up the huge holes in the Stern report?

In 'High Stakes', the Institute of Public Policy Research argues that the time left for action is just about zero, and that we need cuts in greenhouse gases in the UK that achieve not a 60 per cent reduction but 84 per cent, and that the risk of catastrophe is about 80-90 per cent if we do not. Yet, it adds, there is no obvious political mechanism or programme in existence that is going to do the political and technical job.

This is desperately concerning when you look at the political calendar ahead. We have the local elections in May 2007, then a leadership election that will result in a new PM and then in reality the general election campaign begins. Who, we have to ask, is going to be big enough to keep climate change at the top of the agenda and enter the election calling for tax increases and carbon pricing?

Sweden, without a whimper, has set a course to become oil-free by 2020, with attendant costs to society. Germany, without a whimper, is changing its power supply to wind-generation. These are adult countries, where the electorate is kept aware of the pressing issues of peak oil and energy security alongside climate change. Stern's review has highlighted the fact that in the UK, as a society we have over the past two decades been rendered politically illiterate by successive governments that have found it convenient to infantilise us.

Commenting on the willingness of the British public to make the changes necessary, Blair showed once again his disconnection from both the issue and his electorate when he said: 'British people show a real passion to play their part, whether by driving less, not leaving their TV on standby, or just buying greener products.'

Ask yourself this question: is that all you are you prepared to do? Are you willing to risk genocide in Africa, Bangladesh, Southern America and beyond, to retain your current lifestyle? Our answer is straightforward: Not in my name.

Staying silent – to your family and friends, the media and MPs – makes you a collaborator. Don't stand idly by and let them take us to the gates of hell ■

For more information on the Stern Review visit www.hm-treasury.gov.uk

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Who pays for the pipeline?

Carbon pricing could totally change the way companies operate. **Nick Robins** asks if the City is ready to make the leap

After eight years of haggling, endless meetings, U-turns and broken promises, the Companies Act became law on 8 November 2006. Billed as the most important reform of corporate regulation for 150 years, the new Act is symbolic of the decline and fall of Tony Blair's 'third way' approach to modern capitalism.

Rejecting the twin poles of state-controlled communism and untrammelled free markets, the early Blair had promoted a 'stakeholder economy' in which the private firm would cease to be 'a mere vehicle for the capital market to be traded, bought and sold as a commodity'. Instead – as he told an assembly of Singapore business executives in January 1996 – the company would become 'a community of partnership', in which 'each employee has a stake' and where a company's responsibilities would be 'more clearly delineated'.

An in-depth review of company law was duly launched when Blair took office. But under pressure from the corporate establishment, the fuzzy logic of stakeholding was replaced by the even fuzzier notion of 'enlightened shareholder value', catchily known as ESV. In a wonderful piece of wishful thinking, the government now argued that the interests of shareholders and society were as one – and all that was needed to realise this Utopia was a bit of extra reporting by business.

Meanwhile, under the banner of the Corporate Responsibility Coalition, a broad-based alliance of environment, development and labour organisations nobly tried to expose the flimsy foundations of ESV. Yet even the most cynical campaigners hadn't foreseen the next act of the tragedy. In November 2005, after years of laborious consultation, Blair's nemesis, Gordon Brown, contemptuously announced that the modest proposal to require companies to produce an annual operating and financial review was far too burdensome and would have to go.

The final bill that limped through Parliament a year later pointedly reaffirmed the primary obligation of company directors to their shareholders, offering a crumb of comfort that in the pursuit of profit maximisation, directors should 'have regard to' the interests of employees, the community and the wider environment. In a classic British formulation, directors were hereby given a duty to consider the interests of others, but without any obligation to act. Brown's fellow native of Kirkcaldy, economist Adam Smith, would have scoffed at this evasion of justice. Long seen as an unthinking champion of free enterprise, Smith actually identified inherent flaws in the shareholder corporation, arguing for strict controls to curb the 'negligence and profusion' both of executives and investors.

> If BP had to pay the costs of the carbon dioxide released by its goods and services it would cost the company $48 billion a year, more than twice its annual profit. The big word, however, is 'If'

Whether enlightened or not, shareholders have emerged intact – if not strengthened – from this sorry affair, retaining the privileges of limited liability without any corresponding delineation of responsibility. A quick look at today's capital markets would expose the hollowness of this conclusion. The City is a smart place, and many who work within it are well aware of the severe social and ecological faultlines in the global economy. But this awareness has little bearing on actual behaviour in a market increasingly obsessed with absolute financial returns over ever-shorter periods of time. Socially responsible investors strive to act with integrity against the odds. But financial markets as a whole continue to deny the ecological truth.

Nowhere is this more embarrassingly evident than with global warming. Nicholas Stern's recent report on the economics of climate change once again trumpeted the imperative of putting a price on carbon. Indeed, Stern estimated that each tonne of carbon dioxide equivalent (CO_2e) emitted into the atmosphere does $85 of damage to the environment – an amount many times higher than the prevailing carbon price in the EU Emissions Trading Scheme.

For the stock market, the implications are potentially devastating. Take BP, one of Britain's largest firms. If BP had to pay $85 for every tonne of CO_2e emitted from its operations, the bill would account for over a third of its annual profits. More profound still would be the impact on BP's bottom line if it also had to pay the costs of the carbon dioxide released by its goods and services – a not unreasonable assumption, given the established environmental principle of 'extended producer responsibility'. The estimated 570 million tonnes of CO_2e from its products would land BP with an annual requirement to find $48 billion, more than twice its yearly profit – and this is likely to be an underestimate. But the cost of its carbon dioxide would also corrode the company's balance sheet, transforming its reserves of oil and gas into immense carbon liabilities.

In all of this, however, the operative word is 'if'. Stern's $85 remains an esti-

mate, and markets largely continue to allocate capital as if climate change did not exist. There is no obligation on companies to account for the cost of carbon, or on investors to take climate change into account. Equally, there is no requirement for new companies coming to the London stock market to disclose their carbon risks to potential investors.

City eyebrows were certainly raised when the Russian oil giant, Rosneft, was listed on the London Stock Exchange in 2006, with concerns focusing on its dubious acquisition of Yukos' reserves. But not one line of the extensive prospectus analysed how this intrinsically carbon-polluting company could be affected by steps to reduce emissions in the years ahead.

If Stern's grand agenda for driving down greenhouse gases is to be realised, then the oxygen of capital for carbon intensive activities will need to be progressively closed off. This will mean tightening the financial regulation of accounting standards, stock market listing rules and corporate disclosure so that it becomes fit for purpose for the oncoming low carbon age. For if you want to change capitalism, it makes sense to start with capital.

Nick Robins works in the City of London to promote sustainable and responsible investment. He is also author of* The Corporation that Changed the World: How the East India Company Shaped the Modern Multinational *(Pluto Press, 2006).

Starting in the next edition of* The Ecologist: *Nick Robins' monthly finance and economics column.



"If I were... Aviation Minister...

In the first of our new 'If I…' series, the co-founder of aviation campaign group Plane Stupid imagines what he would do if he were in charge of the government's aviation policy. **By Joss Garman**

I feel terrible. As the Minister responsible for aviation, I've done a disservice to my country. For some time now I have been deluding myself and everyone else – had my head in the clouds, so to speak. Thinking that the airline industry could grow and grow, I've ignored the scientific warnings from my advisor, Sir David King, from the Tyndall Centre for Climate Change Research and, most recently, from Oxford University and I've laid out how my government will set the conditions for an unprecedented growth in flying.

The climatologists have been saying that ▶

aviation is the fastest growing cause of climate change. Even if we decarbonised the entire rest of the economy – shut down every factory, switched off every light – we'd still miss our modest target of a 60 per cent cut in emissions by 2050 just because of the growth in the amount we fly. I just couldn't face up to the fact that our ability to live in Tuscany on the weekends should be put at stake, however, so I buried my head in the sand.

In my aviation white paper of November 2003, I, along with my colleagues from the Airport Operators Association and the British Air Transport Association, who also kindly funded the study that was the basis of the paper, set out a vision for the biggest airport expansion programme in UK history. To achieve a tripling in the number of air passengers by 2030, we would bring forth the construction of the equivalent of almost three new Heathrows – and help things along with a continuation of the contribution from each taxpayer of £557 each year – to pay for a subsidy to the aviation industry of £9 billion a year.

I went for the building of five or six new runways and gave the thumbs-up for increased capacity at existing ones. I set aside my doubts about the cons of the project, like the fact that it will amount to the biggest forced dispersal of people since the Highland clearances and destroy swathes of ancient woodland and historic buildings, because I was convinced that these were mere 'externalities' – necessary costs of economic growth. Of progress.

How wrong I have been. Even before the publication of the report from Sir Nicholas Stern – a hard-headed economist and friend of this government – I should have paid more attention to detail and looked at the economics seriously.

A report published by the respected INFRAS Institute in Zurich and IWW at the University of Karlssruhe put the UK's external costs of aviation at around £14 billion per annum in the year 2000. (This included the costs of climate change, noise, local air pollution around airports and the impact of airports on nature and the landscape.) The UK economist and former advisor to the Treasury, Brendon Sewill, did his own sums and calculates that, this year, the cost is likely to be around £16 billion. In other words, the aviation industry's contribution to the economy (estimated at £12 billion by Sewill) is exceeded by its costs.

Furthermore, we have a "tourism deficit" amounting to about £15 billion. (That is, the difference between what Britons spend abroad and what visitors spend in this country.) Unfortunately I've been making things worse by encouraging cheap flights that are haemorrhaging money out of the UK economy. Like I said, I really am sorry, folks. I thought Gordon would have been keeping an eye on the figures, and well, clearly he hasn't.

Unforgivable? Perhaps. But hear me out because I've got a plan, and I think it might work. Our ability to live on earth is at stake, and so is the economy. Sir Nicholas reports we could be looking at 200 million refugees because of the climate crisis and the World Health Organization is already reporting 160,000 climate change related deaths a year – equivalent to one 9/11 every week. In Africa alone, Christian Aid predicts that 182 million people could die this century because of this global planetary emergency, and Stern predicts that the whole world's economy could crash.

> The argument that banning cheap flights hurts the poor… 'fraid not. Over 50 per cent of the population doesn't fly in any one year, and most flights on budget airlines are taken by the well-off

So, I confess, that white paper, well, Richard Branson and Michael O'Leary can wipe their arses on it because that's the best use they're going to get from it under my reign! Those stag dos in Prague – they've got to go too. In fact, all flights to short haul destinations must be banned if we are to curb these emissions in time. Some of these runways can be dug up and used for less destructive ends as well.

This might all sound a tad drastic but since 45 per cent of all flights in Europe are to destinations less than 500km away (to places less in distance than from London to the Scottish border) it's really not so bad. There are still coaches and trains – both more than 10 times less polluting, and frankly it's time we all did our bit. And as for the argument that banning cheap flights hurts the poor… 'fraid not. Over 50 per cent of the population doesn't fly in any one year anyway, and 75 per cent of flights on budget airlines are taken by the well-off in social groups A, B and C.

Unconvinced? I'm taking you on a tour. I'll show you the 14th-century buildings I was going to knock down for tarmac. I'll make you listen to the jets flying over what used to be a tranquil national park – the Brecon Beacons; I'll show you how seaside resorts like Margate are being sacrificed for the sake of Malaga; and we'll end with dinner with a few of my ambassador friends. If you heard from them how Nairobi, a city built above the malaria line had now slipped below it; how the island nation of Tuvalu is being evacuated due to rising seas; and how most of sub-Saharan Africa was to become virtually uninhabitable; you'd think twice before telling them that £28 to Barcelona is part of our way of life.

I admit I've been 'plane' stupid and I'm sorry. But you can take my word for it… I'll bring the aviation industry down to earth. Just give me one last chance? Please?

Joss Garman is co-founder of Plane Stupid (www.planestupid.com), Britain's first national direct action group against the unsustainable growth in flying.

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How to beat denial – a 12-step plan

It's easy to feel so overwhelmed by the problems facing our planet that we turn away to whatever will cheer us. **Pat Thomas** proposes a radical way to break the cycle of addiction and denial

We live in a world haunted by the issue of climate change. A world with problems seemingly so severe and out of control that to stop and think about them is to risk intellectual and emotional paralysis. So we take the issue apart in small doses and sugar the pill with familiar, but ultimately destructive, distractions wherever we can.

Witness the papers on the day the Stern report was published. The front pages told us that the problem of climate change was official and real and important – as if it hadn't been just one day before. But elsewhere in the daily papers there was little comment or analysis of the report's implications. Instead it was business as usual – with some of the financial pages reporting, for instance, that Quantas had ordered eight new airbus A380 superjets; while others fêted the arrival of the first long-haul airline to offer non-stop fights from Gatwick to Hong Kong for just £75 one way.

The Times encouraged readers to start collecting its air miles, and boasted a free flight to Europe for every reader. *The Independent* featured a motoring supplement that trumpeted the merits of the 3.2-litre Land Rover Freelander 4x4, the 6.12-litre Mercedes Benz Rocket (with a ridiculous top speed of 225mph) and the 6-litre Bentley GTC convertible. Aware of the irony, the paper noted that the waiting lists for some of these cars would give its readers 'time to fight your conscience' over their CO_2 emissions. *The Guardian* featured an arts supplement recommending that the best way to appreciate the world's finest pieces of art was to fly to wherever they were and see them up close and personal.

Within a matter of days, the mass media tendency to report and move on was all too apparent: the Stern report had sunk, mostly without trace.

Disconnection

The scientific evidence for climate change grows more incontrovertible and damning by the day, as does evidence of the role that human activity (and inactivity) plays in this destructive phenomenon. Our inability as individuals to make sense of and tackle the problem head-on seems baffling, until seen in the context of our modern information culture. It is not simply the overwhelming volume of information that comes at us each day. More, it is the lack of reference points, the absence of a framework to help an average person make sense of the problem and locate their roles and responsibilities within it that is holding us back.

> "Stressing the large scale of global warming, then telling people they can solve it through actions like changing a light-bulb, encourages people to think individual action is meaningless"

There are other problems. Psychologists have documented how integral the 'messenger' can be in helping individuals interpret a given piece of information. Our climate-change messengers include a media steeped in the language of drama and disaster; and groups of (largely anonymous) scientists, politicians and economists, who debate the topic on a lofty platform and in a language that excludes so many average individuals. Is it any wonder that so many people have switched off or are sitting on the sidelines, waiting for the 'right' moment to step in?

In the macho worlds of politics and ecological debate, it is all too easy to get sucked into a war of words and clever arguments, in which each side becomes obsessed with being right and little effective action is actually taken.

For the past eight years or so, most people's response to climate change has been played out on this mental plane, ultimately making the major challenges we face seem distant and abstract.

Not long ago, an American group called the FrameWorks Institute looked at the way that the climate change message was presented. Among its conclusions was that stressing the large scale of global warming and then telling people they can solve it through small actions such as changing a light-bulb, brings about a disconnection that undermines the urgency of the message and encourages people to think that individual action is meaningless.

Evidence of this disconnection is everywhere and is sadly reminiscent of a man who continues to comb his few remaining strands of hair over his scalp, in the hope of disguising – from himself and everyone else – the fact that he is going bald.

Studies show, for instance, that there is a strong tendency on the part of the public to associate climate change with activities that are both large-scale and not undertaken by individuals. Thus the burning of fossil fuels



for energy is widely associated with climate change, but only a small proportion of individuals (around 20 per cent) associate their own household energy use with the problem. Likewise, many car owners think of car emissions as solely a local environmental problem and do not relate it to wider issues such as global warming.

Losing our minds

To return our focus to a human scale it is necessary to hold up a mirror, put ourselves in the picture and reflect on what it is that keeps us from making a personal connection with the challenge of climate change.

With this in mind, and at the risk of being accused of throwing like a girl, let me throw this out. You are in denial. So am I. So are we all. Never have so many seemed so oblivious to the implications of so momentous a future-shaping condition.

Denial is an all-too-human psychological process that disconnects us from uncomfortable emotions. It is a common defence mechanism that 'protects' us from things we'd prefer not to face up to – which it does by distorting reality, blocking deep understanding, and thus assuaging guilt. It helps us to ignore responsibility, prevents foresight, hinders the ability to see patterns in the apparent chaos of our lives, and stops us learning from our mistakes.

It's not deliberate and it's not malicious, but it *is* progressive and addictive; the longer we deny something, the more pervasive and entrenched in our psyches it becomes. Left unexamined, it can cut a damaging swathe through everything that is precious and worth preserving in life.

There is nothing unique about the course of climate-change denial. It resembles, for instance, that of people suffering alcohol addiction; or of people with sudden, severe impairment brought on by brain damage, such as stroke. Alcoholics are commonly seen as persons overwhelmed by experiences or circumstances beyond their ability to cope, and denial is common amongst them and their families. Likewise, in some stroke patients, 'anosognosia' (the inability to recognise or acknowledge their paralysis) is a common form of denial in which the patient concocts elaborate stories as a rationalisation for their inability to move.

Climate-change deniers are coping with an overwhelming experience too: an almost insufferable contradiction between past convictions and present circumstances, and a need to defend themselves against an intolerable and painful truth: we have been destroying, and continue to destroy, the only home that any of us have known.

For a psychologist, the signs of our denial are all too obvious. It can take many forms, both individual and collective; and in the world of climate change we have gone through them all. For instance:

Simple Denial takes the form of flatly denying that climate change exists. Such arguments, often masquerading as debate, have an almost Python-esque quality to them. For example:

'Climate change is a fact.'

'No it isn't.'

'Yes it is.'

'Sorry, is this the five-minute argument or the half-hour argument?'

Minimising allows the opposing side to appear reasonable by admitting that the problem exists – but doing so in such a way as to make it seem less serious or significant than it actually is.

'Yes, of course the climate is getting hotter. But remember, this is part of a larger natural cycle of climate change.'

'It was much hotter than this during the Middle Ages, you know.'

Rationalising is making excuses or giving reasons to justify why our behaviour isn't the problem. The behaviour is not denied, but an inaccurate explanation of its cause – or our power over it – is given.

'We can't do anything about climate change, because it would destroy our economy.'

'Climate change is just another excuse to raise taxes.'

Intellectualising or **generalising** avoids the emotional, personal awareness of the problem by using sometimes crazy theories and keeping the argument vague.

'How reliable are the figures for climate change? I mean, we're just guessing most of the time.'

'Why would you regulate a pollutant

that's an inert gas vital to plant photosynthesis, and which people exhale when they breathe? That can't be a pollutant.'

Blaming (also called projecting) is maintaining that the responsibility for the problem lies somewhere else, not with us. The behaviour is not denied, but its cause is placed 'out there', not with the person doing it.

'The real problem isn't carbon emissions, it's the fact that the sun is getting more radiant.'

'It's all due to cows farting, you know.'

Diversion is changing the subject to avoid talking about something that is perceived to be threatening.

'What about AIDS or cancer? Don't those things deserve my attention as well?'

'But just think, we'll be able to grow palms and pomegranates in Sussex? Won't that be lovely!'

'The Maldives is going to disappear? We'd better get on a plane quickly, then.'

Bargaining involves cutting deals or setting conditions for when things will be right to deal with the problem.

'I'll do something about cleaning up my CO_2 emissions, when the council cleans up my high street.'

'It's all America's fault. There's no point in doing anything about it until the US does.'

Passivity is ignoring the situation, or being its victim.

'What can I do? It's just little old me against the system.'

'Well, how much difference can just one person make?'

'There's no point, nobody ever listens to what I think anyway.'

Hostility occurs when the person becomes angry or irritable whenever the subject of climate change is mentioned.

'It's always something with these loony ecologist types – they are just a bunch of doom-mongers.'

Through denial in its various forms we have failed to face up to the magnitude of the trap we have created for ourselves. We look to the fixes of technology and investment as the quickest ways out of the trap. Better, less polluting, more innovative technology and more positive investment are important. However, our current climate crisis is not fundamentally one of technology, but of heart and mind and spirit and will.

Coming to our senses

Without change on these fundamental and very personal levels, is change possible at all? And what is the intervention, the catalyst that sets that change in motion? Usually such questions are applied only to people in crisis, to drug addicts, alcoholics, and prisoners. 'Intervention' is not something for 'normal' people going about their everyday lives, who aren't self-harming or harming others.

Yet what is climate change if not an act of extraordinary self-harm? And what is the destruction of the planet and the other species that we share it with, if not an act of harm and aggression directed at 'others'?

Knowledge is not the cure for denial; it rarely motivates people to change. Emotion and connection are the only things that can move mountains. Through emotion and connection we are brought up against our sense of grief, of loss, of helplessness and of guilt in the face of climate change. Experiencing those emotions as part of ourselves, claiming ownership of them, can be the trigger for that all-important 'ah-ha moment' where we begin to feel powerful again and where a change in attitude and behaviour is possible. Science can't deliver that 'ah-ha' moment because it speaks the language of the mind rather than the language of the heart or the spirit.

> There was a time when to be human meant to be alive to be curious, to participate. Now it means to consume. We have to ask ourselves, what in our lives is not sustainable?

To get out of the addictive spiral of climate change denial we quite literally have to come to our senses. In this respect the 12-step programme – originally devised for Alcoholics Anonymous, but adapted and used by many other self-help organisations – may be useful. The 12-step programme is essentially an admission of humility and failure, an acknowledgement that our actions have an effect on others, as well as ourselves and that all of us need help and support to live better lives. Adapted to the realm of climate change, such a programme would look something like this:

1 Admit our failures. Like the alcoholic who can't keep away from the bottle, the first step in our recovery from denial is a humble admission of failure: the failure of our economics, which has become disconnected from real life; the failure of our politics, which has forgotten the moral fibres that bind us and call us to action; the failure of our science, which has lost sight of the connectedness of all things; and our own failures as human beings, for mortgaging our future against numerous meaningless possessions and for not loving this world and the precious lives it sustains deeply, sensitively or intelligently enough.

2 Acknowledge our grief especially over what we have already lost – the communities, the animals, the world's wild places – and what we are losing – more animals, more wild places, non-renewable resources, a safe healthy future for our children. We need to think deeply and come up with answers to what our loss of contact with nature means to us, to the way we think, to the way we live our lives.

3 Take a moral inventory of ourselves. Are we living by morally responsible/sustainable values? There was a time when to be human meant to be alive, to be curious, to participate. Now it means to consume. Thinking of ourselves solely as consumers is problematical because a consumer will always look for a consumer solution or a techno-fix. Thus people living in Surbiton can feel good about buying solar-powered radios even though they have no need of them. Supermarkets can promote 'biodegradeable' plastic bags that come with the message that we can all continue consuming at these community-destroying temples of commerce with a clear conscience. We have to ask ourselves, what in our lives is not sustainable, and what can we do to change?

4 Realise that science and intellect are not the higher powers that will save us. Science long ago ceased to be a search for truth. Today it is a search for grant money and publication rights. In many areas science has become just an-

other tool of industry; indeed, many of the scientists who are climate-change deniers have been exposed as being funded by oil and tobacco multinationals. Likewise, logic and rationality only take us part of the way on life's journey; an intelligent mind that is not connected to the heart and soul is near worthless.

5 Acknowledge that all things are connected and all things matter. Man is not isolated from the world. Everything we buy, everything we use, everything we wash down the drain or flush down the toilet, leaves its mark on the world. Ask yourself: What mark am I leaving? Is my suncream causing fish to spontaneously change sex? How many non-renewable resources did I use in that car journey to school or the market? How much more energy does that plasma TV I want use compared to a conventional set?

6 Make a list of the ways we harm the planet and contribute everyday to climate change. This needs to be a personal list, not one focused on industry. It's the things we all do that we know are part of our personal footprint on the earth. It includes every light left on when we are out; every unnecessary car journey; every plastic item in our homes or offices; every cheap flight we've ever taken to anywhere; every exotic fruit we simply 'had to buy'. Then, having made the personal list, we need to note how our individual contributions are fuelled by industry and by advertising and not by genuine need.

7 Admit to our children that we have not taken good care of ourselves or the planet. Confession is good for the soul… so make a list of all the animals that have become extinct since our child, or grandchild, was born. Include also all the plants that are dying out due to global warming, all the natural places that once existed in our community that are no longer there, and all the good things that we experienced as children, but which our children will not.

8 Be willing to make amends for this harm, starting today. What can we do NOW and keep doing every day – for ourselves, our families, our communities – that will constitute our personal and positive contribution to a better world?

9 Accept that we are here to take care of the world, not the other way round.

10 When we fall off the path of forecaring, admit it and make immediate amends

11 Seek, through meditation and contemplation, through consciousness and regular contact with nature, to live more sustainable and responsible lives. Regular contact with nature is the only way to remind ourselves how precious and necessary it is in all our lives.

12 Use community support to strengthen our resolve to take care of the world. Share what we have learned with others in the community. Everyone is on a different stage of this learning journey. We can help others see the problems more clearly by helping each other realise we are not alone.

Pat Thomas is *The Ecologist*'s Health Editor





BEHIND THE LABEL

FAIRY LIQUID

Just how mild and green is 'mild green Fairy Liquid'? **Pat Thomas** explains

The bird is now bones, the gravy glue, the roast veggies are on their way to becoming a source of winter fuel and as soon as everyone's dinner has gone down just a bit, it will be time to do the washing-up. If you are one of the 64 per cent of households in the UK that doesn't own a dishwasher, chances are there will be a trusty bottle of Fairy Liquid by the sink to get the job of washing-up done.

Because the dishes are a chore that has to be done, most people never think twice about what's in a bottle of washing-up liquid. Nevertheless, a product like this can still add to the total toxic load of your body through its use and through its presence in the environment.

In the UK we spend £310 million a year on dishwashing detergents (in the US, the spend is around $1.53 billion) and Fairy Liquid is the UK's leading brand. With 13 million-plus British households buying 150 million bottles of Fairy each year, this consumer icon boasts 57 per cent of the market, making it the nation's favourite washing-up brand. Parent company Procter & Gamble (P&G) likes it a lot too, since it is the mainstay of the company's £7 billion Fabric and Home Care unit – one of P&Gs most successful moneyspinners.

Fairy has maintained its place in the marketplace with clever marketing that makes use of celebrity endorsements and promises of a world of happiness in a bottle. Famous for the 'mild green Fairy Liquid' slogan as well as its claim to last 50 per cent longer than any other brand, Fairy boasts a seal of approval by the British Skin Foundation, though this claim is not all that it seems. The British Skin Foundation is a charity that P&G (along with many other product manufacturers) supports financially.

So what's really in the bottle? No one outside the P&G labs really knows. The ingredients label is woefully inadequate (see box, right) and P&G told us to try to find what were looking for on the internet. After an extensive web search we did indeed find some – but not all – information on the components that make up Fairy Liquid.

- Aqua
- Sodium laureth sulphate
- Alcohol denat
- Lauramine oxide
- C9-11 pareth-8
- Sodium chloride
- 1,3-Cyclohexanedimethanamine
- PPG (Polypropylene glycols)
- Dimethyl aminoethyl methacrylate/ hydroxypropyl acrylate copolymer citrate
- Parfum
- Geraniol
- Limonene
- Colourant

This list corresponds well with P&G's own 'safety data sheet' for its original Fairy Liquid. The first thing that jumps out about this information is how well Fairy illustrates the problem that so little data exists or is indeed required on the components of common household products, even though human exposure and environmental impact are the key issues for a product of this type.

Anionic and non-ionic detergents can cause irritation to the skin, eyes and mucous membranes. Some, such as the ethoxylated alcohols sodium laureth sulphate and C9-11 pareth 8, can be contaminated with the carcinogen 1,4 dioxane. Several of the detergents and perfumes are known allergens and sensitisers, likely to be made harsher by the skin-denaturing effect of sticking your bare hands in hot water. Using a dish detergent in hot water also creates another health hazard – chemical vapours. In hot water the chemicals vaporise and are inhaled as steam; and some of Fairy's ingredients, such as 1,3-Cyclohexanedimethanamine, can produce vapours that cause severe irritation to the eyes and respiratory tract.

Among the tonnes of cleaning products we pour down the drain each year are toxic substances that are not processed adequately by sewage treatment plants or septic systems. Although Fairy claims to be biodegradable and complies with EU guidelines in this regard, it can hardly be considered good for the environment. For a detergent to be considered biodegradable by the EU, it need only break down by 60 per cent within 28 days. During those 28 days, residues from detergents and surfactants can build up and cause significant, long-lasting damage to humans, animals and the environment.

According to Greenpeace, Fairy may also contain hormone-disrupting artificial



LISTED INGREDIENTS

15-30% Anionic surfactants, 5-15% Nonionic surfactants, Perfume, Geraniol, Limonene

musks, which are potential carcinogens and reproductive toxins both in people and wildlife – again, we don't know for sure because P&G will not answer the simple question: does it or doesn't it? In the absence of data, the precautionary principle applies – assume that it does.

In truth, there is no such thing as an 'environmentally friendly' detergent. Detergents are always a burden on people and the planet in one way or another. The best action is to buy from manufacturers who strive to go beyond existing regulations – for instance by using vegetable-based detergents, eschewing colours or perfumes, and by making their products biodegrade in days, not weeks.

HANDS THAT DO DISHES

…are still in the majority, but only just. The perceived 'menial' nature of household chores means that the era of the dishwasher is upon us. Brits, it seems, are still not afraid to get their hands dirty; and we lag behind many of our neighbours in Europe, where around half of all households own a dishwasher, compared to 36 per cent in the UK.

The energy-intensive, water-wasting nature of dishwashers aside, most automatic dishwashing detergents are either irritants or corrosives – depending on their composition, concentration and physical form. They are made with strong petroleum-based detergents and a strong alkali. Skin irritation or burns may occur following exposure to dissolved detergents. Many also contain phosphates that pollute waterways.

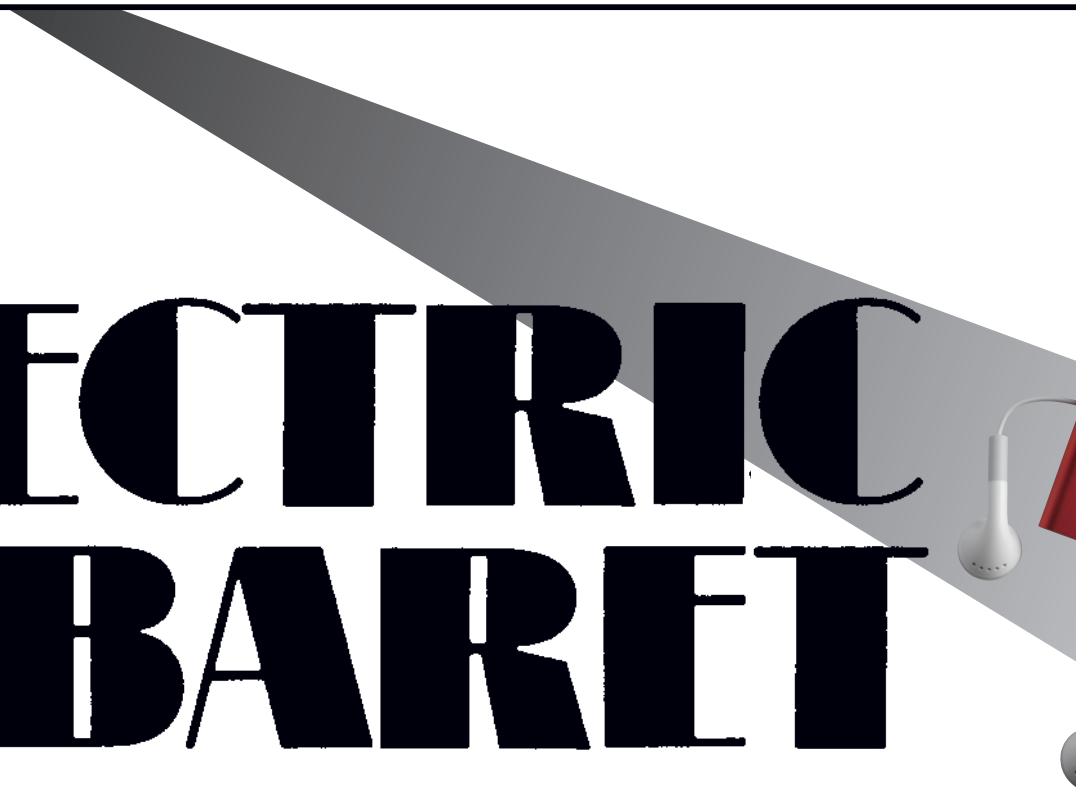
Some automatic dishwashing detergents also contain dry chlorine that is activated when mixed with the water in the dishwasher. This means that when you open the dishwasher, chlorine fumes are released in the steam that leaks out. These can cause eye irritation and difficulty breathing, especially for those with respiratory problems.

BETTER ALTERNATIVES

BIO D www.biodegradable.biz
ECOTOPIA www.ecotopia.co.uk
ECOVER www.ecover.com
GREENLANDS www.greenlands-env.co.uk
SONETT www.sonett-online.de
VERTUE www.vertue.com

INGREDIENTS	PURPOSE	ADVERSE EFFECTS
Sodium laureth sulphate	Detergent	An ethoxylated alcohol that can cause skin dryness, eye irritation. Penetration enhancer. Laureth compounds can be contaminated with 1,4 dioxane, a carcinogen linked to breast cancer.
Alcohol denat	Solvent	Relatively harmless on its own, but in a mixture like this it may potentiate the skin-damaging effects of other ingredients.
Lauramine oxide	Detergent, Degreaser, Non-ionic surfactant	Can cause irritation to the skin, eyes and mucous membranes.
C9-11 pareth-8	Detergent, emulsifier	An ethoxylated alcohol that can cause skin dryness, eye irritation. Penetration enhancer. Can be contaminated with 1,4 dioxane, a carcinogen linked to breast cancer.
1,3-cyclohexane-dimethanamine	Solvent, pH adjuster	A corrosive liquid that causes skin and eye burns. Vapours, especially upon heating, may cause severe irritation. Slow to biodegrade and once released to the sewer system may become associated with sewage sludge. Toxic to fish.
Dimethyl aminoethyl methacrylate/ hydroxypropyl acrylate copolymer citrate	Polymer, grease cutter	Synthetic ingredient derived from petroleum, Absorbs oil, isolates it in the water. No safety data exists for human exposure.
Parfum	Fragrance compound	Allergen; can trigger asthmatic reactions and skin irritation. Perfume vapours easily reach the brain, and can cause central nervous system disruption (eg headache, mood swings, depression, forgetfulness); common fragrance chemicals such as artificial musks and phthalates are hormone-disrupting.
Limonene	Synthetic fragrance, citrus	Skin and eye irritation. Powerful sensitiser. May trigger asthma attacks. Produces tumours, reproductive abnormalities and delayed growth in some animals. Common pesticide in flea control products. Toxic to animals.
Geraniol	Synthetic fragrance, floral	Irritating to skin and eyes; may cause sensitisation by skin contact.
Colourant	Adds colour	Washing-up liquids don't clean better according to what colour they are. Many synthetic colours are known carcinogens.

ELECTRIC CABARET



Most of us have a party in our pockets – those digital devices that promised a global village. We found that village, all right, and it is peopled with idiots. We click, chime and vibrate on the streets. Plugged into iPods, chatting into palms, we ignore passers-by like street addicts, lost in a techno-torpor enveloping us 24/7 from any locale. **Michael Bugeja** reports

The street is no longer the street. Work is home and home is work. It is high time that we analyse how we are using these portable gadgets and an array of others, in nearly every room of the typical house and office. If we don't, a cabaret of marketers will do that for us.

Cabaret is an intriguing word to depict the current milieu. Its Latin root means 'at chamber' – with drink, dance and song, so that patrons could forget the omens of their eras.

French cabaret arose in the 19th century during the technology explosion of telegraphs and telephones. Cabarets were the rage after the First World War, coinciding with radio and cinema. The golden age of cabaret peaked in New York City with the advent of television.

The term cabaret forever is associated with the decadence of the Weimar Republic in the years before Hitler. Cabarets provided refuge from social ills fomenting in the streets, at home and at work, where the bourgeoisie could escape the apocalyptic horsemen on the horizon.

The modern cabaret is wireless with downloaded dance and song.

For a decade now we have been touting technology at great expense – not only to our pocketbooks, but also to our psyches. We were supposed to be citizens of a brave new media world that promised to enfranchise and enlighten everyone with universal access. Somehow we got hooked on vaudevillian devices that tell us we have mail, we have text, we have cell, we have friends, we have worth, we are hip, we are mobile. *We have arrived.*

Where, exactly? There is no there there. Internet, like cabaret, is an illusion.

This was not supposed to happen. Renowned scientists such as Nicholas Negroponte, co-founder of the Media Laboratory at the Massachusetts Institute of Technology, promised a different future. In his inaugural column for the online magazine *Wired*, Negroponte envisioned a global environment devoid of nationalism. Fewer corporate dynasties,



too – a digital utopia so leisurely we would live rurally in our pyjamas (no need for cities or office buildings). Better still, we would be free of the caste system of industrial society. In the new world order, he wrote, 'landlords will be far less important than webmasters.'

Landlords now collect rents online and provide or deny high-speed access as part of the housing agreement.

As much as anyone, I yearned for Negroponte's vision. He is a humane, ideal-driven scientist who believed technology would unite us globally. 'As humans,' he wrote in 1998, 'we tend to be suspicious of those who do not look like us, dress like us, or act like us, because our immediate field of vision includes people more or less like us. In the future, communities formed by ideas will be as strong as those formed by the forces of physical proximity.'

Internet obliterates proximity. That is its core purpose. That is why the newspaper industry, with a local audience, struggles to maintain an audience who

> For a decade now we've been touting technology at great expense – not only to our popcket-books, but also to our psyches

increasingly can be 'found' online. Marketers love the lack of locality because all that is left is target market based on lifestyle, ethnicity, household income and other factors of consumer profiling.

People used to define themselves by community. Now they are identified by marketing lists.

Social networks now substitute for community. We upload pictures, 'friend' or 'de-friend' others with clicks of the keys, and cluster into cabaret-like groups. It is difficult to distinguish between online groups and marketing lists in *The Lifestyle Market Analyst* directory, which advertisers use to sell product. Some groups are identical to marketing lists, such as PC Gamers. Some are barely indistinguishable from lists, such as Baseball Addicts (group)



and Baseball Fanatics (list); Iowa Conservatives (list) and Kick Ass Conservatives (group); Mac Addicts (list) and Apple Macintosh Users (group); Avid Media E-mails (list) and Avid Sweatpants Users (group).

The irony of this is the technology advocates' premise about homogeneity of place where others look, dress and act similarly. Internet was supposed to open the front doors of diversity. If anything, the Web stereotypes across platforms while the physical world has become more diverse, even in midwestern America, where the Latino population burgeons. According to the non-profit, New York-based Population Council, America is becoming diverse so rapidly that by the year 2043, nearly one in four people will be Latino, with multiracial Americans common almost everywhere in every state.

Earlier this year, *The Guardian* reported that London was the most multicultural place on earth, with a population from every race, nation and religion. The rest of Britain is rapidly becoming multicultural as well, the newspaper added, noting that between 1991 and 2001 the UK population increased by 2.2 million, with half of that figure born abroad and another 130,000 relocating in 2004 from new member states of the European Union.

The global village is outside our real front doors, not on the front doors of websites.

In the 1960s, Marshall McLuhan also waxed idyllically about that global village, believing that television would bind us in thought, word and deed. 'The new electronic interdependence recreates the world in the image of a global village', McLuhan wrote in his hip 1967 book with Quentin Fiore, *The Medium is the Massage*. Because of TV, we were supposed to become planetary citizens with no taste for the rampant consumerism post-Second World War. The medium would enlighten and transfigure, creating an inclusive culture of leisure and lifelong learning.

Instead of a global village, we inherited a global mall so divisively isolating and market-driven, that we brand ourselves by the companies (not the human company) we keep: Apple, Microsoft, Sony, Dell *et al*.

You – we – support those and similar companies. Take inventory of all the digital devices that you use on the streets, at home and at work. You may well be surprised at how many you own and the total fees that you pay to use them. Who would have thought that ringtones would become a $4 billion a year industry worldwide?

Taking inventory is apropos as the holiday season approaches. In the States, sales of consumer technology – laptops, desktops, digital cameras, MP3 players, etc – rose by five per cent in the first six months of this year and are anticipated to climb higher through December. Odds are that Americans will be making many of those purchases online.

The same is happening in the UK, which overtook Germany last year in European online shopping. Reuters reports that television shopping in Europe may double to 8.8 million Euros by 2008 as households – especially in the UK – sign up for digital TV service.

But do we really need to buy more gadgets to entertain and distract us? What are we lacking besides substantive relationships in our communities, in our homes and at work?

Most of us remember when people still identified by neighbourhood. Now many of us do not know the person next door or in the adjacent flat. We travel the streets the way bats do caverns, relying on the sonar qualities of consciousness to guide us as we chat on our cell phones.

The most public place is the street, wrote Parker J Palmer a quarter century ago in *The Company of Strangers*. In the street, he observed, even when nobody speaks, people send 'an important subliminal message' to strangers: 'we do not know each other, and we may look strange (even ominous) in each other's eyes, but we occupy the same territory, belong to the same human community, and we need to acknowledge that fact and learn to get along.'

At the time, Parker was concerned about the proliferation of shopping malls. Consumers then believed that malls were safer than streets. In many cities, downtown shopping districts shut down, succumbing to street gangs. 'When we begin to think of space as unsafe,' Parker wrote, 'we withdraw from it, and as we withdraw from it, it becomes unsafe.'

Now, malls are increasingly perceived as unsafe as we withdraw to the seclusion of online shopping.

In a recent US study, more than half



We got hooked on vaudevillian devices that tell us we have mail, we have text, we have friends, we have worth. *We have arrived*





of the respondents expressed concerns about their personal safety in malls. The presence of security guards helped to ease concerns ranging from theft and sexual assault to child abduction. Last year, in one US city, San Antonio, some 3,200 crimes occurred in malls. A local television station advised shoppers not to flash cash, to hold on to purses and wallets, and to be extra vigilant when walking to the car.

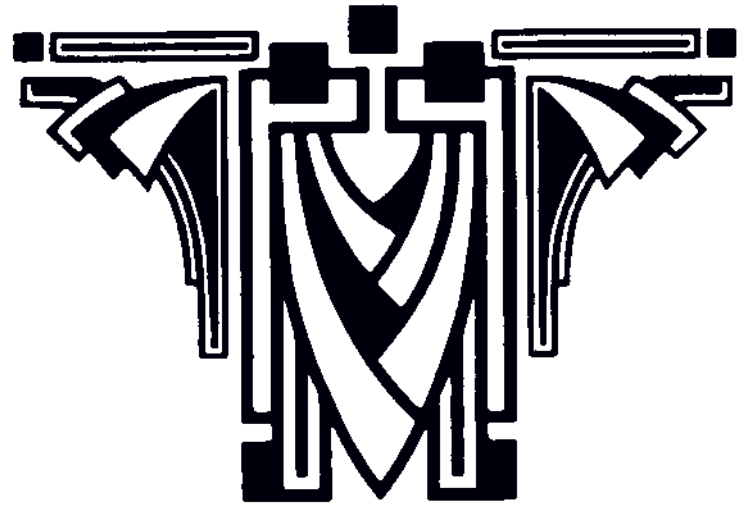
Cell phones purportedly provide a sense of security – that is, when we are paying attention. Of all the gadgets in our digital arsenal, this one above all has undermined community.

Only a few years ago, if you approached someone using a cell phone in public, that user would quickly end the call and apologise to the person in his or her interpersonal space. That etiquette soon changed. If interrupted, the cell phone user would apologise to the person on the other end of the cell phone call. More recently even that etiquette has changed – so much so, that interpersonal interaction has been nullified in the process.

A cell phone user now typically ignores any person within earshot. I call this 'the "it" factor'. Users turn everyone in their presence into inanimate objects, an 'it', as if that person does not exist.

Consider the conversations that we overhear as if we were invisible, not really there, standing beside someone using a cell phone in a public place. The 'it' factor is all around us. Earlier this year, at the local post office, I overheard a man stating that he and his spouse really shouldn't be smacking the children because one day the kids might tell their teachers.

Observe parents with children in strollers or in parks. Many no longer interact with those children, introducing them to the community. Instead, parents are on cell phones, ignoring their charges. They are 'its', too. When many of us were being reared, parents who did not interact with us in public were either alcoholic or dysfunctional. And even those taught us



When we begin to think of space as unsafe, we withdraw from it and, as we withdraw from it, it becomes unsafe



A cell phone user turns everyone in their presence into inanimate objects, an 'it', as if that person does not exist

three words that saved many of us from injury or death: Look both ways.

Children reared by cell phone parents do not look both ways when they step off the kerb. Nobody has informed them of the danger.

That point was driven home graphically earlier this year when the front page of the student newspaper at my university displayed a road sign with the headline 'Look both ways before crossing'. That passes for front-page news for youth in midwestern America. There have been accidents. More recently, *USA Today* ran a story on Ball State University in Indiana, titled 'Most Wired Campus', noting that even campus buses there are wireless.

I worry about the poor sap with an iPod who steps from the bus into the digital street. Drivers there too are apt to be chatting on cell phones.

A Utah study found that 18- to 25-year-olds using cell phones while driving have the motor reflexes of 65- to 74-year-olds not using cell phones. Another study showed that motorists who talk on cell phones are as impaired as drunken drivers with blood alcohol levels of 0.08 – the minimum level that defines illegal drunken driving in most US states.

Worse, many of us use cell phones while driving to and from work, doing business when we should be paying attention to the road. Thanks to the internet highway, we can work at any hour from any location, even as we

travel from one place to another.

Spare time is ever sparer in our high-tech media age. Far from making life more convenient and work easier, media and technology have blurred boundaries between home and work. Work intrudes on family and family on work. In the name of productivity, employers use email, voice mail and cell phones to interrupt family functions on week nights, weekends and holidays. Children and spouses interrupt business meetings with inquiries about the corner Chinese take-away and what to order, in the name of convenience. Productivity and convenience are banes as often as benefits. Machines that tout them usually obscure interpersonal boundaries, placing people in virtual habitats at odds with physical habitat.

That defines 'digital displacement'. Circumstances of displacement vary, but all have these components in common:

- Clash of environments, virtual and real.
- Blurring of work/home or social boundaries.
- Blurring of role and identity.
- Influence on values and priorities.
- Impact of all of these on relationships.

Digital displacement is associated with the video gaming phenomenon, too. Children used to play with other children, in parks or neighbourhoods. Then they migrated to the shopping mall, where video games were located in arcades. There, they had to wait their turn to play the most popular games –interacting with attendants, patrons, peers, other parents and strangers. They played games according to parental and arcade schedules rather than their own. This required persuasion and patience – valuable learning skills.

That soon changed. Home consoles manufactured by Nintendo, Sony and Sega put arcades out of business, and video games moved from the malls to our living rooms. Yet children still needed some interpersonal skills. They still had to interact with each other face to face, deciding what game to play at which difficulty level, sharing one controller. They also had to negotiate with parents about when play should begin and end – again requiring tact and persuasion.

This migration of children from playground to computer room illustrates in micro what is happening to us all in macro. There is a reason. The more isolated we become, the easier it is for the cabaret of marketers to target us

When gaming went digital so that children could access it on demand, they no longer had to gather with friends or interact with them and parents. They just had to hop out of bed or off the school bus and rush to computers and consoles to play each other online in a place that was not really there.

This migration of children from playground to playroom to computer room illustrates in micro what is happening to all of us in macro. We leave the public arena first. Then we gather in our homes. Then we are home alone in our rooms. There is a reason. The more isolated we become, using technology to access programming, especially video games, the easier it is for the cabaret of marketers to target us with typical promotions and services.

Sooner or later, technology leads to isolation. Children are isolated in their rooms. Parents are isolated at their computer terminals. Cell phone users with access to streaming videos will be spotted soon in public places, holding their devices and watching music videos, oblivious to life passing them by, alone in self-imposed virtual isolation booths. Worse, the social etiquette will honour those booths.

Our media-saturated children are entering the workplace already. How will we engage them interpersonally when society has moved, within our lifetimes, from family time (parents and children emphasising togetherness), to quality time (parents advocating less but more focused interaction with children), to media time (amusing or entertaining children in what spare time we have in our digital day)?

The blurring of home and work has resulted in a lack of 'interpersonal intelligence' – knowing when, where and for what purpose technology is appropriate or inappropriate. I'm referring now to supervisors who hold meetings when memos would suffice, or who write memos when the staff want to discuss a matter of great import. There are administrators who rely on email in situations requiring give-and-take, complicating problems. It can be argued that entire institutions of learning and business are being administered through the frame of email rather than through interaction with colleagues in meetings, office visits, workshops and the like. As a result, miscommunication happens as often as successful communication.

The digital workplace mimics the home office, and vice versa – the same gadgets, hardware, software and applications, along with the same habits.

Statistics on media consumption and technology overuse continue to spike. A report by the Middletown Media Studies



at Ball State University found that media consumption is the number one life activity, with the average American spending more time with television, radio, music players and cell phones than doing anything else. Television remains the dominant medium, with computer use a significant second. Americans are spending more than nine hours per day consuming some sort of medium or combination of media. Nielsen Media Research reports that television viewing in the US has increased to eight hours per day despite growing competition from technology.

The UK is mimicking these habits. The National Literacy Trust notes that nine in 10 adults in Britain watch television daily. A report by the Office for National Statistics states that Britain is following America's lead, with the average person spending more time watching television and using the internet than sleeping.

A new study at Stanford University's School of Medicine reports that one in eight adults in the US may be addicted to the internet. Researchers also found that users regularly remain online longer than they intended, with many concealing their addiction from family, friends and employers. Internet digital cabaret was a refuge for 8.2 per cent of respondents, who went online to escape problems or bad moods. Other studies have documented symptoms of addiction that include sleep deprivation and decreased levels of physical activity and social interaction.

What is the consequence of our habits and addictions? The toll may be heavier than we think, for those of us who are thinking at all about the impact of technology on our psyches.

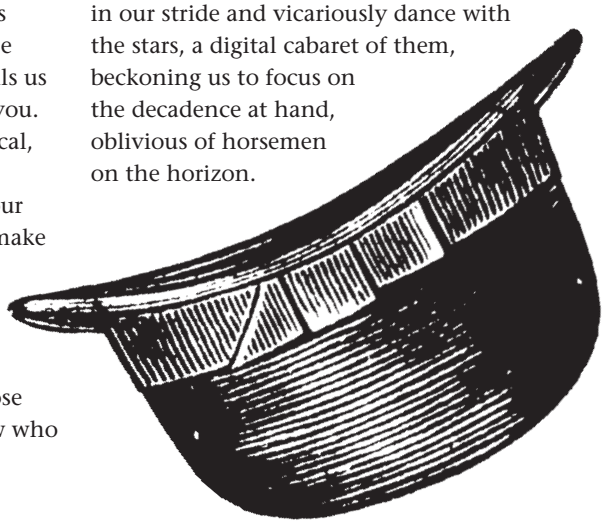
We are creatures as territorial and social as wolves, with similar insatiable appetites. Estranged from locality and face-to-face activity, many of us lose a sense of purpose, then a sense of self. We live linearly, with biological clocks that tell us when to take a mate, when to rear, when to work and when to let go of children, status and even life. Most life crises are violations of the biological clock. We take a mate – or a second or third – when it is time to rear. We rear when it is time to retire and never let go of anything, especially children, status and life. The internet, which obliterates time, now facilitates mating, rearing, working, status and life. Small wonder so many of us are as existential as patrons of the Berlin cabarets, hiding from the human condition.

Consciousness and conscience define the human condition. Consciousness tells us we come into this world alone and we leave it alone. Conscience tells us that what is inside me also is inside you. Life's message is inherently paradoxical, and we need others to make sense of it. We need to be conscious of how our actions affect others so that we can make meaningful adjustments for future encounters. When conscience and consciousness operate in tandem, we feel whole, grounded – an interesting word, suggesting that those who know where they are, also know who they are. Otherwise, we grow fearful.

Since ancient Rome, governments have circumvented the human condition by entertaining rather than educating the masses. That is what technology was supposed to do – inform and enlighten, empowering individuals to make intelligent choices in the voting booth. In time, we are going to get the governments we deserve. We may already have them.

When will we awaken from this techno-torpor and repatriate in communities? What will it take to honour the pre-requisites of conscience, which demand that we love and are loved by others, that we share meaningful relationships with others and contribute to community? How long can we wait for consciousness to account for the consequences of our actions?

It may take a prolonged global disaster, natural or man-made, or horrifically swift pandemic to rouse the conscience and deepen consciousness. Until then we may continue to take each catastrophe in our stride and vicariously dance with the stars, a digital cabaret of them, beckoning us to focus on the decadence at hand, oblivious of horsemen on the horizon.



Most life crises are violations of the biological clock... The Internet, which obliterates time, now facilitates mating, rearing, working, status and life



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1

WARNING WARNING

Parliament wants to put health warnings on wine in a bid to curb binge drinking. But before we tackle the Liebfraumilch louts, surely there are more pressing health warnings crying out for our consideration. Here we highlight the potential, all too real, warnings that should be grabbing our attention.











DEVISED AND REALISED BY CAVEAT


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ST. STEPHEN'S ENTRANCE
MAY CONTAIN NUTS
SOVEREIGN'S ENTRANCE
BLACK ROD'S GARDEN ENTRANCE


POISON
10



11



12



13

PHOTOGRAPHS: ALAMY, CORBIS AND REX FEATURES

WARNING: See page 59

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TWO TRIBES

A tale of our time…



of Money, Chemicals, Power and Redemption



Chemically BONDED



For the Canadian Aanishnaabek tribe, who live on a reserve surrounded by chemical plants, there seems no escape. Do they leave, and abandon their past, or stay, and perhaps lose their future? **Zoe Cormier** investigates

Stand in the middle of Aamjiwnaang and look straight ahead in any direction. Beneath the trees are small houses, trailer homes, a babbling creek, children scampering about. It looks like any other Canadian native reserve.

But it doesn't smell like one. Instead of crisp breezes and pine needles, the air smells of sulphur and diesel fuel. Lurking behind the trees and the homes are giant smokestacks and gas flares from the massive chemical plants that surround the 2,700-acre reserve. Look closer at the creek and you'll see a sign that reads: 'KEEP OUT Talfourd Creek contains toxic substances known to cause serious health risks'. As for the children – very, very few of them are boys.

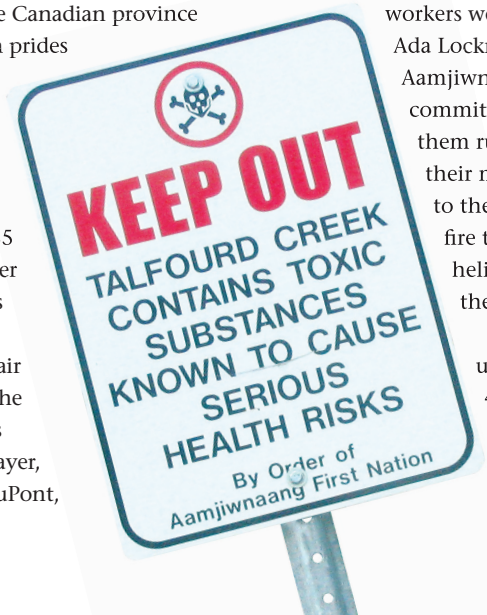
Down and out in Chemical Valley

Aamjiwnaang (pronounced 'Om-ji-non') sits in the middle of Canada's 'Chemical Valley', a cluster of chemical manufacturing plants located just south of the city of Sarnia, in the southern tip of the Canadian province of Ontario. The region prides itself on being home to Canada's largest industrial zone, one of the largest in North America. There are more than 35 petrochemical, polymer and chemical factories here and more on the other side of the St Clair River in the USA. All the big names have plants in Sarnia, including Bayer, Shell, Suncor, Dow, DuPont, Nova, Royal Polymer and Imperial Oil.

From almost anywhere you can see a smokestack or flare peeking out from the treetops. Just beyond the old daycare centre you can see the pipes and towers of a Nova factory. Aamjiwnaang's cemetery is surrounded by giant vats of volatile chemicals owned by Suncor, fringed with sirens and security cameras. So polluted is the land that different areas of the reserve even have their own distinctive smells – some are like rotten eggs; others like gasoline; others like dental freeze.

Chemical spills and releases are so common that the residents often ignore the warning sirens, which go off up to four times a month. According to Riverkeeper, an environmental watchdog, there have been more than 800 spills into the St Clair River from both sides of the border in the past 20 years.

Most recently, the release of a cloud of hydrofluoric acid at the Suncor plant in July 2006 sent 23 workers to hospital. 'The workers were dropping', says Ada Lockridge, a member of Aamjiwnaang's environmental committee. 'We could see them running, holding their mouths, just falling to the ground. There were fire trucks galore, and helicopters landing on the front yard.'



'They didn't even tell us about it – and we are 40 feet from Suncor's front door', adds Ron Plain, another committee member and native of the resident Aanishnaabek tribe.

A lot of the time, they don't even know what the accidentally-released chemicals are. 'One time, these black and green clouds came towards us from Suncor – they just told us it was "non-toxic",' says Lockridge. 'Well, I don't know how it got there, but this thick white goopy stuff was landing on people's cars – this thick substance that bubbled, it was actually eating the paint off the cars.'

Even if accidents like that never happened, each factory in Chemical Valley releases its own unique brew of toxic chemicals every day – including benzene, ethylene, phthalates, vinyl chloride, ammonia, a slew of heavy metals (including lead, mercury, nickel and cadmium), and dioxin (widely considered to be the most toxic chemical known to man).

Sold down the river

There are three main ways in which the federal government has failed to curb pollution in and around Sarnia.

One: when accidents happen, the federal government rarely holds the chemical plants accountable. Until a recent bill was passed in Ontario prescribing fines for spills, 'the ministry wasn't taking any enforcement action', says Ramani Nadarajah, a lawyer with the Canadian Environmental Law Association.

Two: the cumulative impacts are not taken into consideration. Each industrial facility is given a certificate of approval dictating how much of a chemical they are allowed to release – but the location of that facility is not considered. For example, if a new plant wants to be able to emit a certain amount of lead, the ministry does not consider how





Far left: Suncor's claim to care about the environment rings false in Aamjiwnaang. Left: the reserve cemetary and, nearby, giant vats of naptha that probably increase the death rate

much lead is being emitted by neighbouring factories. 'That is a huge weakness in the legislation', says Nadarajah.

And, three: when toxic waste is dumped on their land it is – believe it or not – legal.

It's a giant gap in Canadian environmental legislation, and it works like this: there are no national laws that prohibit toxic spills on land. Instead, each of the 10 provinces has its own laws. But native reserves – like army bases and government buildings – are considered to be federal land. So technically – legally – there are no laws whatsoever to prevent toxic dumping on Indian land. 'You could literally pull up here in a truck and open your hoses up in our ditch, and the most you would face is a $125 fine', says Ron Plain.

He's not being hyperbolic. In 2004 one of the Aanishnaabek agreed to let somebody (Ron declines to say who) store barrels of styrene and toluene on the reserve. 'The barrels leaked all over, it was a nightmare. Environment Canada, the Ministry of Indian Affairs and the provincial Ministry of the Environment just argued back and forth over who was going to pay the bill – while the stuff was leaking all over the ground.'

'Probably the reason there are no laws', explains Gord Miller, environmental commissioner for Ontario, 'is because Aamjiwnaang is the only Indian reservation where you can move hazardous waste just by crossing a road. Anywhere else, you would have to put it on a truck and move it many miles, where we would legally be able to stop you. But in Sarnia you just cross a line and you're in Indian land – and you're scot-free.'

When they signed a treaty with the British in 1827 (Canada did not become a country until 1867), the Aanishnaabek were 'given' about 5,000 acres. Then during the 1940s the big chemical companies started to move in, looking for sites to make rubber for the war effort. At that time and up until the late 1950s, when a company wanted to purchase some Aamjiwnaang land, the Aanishnaabek would first have to hand the land over to the government, who would then sell it on their behalf. The government was keen to get them to sell – and knew how to convince them.

So bleak is life on most reserves, that an aboriginal youth is nine times more likely to commit suicide than his white counterpart

'"Surrender votes" were usually held in the Fall – and the government of course knew that a lot of people [who mostly worked as construction workers or farmers] were unemployed between November and April, and were more in need of the extra money', explains 67-year-old Wilson Plain, who was a child at the time.

'During those meetings, some of the elders said things like, "What about the smoke that's coming from the stacks now? What is that doing to our health?" They spoke in Ojibwe – but their concerns were never ever recorded, even when the recorder spoke Ojibwe too. I feel it was deliberate – so that when, later on, people objected to the pollution, the government would be able to say, "Well, nobody said anything at the proceedings".' And the Aanishnaabek could do little to negotiate – registered Indians in Canada were not even allowed to hire their own lawyers until 1961.

John Beaucage, Grand Council Chief of the Union of Ontario Indians, explains how this situation came about. 'The Indian Act [of 1876] set out specific rules that differentiated between "status" and "non-status" natives,' he says. 'Those who chose to live on the reserves were granted official "status" but were prohibited from voting, and from becoming teachers, lawyers, soldiers or members of the clergy – and from hiring lawyers.

'So companies would come into our territories, and it didn't matter what flowed into the waters – they weren't hurting regular people, they were hurting people who had no right to vote.' For this reason, in both the USA and in Canada, the rule of thumb for a century has been to use native reserves as unofficial dumping grounds for all kinds of waste – uranium tailings from mines, toxic waste from nuclear plants, and, in Aamjiwnaang's case, barrels of toxic petrochemicals.

Although revisions to the Indian Act since 1961 have greatly expanded their legal rights, the 750,000 reservation natives throughout Canada still live a world apart from the rest of the country: infant mortality is 1.5 times higher, men die seven-and-a-half years younger, diabetes is three times more common, tuberculosis is eight times more frequent. Reserves everywhere are plagued by malnutrition, unsanitary water, derelict housing, and the usual fare of impoverished communities: drink, drugs, smoking and suicide. So bleak is life on most reserves, that an aboriginal youth is nine times more likely to commit suicide than his white counterpart.

Boys will be girls

The 850 inhabitants of Aamjiwnaang didn't used to worry about the factories. Twenty years ago when they swam in Talfourd Creek and an oil slick would come by, they would just get out of the water and wait for it to





pass before diving back in. But by the late 1990s, people started to get concerned. Every now and then they'd find a deformed animal on the reserve – recently they came across a sickeningly twisted kitten, and a couple of years ago one of their dogs gave birth to a litter of severely deformed puppies.

To find out exactly what was going on in Aamjiwnaang, Ada Lockridge started going door to door, asking questions. The answers stunned her – 'I felt sick to my stomach, I cried', she says.

Sixty per cent of the Aanishnaabek children suffer from asthma – three times the national rate. About a quarter of the children have some kind of learning or behavioural disability. Forty per cent of the women on the reserve experience miscarriages and stillbirths – some of them as many as six in a row.

But what really shocked Lockridge was that only one-third of the children born around the turn of the millennium were boys.

Worldwide, the proportion of boys to girls born every year is relatively constant – about 102 to 108 boys are born for every 100 girls. Although this ratio in any community naturally varies over time, Aamjiwnaang's boys didn't just vanish in one fluke year – they disappeared gradually over time. Before 1990, the ratio of boy to girl babies was relatively constant. Then the number of boys started to fall, gradually, until by the period 1999 to 2003, only 34.8 per cent of the babies were male.

Ada Lockridge is certain that she knows what is responsible: en locrine disruptors (chemicals that mimic hormones).

Dr Shanna Swan, director of the Center for Reproductive Epidemiology at the University of Rochester School of Medicine, who in May 2005 published the first study to link prenatal exposure to phthalates to outcomes in human babies, thinks she may well be right. 'Sex ratio is a sentinel event for endocrine disruption', says Swan. 'When you see an altered sex ratio of this magnitude, something is altering the hormonal functioning at a basic level.'

Popularly known as 'gender benders', endocrine disruptors behave like hormones – most mimic oestrogen, but some can suppress testosterone, or interfere with natural hormones in other ways. Endocrine disruptors have been linked to a huge variety of abnormalities in both humans and wildlife around the world, including 'feminised' animals, population crashes, cancers, immune system malfunctions, and skewed birth ratios. A recent study found that 45 per cent of the white perch fish in nearby Lake St Clair are 'intersexual'.

Sixty per cent of their children suffer from asthma – three times the national rate

Many of the chemicals released by Sarnia's factories are known and suspected endocrine disruptors. These include dioxins, phthalates, hexachlorobenzene, heavy metals, and many polycylclic aromatic hydrocarbons (PAHs). According to PollutionWatch, a non-profit environmental group that analyses government pollution data, Sarnia facilities released more than 223,000 kilograms of suspected endocrine disruptors to the air during 2003 alone.

In 2005, The Environmental Defence, a sponsor of PollutionWatch, tested the blood of a number of Canadians, including three people from Aamjiwnaang. Wilson Plain (Ron's cousin), his son Wilson Jr, and his granddaughter Jessie volunteered. Wilson Sr had 32 chemicals in his body (including 16 endocrine disruptors), Wilson Jr had 36 (21 endocrine disruptors), and Jessie had 20 (12 endocrine disruptors) – including mercury, lead, arsenic, cadmium, manganese, PCBs, PAHs and a variety of pesticides. While Wilson Jr had the highest total number of chemicals in his body of anyone tested, it was the number of endocrine disruptors in the three people from Aamjiwnaang that is the most suspect.

Many environmental scientists believe that the 'missing' boys in Aamjiwnaang are due to one of two possibilities: either that all the oestrogen-mimicking chemicals in the environment have caused the men to produce more female and fewer male sperm; or that the pollution is causing a disproportionate number of male babies to miscarry. However, many in the chemical industry dismiss Aamjiwnaang's missing boys as a 'statistical anomaly'.

Meanwhile, the Aanishnaabek charge that Health Canada (the government branch





From far left: Ada Lockridge silhouetted against the Suncor plant – the local company she hates most, for its constant flaring and clouds of smoke. The community centre where children attend preschool – and a massive chemicals factory just across the road behind it. Ada's calendar, on which she marks down every time there's some sort of alarm, smoke cloud, smell, tipping or leakage from any of the factories

responsible for monitoring and protecting the health of Canadians) has made every attempt to ignore their pleas for help. They say that while scientists from around the world have visited their reserve, the government has shown almost no interest. 'They refuse to acknowledge that there is a problem at all', says Ron. 'And the reason they won't acknowledge there is a problem here is because that acknowledges liability.'

Who covers the cost?

There were plans earlier this year for Health Canada to conduct a comprehensive health study of the entire region. The chemical companies offered to fund the study, but, as even Sarnia's mayor Mike Bradley points out, 'industry should not be involved in the financing – the credibility would be compromised.' Health Canada's official line is that 'all stakeholders should share the costs.' But neither the city of Sarnia nor Aamjiwnaang has that kind of money. Since 'the community is requesting that Health Canada fund the study in full', the government at this moment has no plans to conduct the full study.

Regardless, a 2005 peer-reviewed scientific paper in the journal *Environmental Health Perspectives* has already shown that the decline in births of boys in Aamjiwnaang is statistically real. Moreover, another First Nations (Chippewa) community in Ontario – which is genetically similar to Aamjiwnaang, and has roughly the same lifestyle – has a normal birth ratio.

This isn't the first time that boys have gone missing from a polluted community:

Forty-five per cent of the white perch fish in nearby Lake St Clair are 'intersexual'

the birth ratio fell in Seveso, Italy after an industrial explosion that released a cloud of dioxins; and in Minamata, Japan, after the lake was poisoned with mercury by upstream factories. However, what makes Aamjiwnaang important for us all is that this may be the first time that missing boys cannot be linked to one single environmental catastrophe. Rather, the culprit is one we all face: long-term exposure to chemicals at legal levels.

While they wait for the government to take action, the Aanishnaabek are doing what they can. There are plans to conduct their own studies – funded, ironically, with the very money they get from allowing the factories to construct pipelines under their land. They aim to keep the media aware of their struggle – there is talk of a documentary on the history of the Aanishnaabek, right from the beginning, so that the rest of the world can understand how things got this way. But beyond that, there is little they can do to stop the factories polluting their land.

So for now they have to settle for small victories. They did manage to prevent Suncor from building a new plant on their borders two years ago. They now know that they can force companies to cough up many millions of dollars for pipelines, as opposed to 60 years ago, when they settled for pitiful sums. And there are proposals for a few new plants – and if they can't stop them, at least they can make it 'very, very expensive for them to build', says Ron Plain.

Meanwhile, Ron's third child was born in September. 'I'm wrestling with myself right now', he says. 'Every instinct is telling me to protect my children, to take them the hell out of here. But if I do that I'm abandoning my community and my relations, and I would carry that guilt with me.'

There are rumours that the government may decide to offer each resident of Aamjiwnaang a sum of money – maybe C$100,000 – to move to a new reserve about three hours' drive north (Ron says he's even seen the area they have staked out for them). Ron says he won't leave for such a sum because 'there's no employment up there, there's no opportunities for anything – where could my children work? If my children can't work they'll be on welfare – and C$100,000 does not go far.'

Compared to most natives in Canada, the Aanishnaabek are well off. They are nestled in one of the most populous and bustling areas of Canada, and live next to the US border. Unlike many reserves, Aamjiwnaang is in an affluent part of the country and there are a lot of jobs available. 'We're in a perfect location, it would be hard to give that up', says Ada Lockridge.

Most of the tribe members might agree to move – not because of their wallets, but because of their health. But in so doing they would cease to be themselves. For the aboriginal peoples of Canada, their land is far more than just property – it's an integral part of their history and their identity.

'I ask non-native people – where do you have to go to find your great-great-grandfather's grave? Most don't know. I do', says Ron Plain. 'I can tell my son stories about his great-great-grandfather, and we can sit on his grave while I tell him those stories. That's why it's important to me, it's a connection to the past.'

But, given the ubiquity of the pollutants that surround them and the damage it has wreaked on them, it seems as though the Aanishnaabek people, ultimately, have few options other than to leave their land, and their past, behind.

Zoe Cornier is a freelance journalist

Getting CLEAN:

Recovering from pesticide addiction



Gerry Marten and **Donna Glee Williams** report on the Indian village of Punukula, so nearly destroyed by reliance on pesticides, yet now known as the 'pesticide-free village'

Around 20 years ago, a handful of families migrated from the Guntur district of Andhra Pradesh, south-east India, into Punukula, a community of around 900 people farming plots of between two and 10 acres. The outsiders from Guntur brought cotton-culture with them. Cotton wooed farmers by promising to bring in more hard cash than the mixed crops they were already growing to eat and sell: millet, sorghum, groundnuts, pigeon peas, mung beans, chilli and rice. But raising cotton meant using pesticides and fertilisers – until then a mystery to the mostly illiterate farmers of the community.

Local agro-chemical dealers obligingly filled the need for information and supplies. These 'middlemen' sold commercial seeds, fertilisers and insecticides on credit and guaranteed purchase of the crop. They offered technical advice (tinged with self-interest) provided by the companies that supplied their products: Bayer, Syngenta, DuPont, Monsanto, and Denocyl. The farmers depended on the dealers. If they wanted to raise cotton – and they did – they had no choice.

A quick 'high' of booming yields and incomes hooked growers during the early years of cotton in the region. Outlay on insecticides was fairly low because cotton pests hadn't moved in yet. Many farmers were so impressed with the chemicals that they started using them on their other crops as well. The immediate payoffs from chemically-dependent cotton agriculture both ensured and obscured the fact that the black dirt fields had gone into a freefall of environmental degradation, dragged down by a chain of cause-and-effect.

Soon, cotton-eaters such as bollworms, army worms, caterpillars, leafhoppers and aphids plagued the fields. Repeated spraying killed off the most susceptible pests and left the strongest to reproduce and pass on their resistance to generations of ever-hardier offspring. As the bugs grew tougher and more abundant, farmers applied a greater variety and quantity of poisons, sometimes mixing 'cocktails' of as many as 10 insecticides. At the same time, cotton was gobbling up the nutrients in the soil, leaving the growers no option but to invest in chemical fertilisers.

> The cost of fertilisers and insecticides escalated until the cost of producing the cotton exceeded the cash value of the crop

The introduction of cotton had pushed them past an ecological tipping-point – an abrupt shift between sustainability and unsustainability. This 'tip' had landed them in the trap of agricultural addiction to chemical pesticides.

Pesticide addiction pulled everyone and everything along in a net of interlocking feedback loops and chain-reactions that trussed up both the ecosystem and the social system. As outlays for fertilisers and insecticides escalated, the cost of producing cotton mounted. Eventually, the expense of chemical inputs outgrew the cash value of the crop. The farmers bought seeds and chemicals on credit and, as their incomes shrivelled, more of their livelihood was eaten up by interest on what they owed. They fell further and further into debt, compelling them to work even harder. As poverty pinched from every side and family survival required child labour, education went by the board, ensuring more generations of poverty.

The addiction to agricultural chemicals affected health as well as pocketbook. All members of farm families shared the work of spraying the fields with insecticides. They did this without training, and so used more than they needed. Lacking information about safe storage, use and disposal, everyone – including women and children – was exposed to toxic effects. Insecticide poisoning became common. People developed chronic health problems such as headaches, nausea, skin rashes, fatigue, mental symptoms and visual problems, as









Clockwise from far left: An old pesticide can used as a water dipper. Preparing botanical pesticide. Simple illustrations explain natural pest-control. Pouring chilli-garlic solution into a tank for spraying the cotton. A Punukula woman talks about their experience.

Suicide became increasingly common among the farmers, the favoured method being ingestion of insecticide

well as acute poisoning that required hospitalisation and sometimes caused permanent neurological damage or death. Humans were not the only victims. Cows and goats died when they grazed too close to treated fields.

By then, nothing but cotton offered the potential to bring in the cash that people needed to pay off their dealers, moneylenders and medical bills. By the time some farmers tried to break free of their chemical dependence, insecticides had already decimated the birds, wasps, beetles, and other predators that had once provided natural control of crop pests. Without their balancing presence, pests ran riot if insecticide use was cut back. The farmers were hooked.

Some farmers escaped to different places, different work. Others resorted to illegal activities, such as teak smuggling, to cope with their debts. Despair came easily. Suicide became increasingly common among the farmers, the favoured method being ingestion of insecticide.

What broke this vicious cycle was the arrival in Punukula of a man called K Venu Madhav. Venu Madhav grew up in Kokkeireni, a village about 100 kilometres from Punukula. He was raised on a farm that relied on insecticides. He had seen them drag his own father into debt.

Breaking free

After working for a few years as a farmer himself, Venu Madhav took a job doing fieldwork for a local NGO called SECURE (Socio-Economic and Cultural Upliftment in Rural Environment). The organisation went to Punukula to develop a watershed project but, as its staff listened to the villagers' concerns, they became aware of the hardships caused by the pesticide trap.

Around 1998, Madhav started talking to the farmers about changing the way they raised their cotton. They visited a woman in Warangel who had learned from another NGO how to control pests successfully without chemical pesticides. From her, they learned what was possible.

The villagers were sceptical, but SECURE was persistent. Finally, after a year, SECURE found the influential pioneer they needed: Margam Mutthaiah, a prominent village elder. His son had collapsed with insecticide poisoning and the hospital bill for his treatment was 18,000 rupees, a staggering sum for a farm family. Mutthaiah was ready to try something different. He had been among the first villagers to raise cotton. Now he would be the first to try it without chemicals.

Venu Madhav and the SECURE staff coached Mutthaiah, their early adopter, in what they called Non-Pesticide Management (NPM), a sort of Twelve-Step Programme for abstinence from agricultural chemicals.

The first step was turning to neem. The neem tree (*Azadirachta indica*) is a fast-growing broad-leaved evergreen tree related to mahogany. It protects itself against insects by producing a multitude of natural pesticides that work in a variety of ways. Because of its wide array of chemical defences, its insect enemies cannot develop pesticide resistance through simple single mutations. And because neem's arsenal of toxins evolved specifically to defeat plant-eating insects, they are generally harmless to humans





and other animals, including birds and insects that eat pest insects. Neem thrives in hot regions like the Khamman district. In this, Punukula was calling on ecological and social memory, frequent allies in eco tipping-point stories with happy endings. The plant is native to India and Burma, where it has been used for centuries to control pests and promote health. It could still be found in the Khamman district. The ecosystem still 'remembered' it. And even though it seemed far-fetched that a humble local plant ('neem that we use to brush our teeth', as Hemla Nayak put it) could outperform sophisticated exotic chemicals, villagers using it would simply be adapting a traditional remedy for the troubles of today.

To protect cotton, neem seeds are simply ground to a powder, soaked overnight in water, and sprayed onto the crop at least every 10 days. The neem treatment disrupts the feeding, development, and reproduction of destructive pests without harming the birds and beneficial insects that provide natural pest control. Neem cake, applied to the soil, kills insect pests and doubles as an organic fertiliser high in nitrogen. Neem grows locally and is easy to process, so it is also much less expensive than the chemical insecticides sold for profit by the dealers and their corporate suppliers.

Margam Mutthaiah's results were good enough to persuade 20 farmers to try NPM the following year. SECURE posted two of its staff to Punukula to teach, help, and facilitate community problem-solving.

Women had a key role in getting the new approach off the ground. They knew the toll that pesticides were taking on their families. They prodded their husbands to pursue NPM and to do it properly. They collected seeds from the scattered neem trees that still survived. They prepared neem and chilli-garlic solutions. Like the devastating effects of pesticide addiction, the work of breaking free was shared.

Quick, short-term gains had once pushed Punukula past the eco tipping-point into chemically-dependent agriculture. Now they found that similar immediate rewards helped to speed change in the other direction: the harvest of the 20 NPM farmers was as good as the harvest of farmers using insecticides, and they came out ahead because they weren't buying insecticides. Instead of investing cash (in short supply) on chemicals, they

The use of neem is complemented by other methods:

- Spraying chilli-garlic solution onto the cotton.
- Applying a mixture of cow dung and urine to repel and disrupt the growth of leafhoppers and aphids.
- Applying a naturally-occurring nuclear polyhedral virus that infects bollworms and army worms. The virus is fatal to them, but harmless to other creatures. Farmers can manage this 'biological warfare' themselves. Infected larvae hang upside down from the leaf edges of the crop, so they can be easily gathered and ground into a solution that is sprayed on the crop, with lethal results for the pests.
- Planting 'trap crops' such as sorghum, marigold, castor, and green gum in and around the fields to attract pest insects away from the cotton.
- Monitoring the abundance of pest insects by observing the plants, as well as by using inexpensive pheromone tablets to attract bollworm moths so they can be counted. With surveillance, farmers can save time and money by treating their fields only when they really need it.
- Removing and burning branches that are heavily infested.
- Putting out coloured wooden discs covered with sticky grease, to attract and trap whiteflies and sucking insects such as mites and thrips.
- Lighting small bonfires on moonless nights, to attract and kill bollworm and army worm moths.
- Enlisting birds as allies by planting perches in the fields.
- Deep summer ploughing to disrupt the life cycle of cotton bollworms, army worms and other pests whose pupae are in the soil.
- Enriching the soil with vermi-compost and cow-dung manure, effectively turning the villagers into organic growers – which could benefit their future income, as the market for organic cotton swells.





From far left: A meeting at Margam Mutthaiah's compound. Ingredients for chill-garlic solution. Neem seed-grinder – simple mechanics and a local plant that have helped farmers break free from the pesticide trap. Crushing neem fruits: women's involvement in NPM has improved their status and provided a source of income

invested time and labour (their more abundant resources) in NPM practices.

Feedback loops began to lock in change – this time, for the better. Pesticide abstinence led to less pesticide resistance and greater resilience in the ecosystem and social system. It allowed the birds and other pest predators (still in the ecological 'memory' outside the village) to return and exert natural control. Using fewer chemicals reduced medical expenses and the costs of bringing in a cotton crop, which meant less debt. Less debt meant less child labour, more families intact and more education for the next generation. More schooling led to improved incomes and better understanding of NPM.

It seemed far-fetched that a humble local plant used to brush teeth could outperform sophisticated, exotic chemicals

The status and economic opportunities of women improved. Neem became a source of income for some of them, as they collected seeds from the surrounding area to grind and sell for NPM in other villages. The improved financial situation meant that families could afford to put more land under cultivation, assisted by hired farm labour (and unpaid allies in the form of birds and other pest-predator species) that freed up farmers' time and energy. And with the time, energy, cash, and health that returned when they stopped poisoning themselves with pesticides, villagers were able to launch new entrepreneurial and community projects, all of which led to an enhanced sense of village solidarity, autonomy, assertiveness, and self-confidence. Desperation gave way to optimism.

Starting in 2000, all the farmers in Punukula village used NPM for cotton, and they began to use it on other crops as well. The change gathered momentum as NPM became even more effective once everyone was using it. Fields were no longer infested by pest outbreaks from neighbouring fields. Populations of natural pest predators bounced back, with the consequence that neem no longer needed to be applied as often.

In 2004, the *panchayat* (village government) formally declared Punukula to be a pesticide-free village.

A new beginning

Today, insecticide containers no longer litter Punukula. The village no longer reeks of chemicals. Villagers say that they didn't realise how much the poisons were sapping their strength until they stopped using them. And the women smile and say, 'the men have more vigour, so there are more babies.'

Fighting against pesticides and winning has increased Punukula's solidarity and confidence. When dealers punished NPM users by paying less for their cotton crops, village farmers formed a marketing cooperative that sought out and found fairer prices outside the village.

They have big plans for the future (such as water purification, higher education, and cotton ginning in their own village) and they are no longer timid about demanding appropriate attention from the government. Pesticide companies and dealers have tried to block the spread of NPM but, in spite of their efforts, the state government has added it to their agricultural extension programme. SECURE is now training local NPM promoters under that programme. The village now serves as a model for disseminating NPM to other communities, with around 2,000 farmers visiting each year. SECURE and eight collaborating NGOs have helped around 200 farmers to launch NPM. SECURE is teaching the programme to children in 27 village schools. What began with a few farmers desperate to find a way to farm without poisons, has become a movement with the potential to pull an entire region back from ecological disaster.

Gerry Marten and Donna Glee Williams are freelance journalists







Have a Wild Guess



How well do you know the wildlife of Britain?

The creatures on this page are all either once native to Britain but no longer found on these shores; or were once thought either extinct or almost extinct, but which have been brought back to relative prosperity. (Oh, and there are some red herrings thrown in for good measure…)





1) GAMES

- **Name all the animals**

- **Work out which ones are a)** extinct, but some people are suggesting that they should be reintroduced **b)** once thought extinct (or almost) but now flourishing once more **c)** not native – they were either introduced or never found here.

- **Where are (or were) they found?**
A list of habitats (it's not exhaustive) for these species appears at the bottom right of the opposite page. Match the creature to its habitat.













2) TALKING POINTS

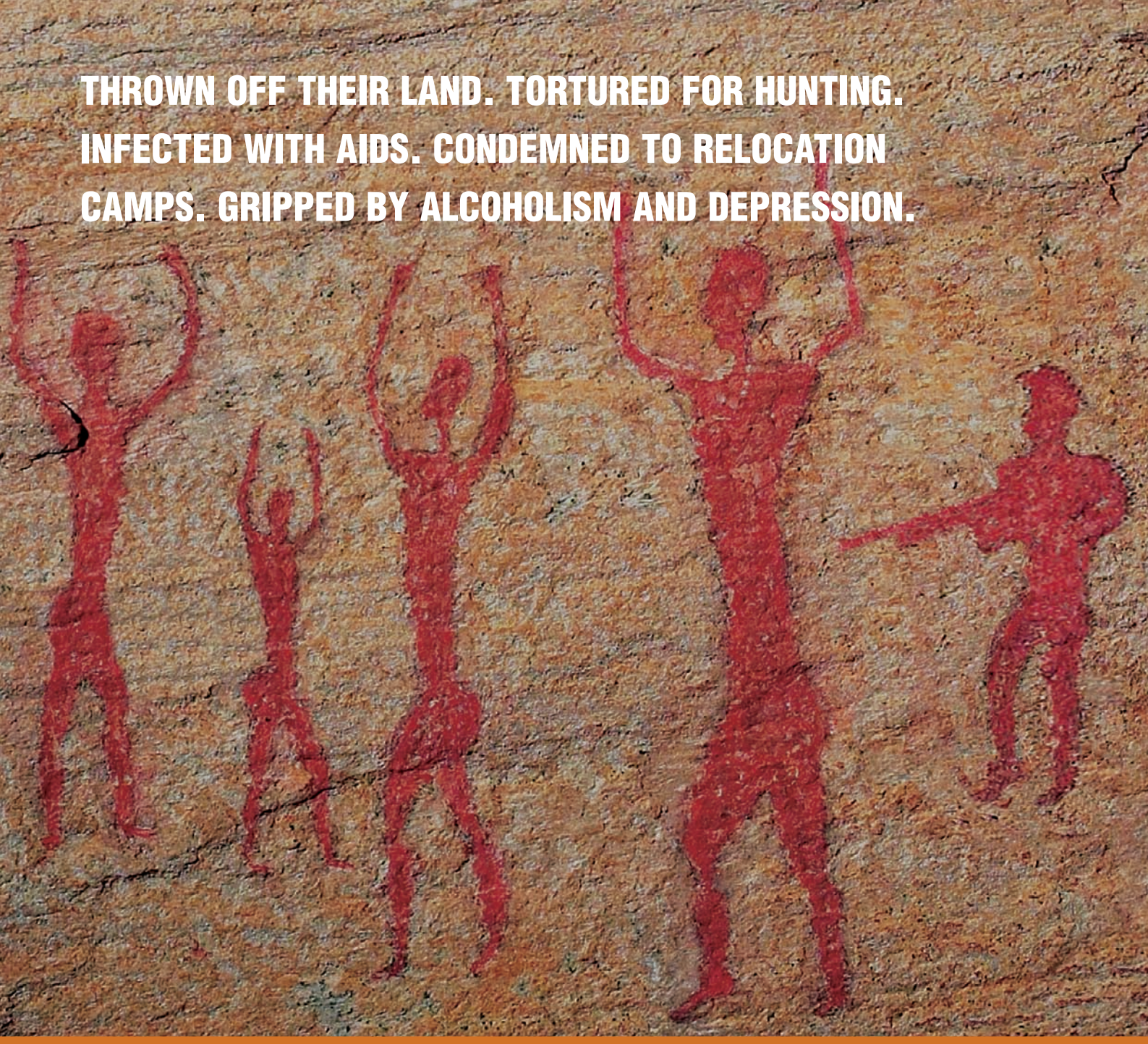
Now you know all the answers, how about taking the game a little further? Below are some Conversation Gambits. Write them out on a sheet of paper, give one to each person, and get the family talking...

- What does it say about our relationship to nature if we want wilderness to be 'safe'?
- Why do we try to protect the fox, but balk at the idea of the return of the wolf?
- Why does it seem obvious that Africa should save its lions, rhinos, etc, but we don't try to reintroduce our 'scary' animals?
- Why did the *Extinct* show on TV this Christmas only focus on saving foreign animals? Are none of ours worth saving?
- With the decline of farming as a viable industry in the UK, might the return of these animals generate valuable tourist revenue for impoverished rural areas?

WHERE ARE THEY FOUND?

• Reedbeds; banks of calm rivers • Riparian forests; tall grass habitats • South-facing Atlantic coastal valley slopes • Riparian zones • Ice floes, rocky shores • Dense forest • Freshwater, brackish and marine environments • Mountains; upland forests • Jungles

Answers on page 59



WHEN BOTSWANA'S PRESIDENT SAID THE KALAHARI BUSHMEN WOULD SOON BE EXTINCT, HE MEANT WHAT HE SAID. PLEASE HELP THE BUSHMEN GO HOME.

- **DON'T HOLIDAY IN BOTSWANA**
- **DON'T BUY ITS – DE BEERS – DIAMONDS**
- **DONATE TO OUR URGENT CAMPAIGN**

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reviews RECOMMENDED BOOKS

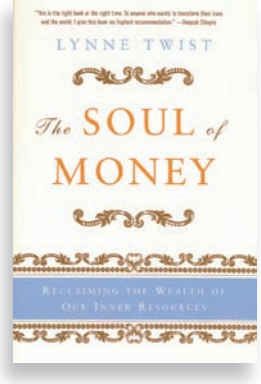


THE SOUL OF MONEY: RECLAIMING THE WEALTH OF OUR INNER RESOURCES

Lynne Twist, WW Norton 2006, $18.95

If ever one needed proof of how important money is in our way of viewing the world, one need look no further than the recent Stern Report on climate change. No matter that for years, climatologists have been giving ever greater warning of the perils we all face. No matter that it seems as though every summer is hotter than the last, every winter shorter, every year drier. And say nothing of the notion that climate change has already caused many thousands of people to die and could cause many millions, if not billions, more to do so, to say nothing of the loss of species and habitat. No, it was only when an economist stood up and said he'd proved that we could 'afford' to combat climate change that everyone sat up and took notice. How skewed have our priorities become that we can even entertain the dilemma of whether or not we can 'afford' to save the world.

The way that money is positioned at the centre of our lives, replacing true values that actually bind us together as societies and individuals, is the centre of Twist's important and inspiring book. She asks us to move away from always chasing more money, and towards a concept of enough. With enough comes contentment, allowing us to feel that whatever else we might earn – or not – can be used to help others. Money can be used as a form of social glue rather than a marker of division.

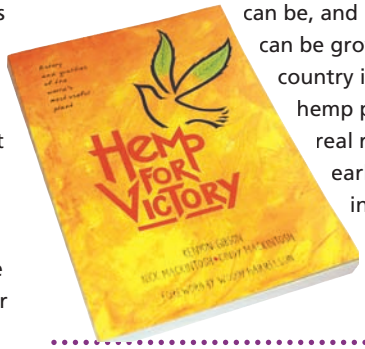


Catherine Bowen

HEMP FOR VICTORY

Kenyon Gibson, Nick Mackintosh, Cindy Mackintosh, Whitaker Publishing 2006, £17.95

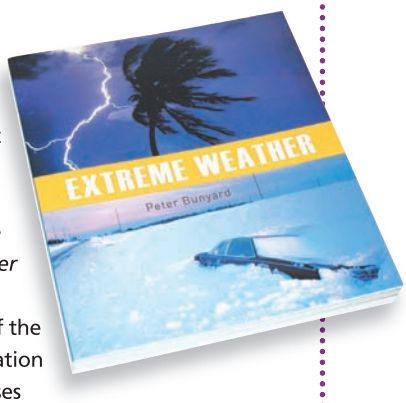
Currently our world relies on oil, and on the plastics produced from it. But as oil becomes ever more expensive and environmentally unacceptable, thoughts will have to turn to how to replace it. The answer, at least in part, must lie with hemp. While the solution is not to turn all the world's fields over to growing the much-maligned and non-narcotic sister of cannabis, its uses are practically limitless. Clothes, paper, oil for food, plastics, medicines... all can be, and most have been, made from hemp. Added to which, the crop can be grown easily without pesticides and can grow in almost every country in the world. *Hemp for Victory* (printed, naturally enough, on hemp paper) charts the fascinating history of the plant, exposes the real reasons why the world turned against and outlawed it in the early 20th century (hint: it's got something to do with the industrial development of plastics) and looks to its gradual renaissance in recent years as seeds of hope for the future.



Jeremy Smith

EXTREME WEATHER

Peter Bunyard, Floris Books 2006, £16.99



Books about climate change are on the increase. What makes Bunyard's unique is his deep understanding of a part of the world with importance for climate regulation – the Amazon. Bunyard spells out the impact of this vast tropical rainforest on the world's weather, and how devastating the loss of this control mechanism would be. In *Extreme Weather* he examines the ever-more-frequent floods and hurricanes striking the globe, and shows that it is the natural capital of the earth upon which we rely, more than any abstract accumulation of GDP. Perhaps the question that climate change really poses is not, can we afford to save the world; but, can the world afford to save us? If you want to understand how our climate works – a logical place to start understanding why it is changing and why this matters – this book is an excellent place to begin.

Jeremy Smith

WILD WORDS...

It's been a big year for the Wildfowl & Wetlands Trust (WWT). Founded in 1946 by the oft-titled Father of Conservation, Peter Scott, it's been celebrating its first 60 years of conservation of ducks, geese, swans and their habitats. You may have seen its logo: two white swans, their wings beating against a teal background as they make their hazardous way from the Russian tundra to winter in the flooded grasslands and lakes of Britain. They are Bewick's swans, and Scott spent many years encouraging them to the WWT's headquarters at Slimbridge, where you can find them today.

They inspired him, and he painted them often. Fitting, for a bird named after an artist who himself inspired so many. Thomas Bewick (1753-1828) was an engraver by trade, an ornithologist by nature, and a storyteller by instinct, and his books of engravings could be found on the shelves of virtually every wordsmith of his era, including John Clare, Wordsworth, Kingsley and Tennyson and the Brontes.

All this for an engraver, a man who recorded the birds, animals and country scenes he saw around him in north-east England? But Bewick's work was more than just pictures. Onto his blocks of boxwood, he recorded a life that with the advent of the Industrial Revolution and the Enclosures was starting to slip away. His work told stories of the people of England and the wildlife with which they shared their land. For a country worried about France, and scared of loss of freedoms, Bewick's engravings had personality, resonance and stability in a time of great change.

Bewick showed that you don't always need words to be a natural historian, although his work inspired words from others. Not the least of these is Jenny Uglow, whose Bewick biography *Nature's Engraver* was published this year by Faber. It's an excellent book which places Bewick superbly in the context of his evolving times, and which shows that sometimes a picture really can be worth a thousand words.

Malcolm Tait

GOOD FOOD STORIES

Tony Hodgson, Shepheard-Walwyn 2006, £7.95

With the ever-growing reach of Tesco and the other giant supermarkets, it's hard to imagine a thriving alternative. Yet Hodgson does much more than just imagine, he tells the stories of several local food initaitives in the UK and worldwide, which together amount to the beginnings of a genuine movement away from mass-produced monoculture.

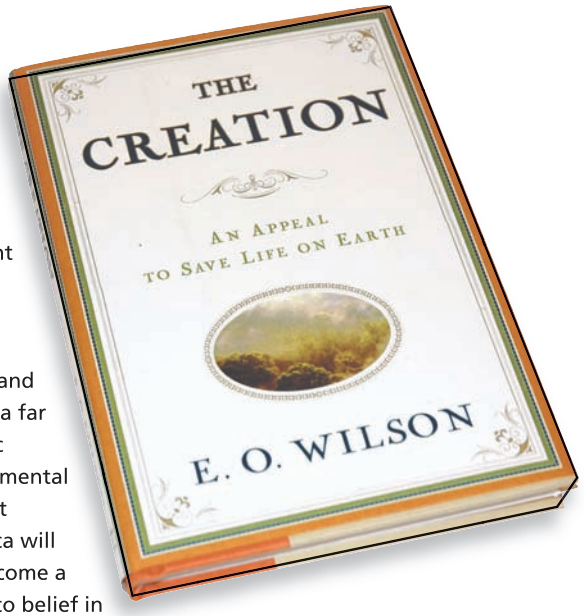


These stories are as varied and far-ranging as their produce. Scottish and English Organic Gardeners work together on either side of the two countries' border to create the largest regional organic group in the UK. In northern England a group of small farmers continue to work their independent plots, but share expensive machinery and cooperate where necessary, enabling them to compete with the vast farms who can afford such tools on their own. Community land trusts buy up local land and put it into community ownership, so that decisions about how it will be used are made by those with the most to gain or lose. Further afield there are Happy Hens of Gascony in France; groups linking impoverished farmers in India with those struggling to survive in the UK; or the ever-growing Slow Food Movement, which unites these disparate groups and many more, with a collective voice saying No to the homogenisation of our food culture, and yes to a world of local character and individuality.

Rufus Weston

THE CREATION

EO Wilson, WW Norton 2006, $21.95



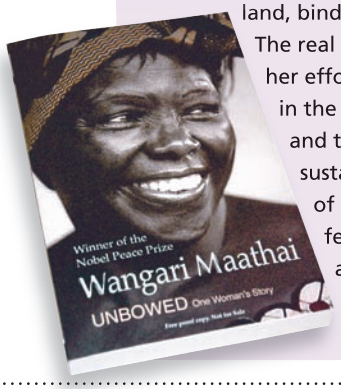
EO Wilson has already won a Pulitzer prize – twice – for his books grappling with the realities of biology and ecology. Here, he turns his considerable skills towards addressing America's religious leaders and winning them over to the fight to save the biosphere. Employing the impassioned lyricism of a Baptist sermon, *The Creation* makes it clear that the aims of science and religion are not opposites, and that if they can work together they stand a far greater chance of mobilising the US public towards action on the most grave environmental issues that affect us all. However, to accept what EO Wilson proposes, many in America will have to reject what has in recent years become a cornerstone of their attempts to cling on to belief in creationism – namely, intelligent design. As Wilson writes: 'But no, I say, respectfully. Life was self assembled by random mutation and natural selection of the codifying molecules… it is supported by an overwhelming body of interlocking evidence… Would God have been so deceptive as to salt the earth with so much misleading evidence?'

Martin Bartram

WANGARI MAATHAI UNBOWED: ONE WOMAN'S STORY

William Heinemann 2007, £17.99

Winner of the Nobel Peace Prize in 2004 and now a leading politician in Kenya, Wangari Maathai's story is one of resistance to oppressive power and unrelenting support for those without a voice. She is best known for founding the Green Belt Movement, whose premise was simple: by empowering women across Kenya to plant trees and protect indigenous forests, she gave them a role in a society that neglected them, and put them at the front of environmental protection schemes that also helped sustain their livelihoods. By planting they gain a supply of wood with which to make fires for cooking; fencing to keep their animals from drifting; and livestock fodder from the leaves. The trees provide much-needed shade for humans and animals, protect the land, bind the soil, and attract birds and small animals. The real key, though, writes Maathai, in this as in all her efforts, was to 'make local people feel invested in the projects so they would mobilize themselves and their neighbours to take responsibility for sustaining them'. Her words strike to the heart of all our efforts to save the planet. When we feel that we are both affected by the problem and involved in the solution, we are much more likely to get involved.



Sarah McCarthy



WORDS OF WARNING



1: The deadly chemicals produced by modern incinerators more than resemble those given off by cigarettes. The government is banning one and encouraging the other as a green solution to our mounting waste problem. Without warning, 40 are in the planning pipeline. More are being considered. 'Your smoke kills others' is a health warning the government should heed. For more information see Bin The Bin, *The Ecologist*, July/August, and Dr Dick van Steenis' website: www.countrydoctor.co.uk

2: Pesticide run-off and licensed and controlled emissions from factories are killing our waterways. For more information visit www.pan-ik.org

3: The sea is storming the UK coastline as global warming causes water levels and temperatures to rise, and tides to be stronger. If climate change apathy continues unabated we will all need to run for the hills.

4: Sir Nicholas Stern has sanitised the climate change debate. We need to keep a close eye on how others act on his conservative conclusions and erroneous timeline. Beware, in particular, a fatal filibustering review of the Review. Google 'The Stern Review' to read it for yourself.

5: This terribly polite sign, more at home on a croquet lawn than the site of an environmental disaster, was erected after an oil spill on the sandy shores of Weston-super-Mare.

6: In an honest world, warning signs like these could become increasingly common unless we start to tackle our waste problem by composting and returning packaging to the makers.

7: You decide: are you going to allow climate change to progress towards climate catastrophe. See the IPPR report High Stakes, at www.ippr.org

8: Around 10 million hectares of forest are lost every year to produce, among other things, cheap furniture and free newspapers. Increasing pressure to clear more trees to create palm oil plantations for bio-fuels, will compound the problem by creating monoculture pine forests where once there were tropical rainforests. See www.earthwatch.net

9: Yo ho ho. You may find yourself allergic to some of the decisions taken here.

10: Consumerism and the global economy is killing us, but Christmas wouldn't be Christmas without the Chinese ship the Emma Maersk delivering 11,000 containers full of plastic novelties, MP3 players, potato mashers and the like. Resource shortage? Peak oil? Bah humbug! See http://www.guardian.co.uk/china/story/0,,1934774,00.htm

11: Every time you get in your car, whether for a quick trip to the shops or a long haul to a family reunion, you are belching out climate-changing, planet-killing greenhouse gases into the atmosphere. 'Nuff said.

12: Planes not people? This sign warns ramblers on the beautiful Aran islands, a few miles off the coast in Galway Bay, to watch out for the low-flying aircraft that regularly disrupt the peace of the island. See www.planestupid.com

13: All drugs can be addictive, not just illicit or prescription ones. Worryingly, attempts to regulate the pharmaceutical industry under REACH were recently neutered by lobbyists. Ongoing endeavours to give health regulators teeth come in the aftermath of numerous scandals, such as drug trial cheats manipulating data with fatal results. See Drug Trial Tricksters, *The Ecologist*, May 2006.

HAVE A WILD GUESS - QUIZ ANSWERS



1 Walrus a) Ice floes, rocky shores 2 Large Blue Butterfly b) South-facing Atlantic coastal valley slopes 3 Grey Wolf a) Mountains; upland forests 4 Osprey b) Freshwater, brackish and marine environments 5 Eurasion Lynx a) Dense forest 6 Peafowl c) Riparian forests; tall grass habitats 7 Panther c) Jungles 8 European Beaver a) Riparian zones 9 Water Vole b) Reed beds; banks of calm rivers 10 Depressed River Mussel b) Stream sediment 11 Greater Horseshoe Bat b) Mixed deciduous woodland; grazing pastures of south-facing slopes

ecologist Reader Survey 2006

HOTEL Chocolat.

By taking a few minutes to complete this brief questionnaire you will help our editorial staff and Green Pages advertisers understand more about what interests you. In return you can choose to be entered into a prize draw for a delicious hamper of organic chocolate, courtesy of Hotel Chocolat.

You can photocopy this survey, or fill it in on the page. Please answer each question by putting a ✓ in the appropriate box.

1 How many of the last four issues of *The Ecologist* did you read or look at?

☐ 1 ☐ 2 ☐ 3 ☐ 4
☐ This is my first issue

2 (a) Which of the following best describes how you obtained this copy of *The Ecologist*?

☐ Postal subscription
☐ Delivered or kept for me by shop/newsagent
☐ Bought from shop/newsagent
☐ Someone else's copy

(b) How likely are you to take out or renew a subscription?

☐ Definitely will
☐ Very likely
☐ Fairly likely
☐ Fairly unlikely
☐ Very unlikely
☐ Definitely will not

3 How many people, apart from yourself, usually look at your copy of *The Ecologist*?

☐ 1 ☐ 2 or 3 ☐ 4 or 5 ☐ 6-9
☐ 10+ ☐ None

4 (a) Which of the following sections of *The Ecologist* do you normally read or look at? (Please tick all that apply.)

☐ Zac Goldsmith editorial
☐ Readers' letters
☐ News ('Upfront')
☐ Comments
☐ Essays/think pieces
☐ Photo essays
☐ Behind The Label
☐ Investigative features
☐ Edward Goldsmith Doomsday Fun Book
☐ Reviews
☐ Green Pages hero
☐ Green Pages advertisements
☐ Green Pages special offers
☐ Green Pages listings
☐ Other _____

(b) Which of these are most important to you? (PLEASE CIRCLE THREE ABOVE)

5 Which of the following best describe the reasons why you read *The Ecologist*? (Please tick all that apply.)

☐ The political issues it covers are important to me
☐ I want to read about environmental issues
☐ I want to know about ethical products and businesses
☐ It provides information not covered by the mainstream media
☐ I find the Green Pages useful
☐ For a different perspective on current issues
☐ Other _____

6 Which, if any, of the following subjects would you like to read more about in *The Ecologist* or the Green Pages in future:

☐ Climate Change/Energy issues
☐ Music/Film/Culture
☐ Baby/Child issues and products
☐ Environmental campaigns
☐ Visions for the future
☐ Holidays/Places to visit
☐ Sustainable home design
☐ Transport issues
☐ Sustainable business products
☐ Ethical careers/training
☐ Courses/self-Improvement
☐ Other _____

7 How often, if ever, do you visit *The Ecologist* website?

☐ At least once a week
☐ 1-3 times a month
☐ Once a month
☐ Have just visited it once or twice
☐ Never

ABOUT YOU

8 Are you: ☐ Male ☐ Female

9 Into which of the following broad groups does your age fall?

☐ Under 25 ☐ 25-34 ☐ 35-44
☐ 45-54 ☐ 55-64 ☐ 65-74
☐ 75+

10 (a) Which of these best describes your current work status? (Please tick all that apply)

☐ Run own business
☐ Self-employed/consultant
☐ Full-time employed (30+ hrs/week)
☐ Part-time employed
☐ Semi-retired
☐ Fully retired
☐ Studying
☐ Seeking employment
☐ Looking after children/the home
☐ Other _____

(b) If you are working, please write in your job title (if you have one) and the sector in which you work (eg Nutritionist, HM Prisons).

_____

(c) Does your work involve you in environmental or ethical issues?

☐ **Yes** – this is the main area in which I am involved
☐ **Yes** – I have some involvement
☐ **No** – I have little or no involvement, but would like to have
☐ **No** – I am happy having little or no involvement

11 (a) In which, if any, of the ways below have you bought organic, ethical or environmentally friendly products in the past 12 months?

☐ From an independent shop
☐ From a supermarket
☐ Online
☐ Via mail order
☐ None of these

(b) How often do you buy such products?

☐ Every time I shop
☐ As often as possible
☐ Just for certain purchases
☐ Rarely

Thank you very much for your help. We have entrusted handling of this survey to an independent company, Objective Research, who will treat your replies in the strictest confidence in accordance with the Code of Conduct of the Market Research Society. If you would like to enter the prize draw please provide your name and address below.

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green pages

The new world of flying winemakers

Face to face with fashion waste

LOCAL HEROES:
Inside the most influential enviromental organisation you've never heard of

PHOTOGRAPH BY Bella West

READ THE LABEL:
Chemicals that bind

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Daylesford Organic Christmas Meat Boxes ● 15% off Nigel's Eco Store ● Bike Lights from Pedalite ● 15% off Ecobtq's Clothing Range ● 15% off Akamuti's Organic Skincare ● Free Jigsaw with Ecotopia's Playhouse ● Eco Wedding Gift Guide



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Change where your electricity comes from.

If you thought climate change was too big a problem for you to tackle – think again. By changing to a supplier that produces electricity from renewable sources you are taking one of the biggest steps you can to help reduce carbon emissions and fight climate change. Switching is easy and takes only a few minutes. And we even match the standard price of each regional supplier. Change to Ecotricity and help change the way electricity is made.



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Burning fossil fuels to make electricity accounts for a third of the UK's carbon emissions.

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Last year our wind turbines saved an estimated 32,000 tonnes of CO2 emissions.[1]

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or visit

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ecotricity

[1] Based on BWEA and ASA figures of an emissions factor of 860g CO2/kWh for electricity generated by coal fired power stations, typically displaced by wind power generating capacity.

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66 Local Heroes Sue Clifford and Angela King, championing local distinctiveness. **Paul Kingsnorth** meets the women behind the most influential NGO you've never heard of

70 Flying Winemakers New World winemakers breathed fresh air into the stuffy Old World of wine – and now they're turning their attentions to organic wines, too. **Monty Waldin** reports

71 Ecologist Organic and Biodynamic Wine Club This month's case – 'Festive Flavours' – for only £65. Twelve bottles of organic wine, sparkling Prosecco, organic gin and Port – delivered direct to your door

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79 DIY Clothing: Knit and Natter Stuck indoors with three fed-up nephews, **Eithne Farry** gets out her knitting needles and yarn, and pulls the wool over their eyes

PLUS! ECOLOGIST READER OFFERS

82 Christmas Meat Boxes from Daylesford Organic

85 15% off Nigel's Eco Store

88 Battery-Free Pedals with Integral Lights from Pedalite

90 15% off Ecobtq's Clothing Range

92 15% off Akamuti's Organic Skincare

94 Free Jigsaw with Ecotopia's Playhouse

94 No excuse! Cloth Nappy Trial Pack

Editor's Letter



Am I part of a 'gloom and doom, hair shirt, lentil eating' brigade? I ask myself that every time I read certain mainstream media depictions of greens. While I do inherently mistrust some modern 'conveniences' – such as microwaving a ready-meal dinner to *save time*, throwing things in a place called *away*, or believing that beauty products need chemicals to be *effective* – I'm not an ascetic. Careless consumption is our modern misfortune. Is the answer to live in a perpetual state of sacrifice? Far from it. Over the past year, the Green Pages have aimed to raise questions and celebrate answers to what it means to live within our means. In other words, once we start to Read the Label on products, we can begin to decide for ourselves what we want on or in our bodies. Once the term 'local' begins to take on a personal significance, we can appreciate what defines a Local Hero. And once the meaning of organic becomes liberated from corporate-speak, we're all the more aware of others who know it, grow it or sew it. Could someone please tell me what a hair shirt is anyway – or send a press sample?

Sincerely,
Matilda Lee
Green Pages Editor
Email: greenpages@theecologist.org



Seasonal survival guide

Branch out with eco Christmas trees and decorations; let off festive steam carolling; keep kids busy with fun for free; cool down with a wintry walk; or warm up with mulled wine



2- 3 DEC TREE DRESSING DAY

The brainchild of Common Ground (see our Local Heroes, page 66), Tree Dressing Day has taken on a life of its own since it started 16 years ago. From village greens to city parks around the country, it's a celebration of trees and their enormous cultural and environmental importance. Decorate them, read poetry beneath them, dance and sing around them… Find an event near you at www.england-in-particular.info

21- 25 DEC CAROLS

A perfect excuse to raise your voice with your neighbours, carolling in your community can be lots of fun. Contact your local church for existing groups or just grab a few friends or family members and a songbook. The traditional period for singing Christmas carols is from St Thomas's Day (21 December) until the morning of Christmas Day.

24 DEC WARM UP WITH MULLED WINE

What you'll need:

1 bottle red wine
60g/2oz demerara sugar
1 orange, halved
1 dried bay leaf
1 cinnamon stick
grated nutmeg
60ml/2fl oz sloe or damson gin (optional)

How to make:

1. Put the wine in a saucepan with the sugar, orange, bay leaf and spices.
2. Heat gently until the sugar has dissolved. Add sugar to taste.
3. Take off heat and stir in the sloe or damson gin if you are using it.
4. Strain into heatproof glasses and serve immediately.



GREENING CHRISTMAS TREES…



Most of the eight million Christmas trees bought in the UK at this time of year will end up as festive landfill waste. Farmed fir trees have been sprayed with pesticides and other chemicals. Their fake, non-renewable, non-recyclable and non-biodegradable plastic counterparts are no better. Oh, Christmas Tree, what are we to do?

Eco tips

- Buy from a small-scale sustainable grower and/or make sure the tree has Forest Stewardship Council (FSC) accreditation. Go to www.soilassociation.org/christmas for a list of producers.
- Choose a tree with roots so it can be replanted. If replanting isn't an option:
- Most local councils run Christmas tree recycling schemes. Contact yours or go to www.letsrecycle.com
- Decorate an exterior tree or houseplant instead.

…and the decorations

Boycott the plastic dancing Santas, flashing lights and baubles – keep it natural or make your own.

Eco tips

- Pinecones and small apples
- Bundles of cinnamon sticks and bright seasonal berries
- Colourful ribbon bows
- Felt shapes
- Paper ring sculptures: experiment with cutting out different shapes and gluing the ends together to form rings. Add details with crayons or paint



26 DEC- 2 JAN FESTIVAL OF WINTER WALKS

How can you escape the in-laws, work off the Christmas dinner and revel in the beauty of the winter landscape? The Ramblers' Association's Festival of Winter Walks includes hundreds of planned walks throughout the UK, ranging in length from three to ten miles, free of charge. Find out more at www.ramblers.org.uk/winterwalks



WINTER HEALTH REMEDIES

Hangover SOS – Milk thistle

Feeling stuffed, sluggish and hung-over? Try some milk thistle, a detoxifying, immune-boosting herb well known for its ability to enhance liver function. From www.hambledonherbs.co.uk and www.nealsyard.com

Cold and flu – Ginger and lemon tea

Ginger is a favourite home remedy for colds and flu. It helps to soothe sore throats, stop coughing, reduce fever and clear congestion. Stir a tablespoon of grated ginger into a mug of hot water. Add the juice of half a lemon and sweeten with honey.

FREE FUN FOR KIDS

Nature spotters

How connected are you to your natural environment? Test your knowledge and go on a nature-spotting session. Decide what you're going to spot. It could be fir trees, birds, insects, mushrooms, types of clouds, species of dog. Do you know their names? For information on what to look out for and when, buy a good guidebook or go to www.whentowatchwildlife.org

PICK OF THE MONTH



DAYLESFORD ORGANIC SPA

Ayurvedic massages are designed to eliminate waste products, free up muscles, speed metabolism and improve circulation. The Hay Barn at Daylesford Organic, a farm/café/bakery/creamery/shop/spa in Gloucestershire, has introduced an Ayurvedic Ritual that will knock your socks off. It starts with a 15-minute consultation with an Ayurvedic physician to assess your Doshas (physiological energies) and decide on the massage style most suitable for you. Sixty minutes at the hands of one of Hay Barn's experienced practitioners then follows. Ayurvedic first-timers, be prepared – no part of the body is excluded. 75mins, £110. To book: 01608 731703.

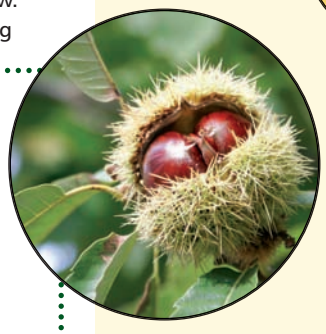
DECEMBER FOOD IN SEASON



VEGETABLES

Artichoke (Jerusalem)
Brussels sprouts
Broccoli (purple sprouting)
Beetroot
Cabbage (red)
Celeriac
Celery
Carrots
Cauliflower
Chicory
Chard
Celeriac
Cardoons
Cabbages
Endive
Garlic
Kale
Kohlrabi
Lamb's Lettuce
Leeks
Onions
Parsnips
Potatoes
Pumpkin
Rocket
Shallots
Spinach
Swede
Turnips
Watercress





FRUIT & NUTS

Apples
Chestnuts
Pears
Pomegranate
Quince
Rhubarb

MEAT, POULTRY & GAME

Goose
Grouse
Hare
Mallard
Partridge
Pheasant
Rabbit
Snipe
Squirrel (grey)
Turkey
Venison
Woodcock

FISH

Bream (black)
Herring
Mussels
Oysters (native)
Scallops
Turbot

CHEESE

Stilton
Wensleydale, blue

LOCAL HEROES:
Sue Clifford & Angela King



PHOTOGRAPH BY **CLARE RICHARDSON**

The UK's most successful NGO is based in a Dorset village, with no members or PR team. **Paul Kingsnorth** meets the duo behind it…

Picture the scene: it's the early 1980s, and the rising tide of Thatcherism is sweeping all before it. Big is beautiful, markets are the arbiters of both economics and morality, and the times are symbolised by road-building, downsizing and shareholding.

In the midst of this bleak landscape, two women look around them and don't like what they see. They don't like the way that this rising tide of über-materialism is drowning so many things that seem important, from green fields to small shops, wildlife to local character. But they are uncomfortable because many 'environmentalists' seem to be falling into the same trap as those they oppose.

'We felt that the environment movement had got a bit lost', says Sue Clifford. 'One of the things that we were worried about was that people were getting written out of it. The complications of talking about physics and nuclear power and all the rest of it had just left people behind.'

'So unless a place had special and rare things in it,' adds Angela King, 'it wasn't of importance, or worth fighting for, and the people who cared about it were left bereft.'

Sue Clifford and Angela King met whilst working at Friends of the Earth during its inception in the 1970s. King was its first wildlife campaigner, Clifford was on its board, and both of them wanted to reach beyond it. With writer and environmentalist Roger Deakin they did so by founding Common Ground in 1982.

Common Ground is an environmental

campaign group with a difference. It focuses on the small rather than the vast, the particular rather than the general and the possibilities rather than the dangers. The tools of its trade are not direct action, letter-writing or hard-hitting reports, but art, poetry, sculpture, and the creative impulse in all of our lives.

'We always felt very lonely out there', says Clifford, smiling. 'People would give you that kind of sideways look. But from the beginning we knew in our hearts that unless we argued for the commonplace and made our everyday surroundings the best we could make them, that we would always lose the special and the endangered in the end, because they would be left as islands.'

The belief that ordinary people can make ordinary places matter – that 'everywhere means something to someone' – is what has driven them ever since.

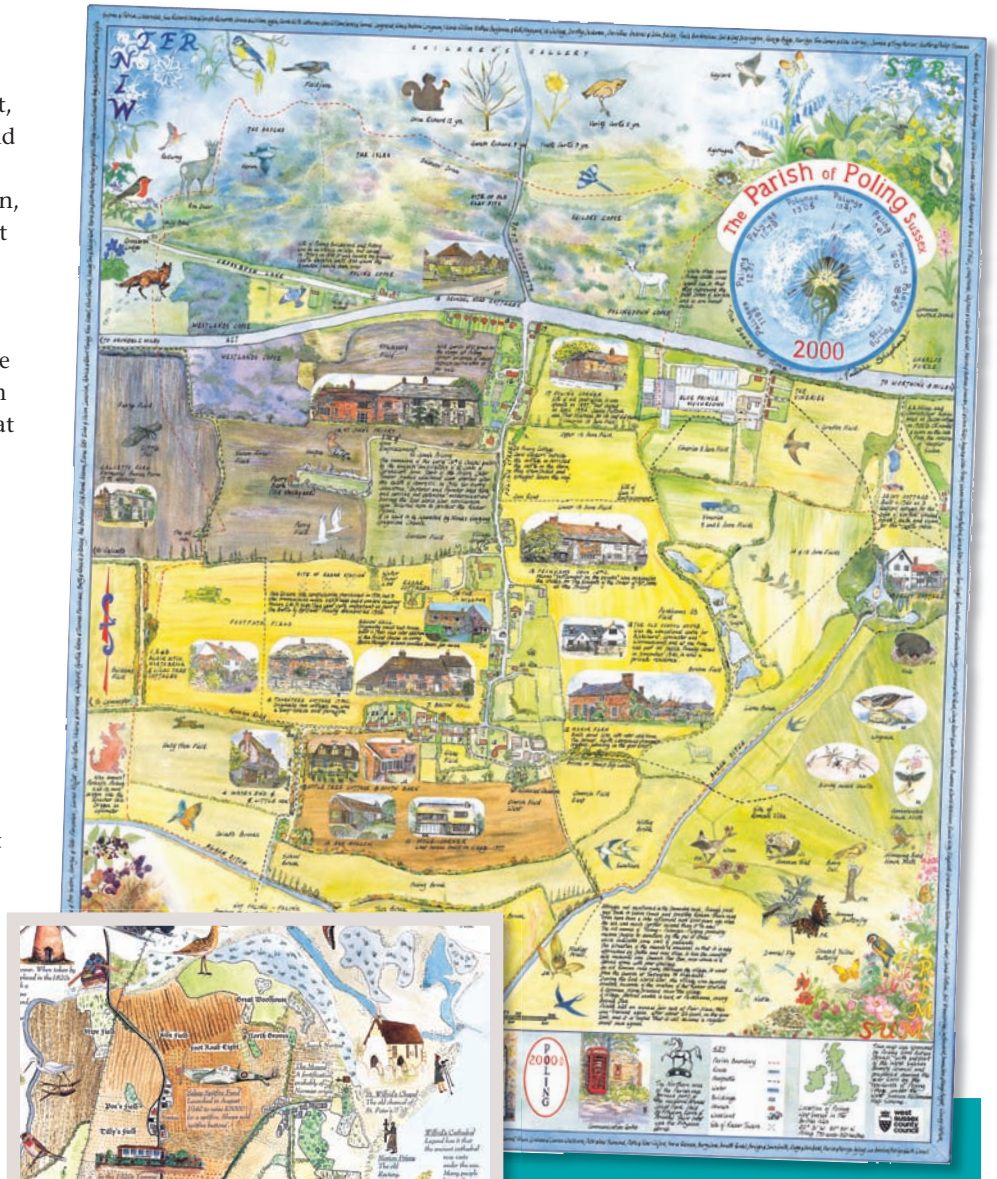
'You've got to try and help people say how much they love things, and what it means to them', says King. When they first got started, neither of them were quite sure how to do this. But they knew they wanted to bring people and their places together, and use creative means of showing them how to express their feelings for what they call 'particularity'.

The results of this desire have been fascinating – and entirely unique. They have also been influential. Take one of their earliest projects – Parish Maps. In the early days of Common Ground, Clifford and King mulled over practical ways in which people could begin to take the pulse of their place. How could local communities express what mattered to them, and start looking after the things they valued locally? They came up with a simple idea: what would happen if members of each parish – the smallest measure of locality there is – were to begin making community maps of their surroundings? Would it help reconnect people and place? Would anyone be interested?

They floated the idea in Common Ground's first book, *Holding Your Ground*, in 1985, and were soon contacted by people all over the country who wanted to have a go – or were already doing so. Often such projects would start with just a couple of people, and mushroom to engage the whole community. People began to understand that they valued, and knew, their locality better than they thought they did.

In Elham, in Kent, for example, people started off small. They planned simply to map all their local footpaths, but the more they talked and planned, the more ambitious they became. Their parish map ended up as a wonderfully detailed, eight-foot-long painting. In Easton, Bristol, the multi-ethnic community held a double-decker bus tour to get everyone involved in their map, which is now on permanent display. In Sunderland, 21 schools got together to map their local stretches of the River Wear and turn the whole into a knitted map of what the river meant to them. Hundreds of parish maps have been made since, directly inspired by Common Ground, every one of them bringing communities closer to each other, and to the places they inhabit.

Or take Apple Day. Clifford and King have long been fascinated by calendar customs – dates in which specific events or celebrations, from May Day to cheese-rolling, have embedded themselves in the



Parish Maps of Poling and Selsey in West Sussex, created by local residents. Both appear in Kim Leslie's book *A Sense of Place: West Sussex Parish Maps, WSCC 2006*. In West Sussex alone over 100 Parish Maps have been made involving 2000 residents.

unofficial folk calendar of the nation. So in 1990 they had a shot at creating one of their own. Apple Day was to be on 21st October, a celebration of our native fruit, the apple. England grows more varieties of apple than any other country – more than 2,000 (c – around a quarter of all the apple varieties in the world) – and the orchards they grow in are some of our most remarkable, and endangered, landscapes.

Apple Day was intended to raise awareness of this fact, and to do something about it. There were no rules, and no one had to ask permission. It was an experiment. The first event was organised by Clifford and King in a marquee near their then office in Covent Garden. It contained orchard photographs and rare apple displays, and around 1,600 people came to see it.

Clifford and King were amazed at the interest that was shown, but not as amazed as when they watched their new calendar custom take off nationwide over the next few years. This year, Apple Day was celebrated in more than 260 places across Britain. Mulled cider was served in Sussex, apples were pressed in ancient wooden presses in Worcestershire, draughts was played on a giant board using red and green apples as counters in Oxfordshire, a 'longest peel competition' was held in Cambridgeshire, guided orchard walks were held in Cheshire. And at every event, people came away with a wider and deeper knowledge of their locality – and a feeling that, in the end, it was theirs after all.

Apple Day has been so successful, in fact, that many people now think it is actually an ancient custom – which is fine by its originators.

'I don't know if many people would necessarily trace things back to us', says Clifford. 'What's happening now is that people are going off in all sorts of directions with the things we helped to start rolling. And we know that many of the things we've done have really affected how the Countryside Agency go about their work, how lots of local authorities go about their business. We constantly come up against our words, and our way of looking, in reports from counties, planning policy guidelines… it's out there, and it's embedding.'

Perhaps the most inspiring thing about Common Ground is that it continues to innovate, continues to develop, continues to move on, and yet its underlying philosophy remains the same. That philosophy is summed up in a phrase coined by King and Clifford, and which now, like so many of their other works, is beginning to take on a life of its own: 'local distinctiveness' – the idea that every place is different, special, unique, and that this is what makes it live. It is a rallying point against the homogenising power of the global consumer economy; and all Common Ground projects, from orchards to maps, apples to rivers, trees to street names, come under this umbrella.

> Who else brings together sculptors and farmers, poets and market traders, musicians and fishermen?

'It's about letting people define for themselves what's special about a place, and what matters about it', says Sue Clifford. 'That's the key. Government agencies and large bodies can't stand this. They want to define things, they want to keep tabs. But we've always been rather anarchic in that way, knowing that if you can turn people on and let them control things, they'll do much better than if you say, "Here's a way of doing it, and it's the only way".'

Time and again, Common Ground has been proved right in this regard: people value their places, and, given the confidence and the inspiration, they will fight for them. As their influence spreads (from swimming against the tide 20 years ago they are now, says Clifford, 'dog paddling as fast as we can to keep up'), there's surely no doubt that we need them. Who else would encourage whole communities along a river to participate in writing a libretto about otters? Who else brings together sculptors and farmers, poets and market traders, musicians and fishermen? Who else would write a *Manifesto for Fields*? Who else produces documents that look at least as good as they read, that are a work of art in themselves? Who else pays this much attention to detail, because they know that detail is what matters?



Tree of life: Tree Dressing by Japanese artist Katsuya Ise on Mitcham Green, in Merton. The small bags of rice symbolise life and prosperity. Credit ©Common Ground.



Apple Day, October 21st 2006 in Tenbury Wells, Worcestershire. At an Apple Day you can sometimes see hundreds of different varieties of apples and taste some of the more unusual kinds that you cannot find in the shops. Over 260 apple orientated events took place across the UK.

Fortunately for us, Clifford and King are busier than ever Their new book, *England in Particular*, a celebration of ordinary things and places all over the country, came out this year, and they are busier than they have ever been. And the first weekend of December is Tree Dressing Day, another Common Ground innovation, which began the same year as Apple Day. Back in 1990, Clifford and King decorated a group of plane trees in Shaftesbury Avenue, London, with huge numbers, to show that 'every tree counts'. This year, people will dress trees all over the country with everything from ribbons to messages in bottles. The ordinary will again become special, and more people will begin to notice where they are.

Twenty years ago, it seemed that Clifford and King were howling in the wilderness. Today, with the local, the seasonal and the 'sustainable' firmly in fashion, much of what they say has been vindicated. But there is still a long way to go. There probably always will be.

'One of the things that really gets my blood up', fumes Clifford, 'is people saying "Isn't this all just nostalgia?" Completely missing the point that we all live in history – we're surrounded by breeds of cattle and sheep and buildings and connections, and all sorts of things that are from other places and other times. We've just never thought about it in that kind of way. The whole point is that one's trying to look forward in an engaging and positive way. To look forward to a future in which we can nurture the commonplace and understand its value.'

In an age of placeless globalisation, this has become a radical message. And, if Sue Clifford and Angela King have their way, it's one that will be heard louder and louder.

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www.england-in-particular.info/



The Perlage team

THE NEW WORLD OF

FLYING WINEMAKERS

Antipodean winemakers are still breathing fresh air into the stuffy Old World of wine. **Monty Waldin** reports

Most people shopping in their local supermarket wine aisle might be impressed if told they were buying wine made by a 'flying winemaker'.

The term describes technically qualified, usually young, men and women who leave their (usually) native Australia and New Zealand after the winemaking season there (February to May), for the northern hemisphere and its winemaking season, from August to November.

Around 20 years ago, Australia and New Zealand transformed their (mostly) awful wines via a scientific approach: keeping wineries as clean as possible; preventing a vinegary taste by fermenting wines as cool as possible, often in temperature-controlled stainless steel vats; preserving fruit flavours by keeping wines waiting in huge tanks to be bottled at the right temperature; and regular scientific analysis to make sure that rogue yeasts and bacteria, which can destroy wines almost overnight, were kept under control by (commonly) adding judicious amounts of sulphur dioxide (E220), which is allowed in all wines by law and which is a main weapon in stopping them from spoiling.

What has this got to do with *The Ecologist*'s organic wine club?

Well, when the first 'flying winemakers' started arriving in Europe, around 20 years ago, they usually ended up working for big supermarkets keen to improve the quality of their cheapest (ergo biggest-selling) wines, which were usually sourced from grimy wine co-operatives in not-so-famous European wine regions.

Getting local growers (peasants) to pick the grapes a few days later than usual (for riper, stronger flavours) by buying them a beer (or five), making sure the grapes were pressed with minimum damage (often with a flick of a screwdriver to force the rollers on the thresher a few centimetres further apart), and keeping everything clean ('It's amazing what effect a bucket of water and some detergent can have on wine quality', as one flying winemaker told me) were the stock-in-trade of the flying winemakers' skills. Their technical prowess meant that supermarkets no longer had to worry so much that wine shipped in quantities of hundreds of thousands of litres at a time would go off on the shelf.

Now flying winemakers are increasingly being asked to polish wines made from organically grown grapes, as organic winemakers had a (sometimes deserved) reputation of earnestness in the vineyard, where they grew superb grapes; but a lack of direction in the winery.

If you have followed the fortunes of the Perlage winery, in north-east Italy, you'll have noticed that since a flying winemaker project began here in 1998, the wines have gained much-needed zip and clarity.

Perlage is owned by the Nardi family and, as well as its own vineyards, which are certified organic, it buys in grapes from local growers who are certified either organic or Biodynamic (by Demeter).

Subtle changes made here include leaving newly-fermented dry white wines like the Terre di Chieti to rest on the dead yeast after fermentation, which gives the wine a bit more texture and freshness; or fermenting each variety of dark-skinned grape at a designated temperature: the robust Cabernet Sauvignon needs to be fermented slightly hotter than the more fragile Merlot.

One risk of the flying winemaker phenomenon is that wines from different regions and countries can taste standardised. But flying winemakers are becoming savvy to such criticisms; and no one can argue that they have shaken up complacent Europeans who used to be content with 'making wines like grandad did', even though they were often little better than vinegar.

To order a copy of Monty's new book *Tuscany* at the special price of £9.75 (RRP £12.99) including post and packing, please call 01903 828503 and quote the code MB14.



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Tel: 01483 894650 Email:
office@londonandscottish.co.uk

Tasting Notes



Perlage, Prosecco
Dryish, light sparkling white wine made from the Prosecco grape, local to Treviso province. The grapes are picked, crushed and the juice fermented into a dry white wine. Yeast and sugar are added while it is in sealed tanks, to provoke a second fermentation. The fizzy gas this produces appears only once the bottle is opened. Ideal as an aperitif or after a meal with nuts, dried fruit or light cheeses.



Perlage, Terra Viva Merlot Easy-drinking, smooth light red made from Merlot grapes. These are chilled as soon as they are picked, then crushed so that the cooler-than-usual juice ferments on skins as slowly as possible at first. This does three things: it accentuates Merlot's plum and bramble flavours; it means the wine tastes smooth (not tannic); and it means the wine tastes crisp instead of flabby (Merlot can taste flabby if fermented too hot).



Perlage 'Terra Viva Bianco Terre di Chieti' Light, dry, crisp aperitif-style white made from northern Italian grapes such as Trebbiano and a local creation called Incrocio Manzoni – literally 'Manzoni's cross'. This is a cross bred from two famous white wine grapes: the steely Riesling, and the Pinot Blanc, which tastes like Chardonnay-lite. This wine is ultra-cool fermented to preserve its tangy greengage fruit. Good also with light main courses.



Majara Vintage Character Port, Vegan suitable A mouthfilling blend of Port wines made from four local grapes: Touriga Francesa (light blackberry fruit), Tinta Roriz (red cherry fruit), Tinto Cao (tea leaf aromas) and Touriga Nacional (concentrated blackcurrant fruit). The Casal dos Jordões port winery's Port grapes are still trodden by foot in open troughs ('lagares'), allowed to part-ferment using wild yeasts, then the fermentation is stopped by adding grape spirit (brandy).



Juniper Green Organic London Dry Gin, Vegan suitable You can drink this with tonic water or make it part of the classic martini. Juniper Green is distilled at Thames Distillers and flavoured with juniper, coriander, angelica root and savoury, 'botanicals' certified organic by the UK's Soil Association. The grain from which the spirit is distilled is also certified organic.

ecologist

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2) Bodegas Robles 'Piedra Luenga PX'
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4) Cantine Volpi 'Era', Nero d'Avola, Sicily (x2)

December/January selections:
5) Juniper Green Gin
6) Sparkling Perlage Prosecco (x2)
7) Perlage Terra Viva Merlot
8) Perlage Terra Viva Bianco Terre di Chieti
9) Port from Casal dos Jordoes

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EARTH MATTERS

Reflecting on a bumper crop, **Paul Kingsnorth** pays homage to the powerhouse behind his succulent pumpkins and savoury squash



PHOTOGRAPHS PHOTOLIBRARY.COM

Winter. Nothing grows, nothing moves. All is cold and dark. Frost – and snow, if you live in a part of the country still fortunate enough to experience it – descends on anything still foolish enough to be growing, and tries its best to squeeze the life out of it. Anyone with any sense is indoors, in front of the fire, with a glass of something warming.

For all but the most organised allotmenteers, though, things are not that simple. True, nothing much grows this time of year. I have some leeks and broccoli still toughing it out – they're happy to sit through all but the coldest winter. There are a few sad-looking winter salads limping along, too. But that's about it. Just about the only other thing you can usefully grow is Brussels sprouts, and I'd rather eat dung.

The good thing about a season in which few food crops grow is that few weeds grow either, so you don't have to spend your time battling it out with couch grass or horsetail. There's nothing to plant, and little to tend. But that doesn't mean we're off the hook, because on an allotment there are always things to do. Not that they'll necessarily get done, of course – that depends how hardy, and possibly masochistic, you are. But a plot can't just be abandoned to the bleak midwinter. Like us, it needs a bit of loving care and attention.

So I will be pulling on my woolly hat and my thick coat and trudging out there to tend the soil. For a veg grower, your soil is priceless. It may look like a load of crumbly, or gooey, brown stuff that sticks to your boots and attracts worms by the million, but this is the stuff of life. The difference between happy, healthy soil and morose, weak soil is the difference between 15 vibrant yellow corn cobs



Winter is the time for preparing the soil, nourishing it for the following year's crops

and three wrinkly little embarrassments.

At this time of year, soil likes two things: nourishment and protection. Nourishment, because a lot of its essential nutrients have been sucked out by the year's crop, and protection because the weather's so damn cold. All those little micro-organisms that make up your soil don't like frost any more than you do. If you were well-organised you would, by now, have stocked up your soil with replacement nutrients – in the form of some home-made compost, perhaps, or horse manure from a local farm. You would have dug lots of this into your beds, and then covered them up with something protective, such as a layer of old leaves, or some plastic sheets or old carpet, to keep the soil nice and warm over the winter while it absorbs its nourishing meal.

If you are like me, though, you won't yet have quite got round to doing any of this. Hence you will be doing it now, in the freezing winter weather. As you do so, you will be telling yourself that next year you are going to be more organised and better prepared – just like you did last year. You will, if you have any sense, have a very large flask of tea with you. Or perhaps a small flask of whisky. Or both. While you're at it, you may take pleasure in removing any old bits of brick or wood that you find lying around, under which slugs will be desperately sheltering, so that they freeze to death before the spring comes. January can be a cruel month.

But after the pain comes the gain. In my case, I will go home to a house full of very large, very orange pumpkins and butternut squash, the result of a surprisingly successful year. If I'm lucky, there might be enough to provide a whole winter's-worth of tasty soups, lasagnes, risottos, pies and mashes. I'll decide which one I fancy today, then curl up in front of the fire with it and a glass of whisky. Who knows, I might even feel mildly guilty about the slugs. That's the thing about allotments: sometimes they can be a real pain; yet it's always worth it in the end.

The difference between happy, healthy soil and morose, weak soil is the difference between 15 vibrant yellow corn cobs and three wrinkly little embarrassments

● For links and tips from other plotholders. **www.allotments-uk.com**

Email me: **paul@paulkingsnorth.net**

Inspiring stories

...FOR THE WINTER MONTHS

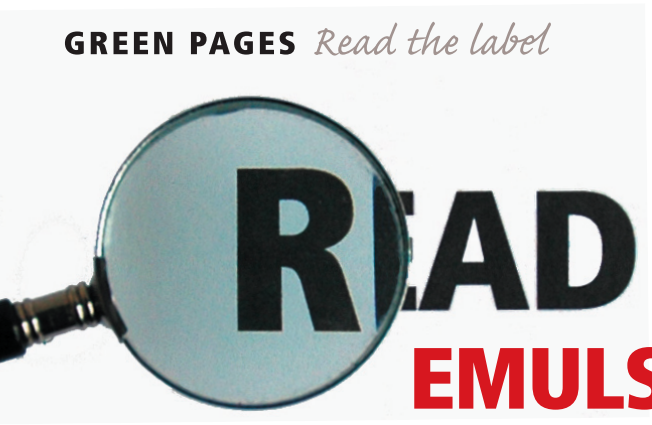
Are your local allotments run-down, vandalised or under-used? If so, help could be at hand in the form of the Allotments Regeneration Initiative (ARI). The ARI, as its name suggests, aims to help regenerate run-down allotments and to prevent them being sold or 'developed'.

And it's working. Take the Dal Muir allotments in Clydebank: five years ago, the allotment association was told that plans to 'regenerate' the River Clyde meant that their allotments were to be built on by 2007. The plotholders hit back with a 'regeneration' plan of their own, which included an education centre, community composting facility, 'sensory garden' and renewable energy schemes. As a result, the plans to destroy the plots have been put on hold.

Five years ago, Walsall Road Allotments in Birmingham were similarly run-down, with over a quarter of plots empty and many others in disrepair. Rather than giving up, plotholders got together to promote the allotments, with posters in local shops, a website, regular press releases to the local paper and a mass tidy-up. The result was a waiting list and a visit from *Gardeners' Question Time*.

There are plenty more examples: the Derbyshire community who persuaded their council to create the first new allotments for 40 years; the Cheshire allotment society that has helped create a haven for local people to engage with wildlife; the Cleethorpes growers who have twinned their allotment with one in Germany. The possibilities are endless. Find out more at **www.farmgarden.org.uk/ari/**





READ THE LABEL
EMULSIFIERS



Many mainstream toiletries' incompatible ingredients require chemicals to bind them together. **Pat Thomas** considers the alternatives to this unholy alliance

Many of the ingredients in commercial toiletries are uneasy bedfellows: none more so than water and oil. Anybody who has ever made a salad dressing or sauce knows these two don't combine well unless you add something else – such as salt, mustard, sugar or corn starch. Emulsifiers are essentially the glue that holds incompatible ingredients together, producing a stable, homogenous product with an even texture that formulators call an emulsion. An emulsifier can be either a physical substance (like a wax), which will generally hold the ingredients in suspension indefinitely; or a physical action, such as the instruction to shake well before use.

For the purposes of understanding toiletries there are two basic types of emulsion: oil in water and water in oil.

Oil in water – In this type of emulsion, water is the major ingredient. Oil in water emulsions are used to create creams and lotions that feel moist and less greasy. When absorbed into the skin there is very little or no oily residue.

Water in oil – Here, oil is the dominant ingredient. You will find this mixture in heavier creams, and those used to treat rough skin. The level of greasiness depends on the formula – all of which will be absorbed into the skin, albeit more slowly.

Many toiletries – creams, lotions, liquid soaps, toothpastes, and various other cosmetics – contain emulsifiers. Although they are generally minor ingredients, they confer no real benefit to the skin. Often they are used in conjunction with solubilisers – solvents that keep other ingredients in the mix dissolved. Complex blends of ingredients typically aren't stable for more than a few days without emulsifiers and solubilisers. Without them, the oil and water would separate and other ingredients would drop to the bottom or float to the top of the bottle.

Those who question the use of emulsifiers are often labelled as puritans. After all, how can we make great-looking and great-feeling products without them? In fact, very few manufacturers – even those that purport to make natural toiletries – regard emulsifiers as a problem. But because these ingredients simply address aesthetics and ease-of-use issues, it's worth at least pausing to consider both their safety and necessity.

Many types of bodycare products, for instance, make use of polyethylene glycol, or PEG, compounds. PEGs, which are derived from the petrochemical gases ethylene and propylene, belong to a



Beeswax: a natural emulsifier

PHOTOGRAPH CLAIRE WARING (WWW.BUZZWORDS-UK.COM)

large family of chemicals that can be, among their many other uses, effective emulsifiers. They can also irritate sensitive or damaged skin and have been associated with kidney damage in animals.

According to a report in the *International Journal of Toxicology* by the Cosmetic Ingredient Review (CIR) committee, impurities found in various PEG compounds include ethylene oxide and 1,4-dioxane – both human carcinogens; polycyclic aromatic compounds (volatile chemicals that are also potentially cancer-causing); and heavy metals such as lead, iron, cobalt, nickel, cadmium, and arsenic.

In spite of this, the CIR (which is funded by the cosmetics industry) concludes that PEGs are generally 'safe for use' in cosmetics but should 'not be used on damaged skin'. It is on this rather thin endorsement that PEGs continue to be used in bodycare products, though their presence on the label would indicate a product that is best avoided.

Other common emulsifiers include surfactants (which change the surface tension of water) such as triethanolamine (TEA), which can cause sometimes severe allergic reactions, dry skin and eye problems, and can become a sensitiser if used over a long period of time. Mixed with formaldehyde-forming ingredients such as the preservatives 2-bromo-2-nitropropane-1,3-diol DMDM hydantoin, diazolidinyl urea, imidazolindinyl urea and quaternium 15, TEA can promote the formation of cancer-causing substances known as nitrosamines.

Searching for emulsifiers on the label can be a bit of a minefield. Some, such as 'emulsifying wax', sound more natural than they are. Emulsifying wax, for example, is label shorthand for an ingredient made from other (largely synthetic) ingredients, such as polysorbate 60, PEG-150 stearate (can be animal or vegetable in origin) and steareth-20 – all three of which can be contaminated with the carcinogen 1,4-dioxane. Others such as decyl glucoside, which can be made from corn starch, are effective natural emulsifiers, but are not available in an organic form. Indeed, there are no certified organic emulsifiers.

So do we need emulsifers in our products? Aubrey Organics – who famously encourage users to 'shake the bottle' before use – would say no. Other manufacturers use natural emulsifiers, such as glycerine and beeswax, to good advantage, but many of these require some chemical processing and may provide little benefit to the skin. So maybe we are asking the wrong question.

Emulsifiers are necessary if you have oil- and water-based products. The real question would appear to be: do we need oil- and water-based products? Often, the answer is no. In the case of moisturisers – as I have said in a previous *Read the Label* – you can use single oils (such as jojoba or rosehip) to keep your skin supple. These are best applied to damp skin or with damp hands, to ease their application and to stop you from using too much and feeling greasy. Applying oil or an oil-based moisturiser in this way effectively does the same job as applying an oil/water mixture – without the extra chemicals.

ACTION ACTION ACTION ACTION ACTION ACTION

1 Go into your bathroom and look at the labels of your favourite products. Do any of them contain the following emulsifiers?

None of the current emulsifiers – even the natural ones – are currently available in organic form, which is why the Soil Association seal of approval can't be found on products that appear to be emulsions of natural ingredients. Other organic certification bodies are less strict, so as always it's worth paying attention to what the label actually says. Is the whole product certified organic, or just some of its ingredients? In the UK at least, choosing Soil Association certified organic products can wipe out a whole host of problems to do with emulsifiers at a stroke and make your life much less complicated.

- ☹ **Carbomer**
- ☹ **Carboxymethylcellulose**
- ☹ **Ceresin (aka mineral wax, Ozokerite)**
- ☹ **Diethanolamine (DEA)**
- ☹ **Isopropyl stearate (laurate, palmitate, oleate etc)**
- ☹ **PEG compounds, eg:**
- ☹ **PEG-8 myristate**
- ☹ **PEG-30 glyceryl cocoate**
- ☹ **PEG-80 glyceryl cocoate**
- ☹ **PEG-15 soyamide/IPDI copolymer**
- ☹ **PEG-40 sorbitan peroleate**
- ☹ **PEG-150 stearate**
- ☹ **Polysorbate 20**
- ☹ **Polysorbate 60**
- ☹ **Polysorbate 80**
- ☹ **Potassium hydroxide**
- ☹ **Propylene glycol**
- ☹ **Sorbitan stearate (laurate, palmitate, oleate etc)**
- ☹ **Steareth-20**
- ☹ **Triethanolamine (TEA)**

2 If so, photocopy these pages, highlight the worrying emulsifiers you have found on the label and write to the manufacturer's customer services department. Ask them why they are using these ingredients in their product, given that the following natural, non-toxic and equally effective emulsifiers exist.

- ☺ **Beeswax**
- ☺ **Candelilla**
- ☺ **Carnauba**
- ☺ **Cetearyl alcohol**
- ☺ **Cetearyl wheat bran glycosides**
- ☺ **Cetearyl wheat straw glycosides**
- ☺ **Decyl glucoside**
- ☺ **Jojoba**
- ☺ **Lecithin**
- ☺ **Quince seed**
- ☺ **Rice bran wax**
- ☺ **Sucrose cocoate**
- ☺ **Vegetable glycerin**
- ☺ **Xanthan gum**

3 Ask the manufacturer to send a copy of their reply to *The Ecologist*; or, failing that, pass the reply you do get on to us, as we will be monitoring all feedback for future investigations and campaigns.



Designer Rubbish

Photographs CHARLIE STEWART
Text MATILDA LEE



'Recycling since 1997' reads its motto. This year, two tonnes of fashion waste was diverted from landfill and into the funky, fresh designs of the From Somewhere label.

It started as Venetian-born designer Orsola de Castro's refusal to throw out a cherished sweater inherited from her grandmother, then evolved into a business customising secondhand cashmere cardigans retrieved from flea markets and charity shops. Her signature feature was to crochet or sew on buttons or pieces of fabric onto holes or stains.

Her break came when MILES, a famous Italian fabric manufacturer, offered her their damaged goods. Eyeing up their rubbish, she asked for that too. 'I was given anything from production cuts to fabric colour charts. In my mind, they were throwing away gold dust.'

Scouring the rubbish bins of Northern Italy undercover wasn't long-lived, as other manufacturers realised that From Somewhere could act as a free waste disposal service – and give them good PR. 'We started off as a pain in the ass. Now we are providing a service.'

She currently receives rubbish from manufacturers providing for Marc Jacobs, Sonia Rykiel, Valentino and Burberry, to name a few. Sewn together, these offcuts create a wholly unique mix of cashmere, silk, cotton, jersey and tweed, in colourful recurrent themes. 'They are profoundly different but exactly the same,' she says.

Boxes and bits of fabric litter their West London studio. Is there any method to the madness? 'Themed' fabrics are packed up in boxes to send to the seamstresses. One may be filled with different shades of red and brown, or variations of striped blues. The seamstresses are instructed to take certain amounts from specific boxes – so they pick and cut, pick and cut and then assemble, giving them a certain amount of control over the final product.

'We sold 2,000 pieces last year. If we ever did 10,000, we might be taking care of all the fabric waste from Northern Italy alone. I dread to think about the rest of the world', Orsola says. ➤

Left: Orsola (seated) with some of her designs. Model Lizzie wears: cashmere patch dress with Peter Pan neck, approx £250
Above: Zip-up cardigan in chunky knits, approx £216





'We take a tonne of waste and give back a kilo of pride.' With fabric manufacturing being outsourced to China as quick as you can say pronto, From Somewhere is helping to keep Italy's tradition of craftsmanship alive

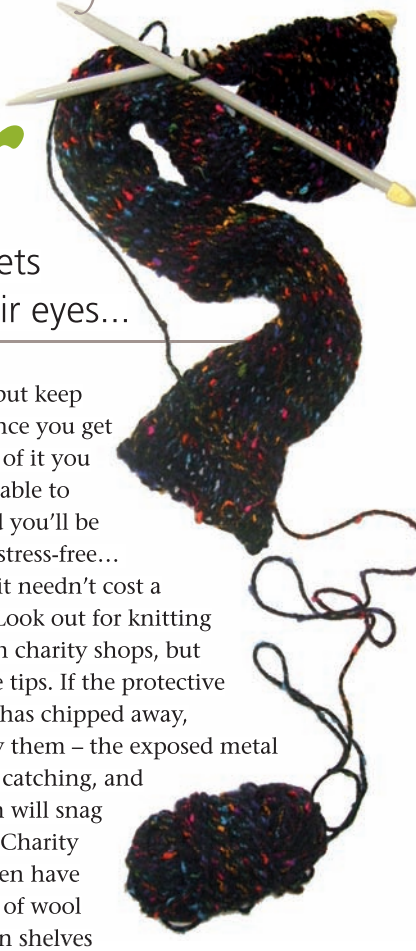
Above: Silk tea dress, approx £235
Left: Forties-style dress in patch mix knit, approx £250
Right: Tweed patch coat lined in silk, approx £400
Sizes: XS – L (equivalent to UK 18)
Stockists: (mail order) Equa, www.equaclothing.com; The Natural Store, www.thenaturalstore.co.uk (retail) Dispensary (London), Tel: 020 7734 6694
Shot in From Somewhere's studio – 43 Rylett Crescent, London W12 9RP. Tel: 020 8743 7061
HAIR & MAKE-UP Elisalex de Castro Peake
MODEL: Lizzie Fison





KNIT AND Natter

Stuck indoors with her nephews, **Eithne Farry** gets out needles and yarn and pulls the wool over their eyes...



This time last year, on a dreary day with a sky full of sleety rain and nothing interesting on the television, I was stuck indoors with three fed-up nephews. We'd played pool, cards, and 'we're bored' board games. They were getting fractious, and I overwrought.

It might not have seemed the best of moments to get out my knitting needles, but in times of stress, a few rows of plain and purl puts me back on an even keel. There is something calming, addictive and funny about twisting yarn around needles and ending up with a jumper. Blotting out the noisy boys, I got on with transforming bits of leftover wool into striped fingerless gloves. Within minutes, the 13-year-old and the 15-year-old were hovering by my shoulder wanting a go, and the seven-year old was wondering if the pool cue could make a giant knitting needle.

Half an hour later, the four of us were sitting in a row on the sofa, embarked on a scarf project. We didn't have enough needles, so we made do with pencils and old biros, and unravelled a cat-tangled ball of yarn for the wool. I gave them a quick lesson in the basics – cast on, cast off, plain and purl – and now they're hooked.

I was tempted to lecture them on the history of knitting – taking in Elizabethan socks, Scottish Fair Isle jumpers, Irish Aran sweaters, the make-do-and-mend frugality of the war years and 1950s twinsets. Instead, I whipped out a copy of Rachael Matthews' *Knitorama* book and told them that if they practised, they too could knit an olive green worsted hand grenade or rustle up a knitted pint of stout. Then I showed them a picture of Rachael's friend Annie, who whittles her own needles from pieces of wood, and knits bits of heather and grass into her work on days out in the country.



That's the thing about knitting: it's fun and practical. You can make stuff you want to wear, but you can also go a bit haywire creatively. And it needn't be lonely: knitting groups are springing up on the internet, in pubs, clubs and cafes. Debbie Stoller, editor of the feminist magazine *Bust*, started the 'stitch and bitch' groups in America; here they're called 'knit and natter' meetings, and are informal: just turn up and join in. Rachael Matthews, founder of the Cast Off Knitting Club for Boys and Girls, is a big fan of KIP (knitting in public). She clicks away on buses, trains, tubes and in art galleries, and always carries spare needles and yarn in case an intrigued passer-by wants to learn.

The first thing I made out of wool was a giant pom-pom, and I still love them. Tiny ones in soft wool to decorate a necklace, medium-sized ones to grace a scarf or gloves, huge ones that on a hat would overbalance a small child. And you don't have to concentrate to make them!

My mum taught me to knit, and it is better and more fun if someone shows you how. If you don't know a knitter, you can buy a book, rent a video from the library, or peruse instructions from the internet. Get some brightly coloured yarn (avoid black or navy, it's hard to see what you're doing with dark colours). Next, grab a pair of needles: I like medium-sized ones (4.5s), but friends swear the bigger the better, and learnt on needles the size of small tree trunks. It might seem tricky at first, all that looping the wool around uncooperative needles, but keep going. Once you get the hang of it you won't be able to stop. And you'll be virtually stress-free…

Plus, it needn't cost a fortune. Look out for knitting needles in charity shops, but check the tips. If the protective covering has chipped away, don't buy them – the exposed metal will keep catching, and your yarn will snag and fray. Charity shops often have odd balls of wool lurking on shelves at the back of the shop, and it's worth snapping them up. If you're frugal and of a very patient disposition it might be worth buying an old hand-knitted jumper to unravel and reuse, especially if the wool is a gorgeous colour and feels expensive.

Cheap yarn is the way to go for some knitty things – pom-poms, mittens and egg cosies. But if you want a jumper that'll last for years, it's best to choose a yarn that will last. Acrylic gets baggy and bobbled if it's washed too much. A wool and acrylic mix will give you the best of both worlds. Or treat yourself to something really lovely, and make a small winter scarf in cashmere or a little collar in soft-as-a-whisper angora.

However, my own favourite scarf is made out of scratchy brown wool. It starts wide, gets very skinny towards the middle, then thins out again. It is a bit ramshackle and holey and was the first thing made by my seven-year old nephew…

How to get started

Websites

www.stitchnbitch.co.uk and www.castoff.info – for local knitting networks

www.knitty.com – free patterns/techniques

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Why not free yourself from the overly packaged, non-ripe, out of season and tasteless varieties of supermarket produce and visit one of the excellent online producers below? They will deliver their genuinely fresh, seasonal fruit, vegetables, fish and meat direct to your door. And you can feel safe in the knowledge that you're buying environmentally sound, locally sourced, delicious food that meets the highest animal welfare standards.

FRUIT & VEGETABLES

Do you live near a farmers' market? For a list of farmers' markets around the country, go to **www.theecologist.org/farmersmarket**. Along with many greengrocers, farmers' markets are a great source for locally produced, fresh, seasonal fruit and veg. If, however, you don't live near a good greengrocer or farmers' market, the next best way to get your fruit and veg is to sign up for a local box scheme. For 15 reasons to join one, and a list of suppliers throughout the UK, go to **www.theecologist.org/boxscheme**

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www.graigfarm.co.uk
Loch Fyne
www.lochfyne.com



TURKEY

Around **11 million turkeys** will be cooked on Christmas Day in the UK – 93 per cent of us choose to eat it as part of the Christmas annual feast.

5 IDEAS FOR TURKEY LEFTOVERS

Cold turkey sandwich
Just add mustard or cranberry sauce

Turkey stock
• Put the carcase into a large stockpot and cover with cold water.
• Add chopped carrot, celery and onion, herbs, crushed garlic and salt (to taste).
• Bring to the boil then simmer for 4–5 hours.
• Pass the stock through a narrow sieve.
Enjoy it as the basis for turkey and vegetable soup.

Turkey curry
• Spice it up with coriander, cumin, turmeric, chilli, ginger and garlic, together with creamy coconut milk and chopped tomatoes.
Serve sprinkled with freshly chopped coriander, accompanied by rice, naan bread and chutney.

Turkey pasta
Lightly stir-fry slices of turkey and add pesto and crème fraiche to make a sauce.
Serve with pasta, toasted pine nuts and seasonal steamed vegetables.

Turkey pie
Stir fry turkey chunks in melted butter. Sprinkle with a little flour and gradually stir in some milk to make a thick sauce.
Add sautéed carrots, onions and celery and pour into a shortcrust pastry pie shell. Bake until the pastry is golden brown.

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www.goodnessdirect.co.uk

Hider
www.hider-foods.co.uk

Meridian Foods
www.meridianfoods.co.uk

Naturally Good Food Ltd
www.goodfooddelivery.co.uk

Real Food Direct
www.realfooddirect.co.uk

ECOLOGIST ACTION FOOD-BUYING GROUPS

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www.communityfoods.co.uk

Eostre
www.eostreorganics.co.uk

Essential Trading
www.essential-trading.coop

Organico
www.organico.co.uk

Suma
www.suma.co.uk

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Beers in a Box
www.beersinabox.com

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www.blackislebrewery.com

Broughton Ales
www.broughtonales.co.uk

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www.orchard-hive-and-vine.co.uk

Freedom Organic Beer
www.freedombeer.com

Festival Wines
www.festivalwines.co.uk

Pure Wine
www.purewine.co.uk

Vinceremos
www.vinceremos.co.uk

Vintage Roots
www.vintageroots.co.uk

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HOME & GARDEN

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ecologist READER OFFER

Entrepreneurial eco spirit Nigel Berman set up Nigel's Eco Store in March 2005. 'I saw some eco products that were interesting and innovative and I felt inspired to offer them to a wider audience,' he says.

What began as a sideline was soon a fully-fledged business. In April this year he left his publishing day job to run the online Eco Store full-time. It stocks kitchenware, gadgets, furniture, lighting, office and household goods that are made of natural, organic, recycled and energy-efficient materials.

As the necessity to cut carbon emissions and save energy becomes increasingly urgent, the market for greener, more energy-efficient products is expanding. 'We're now seeing more new products that have sustainability built into them.' Nigel's Eco Store is on the crest of a "green wave" of eco products that are designed to be part of the solution – but not dull. 'We look for products that are functional and desirable – being eco doesn't mean sacrificing good design.'

There are, of course, varying shades of green. 'Sometimes something may fulfil a "green" function, but not be made from green materials. We then think long and hard about whether to stock it. We take the view that we're offering the best of what's available now.'



Eco bowls, £24.95 for four made from bio-degradable bamboo fibre eco-plastic.



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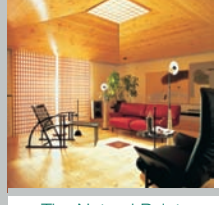
and more. . .

At Green Building Store we only sell building products which promote healthy, environment-friendly homes. Whether you are redecorating, building or refurbishing we can help you do it safely and sustainably.





- Ecoplus System. High performance timber windows, doors and conservatories, with a unique environmental specification.
- Ifö ultra-efficient WCs. Elegance and water conservation combined.

- The Natural Paint Collection.* Natural ingredients; healthy, effective paints and woodfinishes.
- Lindab rainwater drainage system. The solid steel alternative to PVC guttering.

* Some products contain some non-natural ingredients.



To find out more, visit our website or call our sales team:
www.greenbuildingstore.co.uk
01484 854898



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- MATTRESSES, FUTONS AND CUSHIONS HANDMADE WITH CARE FROM ORGANIC, NATURAL AND RECYCLED MATERIALS.
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38 MASON STREET MANCHESTER M4 5EZ
WWW.DOJOECO.CO.UK
MAIL@DOJOECO.CO.UK

BRITISHECO.COM

THE GREEN AND PLEASANT WEBSITE

...for all things green and eco



Solar Security Light £39.99

NEW: Solar Hot Water Systems



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info@britisheco.net 01753 643121



The European Ecolabel is Europe's official green label. Run by Defra in the UK, you'll find its flower logo on a growing range of quality products which are independently certified to meet high environmental standards. To find out more, and to see a full list of ecolabelled products, visit www.defra.gov.uk/environment/consumerprod/ecolabel

defra
Department for Environment Food and Rural Affairs



www.nigelsecostore.com
or call us on 01273 821683

The ecologist offers producers of organic and ethically produced goods and services an audience of 400,000 potential new customers. To advertise, call Zayda on 020 7351 3578.



econatural.com

Natural, organic, eco-friendly and Fair Trade products for all the family.

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albatross

Luxurious organic deep-pile cotton towels

Soft & cosy organic pima cotton bedlinen

organic natural fair

For a catalogue call 08708 502098 or visit www.albatross-global.com

ECO POWER CAMPAIGN

AIM To meet the UK's energy needs from local, clean, renewable sources

In the UK we need to move from our dependence on non-renewable, air-polluting, climate-changing, centrally generated, hugely inefficient and increasingly expensive sources of energy – gas (40 per cent), coal (30 per cent), nuclear (20 per cent), oil (five per cent) – to non-polluting, small-scale energy sources generated as close to users as possible, eg wind, hydro, tidal, solar, biofuels, ground source heat, etc.

HOW? Supplying the current (and expected increased) energy demand in the UK, while keeping prices for energy low, is IMPOSSIBLE. We either confront this and start to adapt, or we stick our heads in the sand and moan about the inexorable rise in our energy bills. Each one of us, starting at home and then moving out into our local communities and workplaces, needs to:

1 **SWITCH our energy SUPPLY to ECOTRICITY**
2 **REDUCE our energy DEMAND**
3 **LOCALISE our energy SUPPLY... individually, and in our communities.**

We can't wait for politicians to act, and can't rely on an energy market that profits from rising energy prices and increasing demand. This is why *The Ecologist* and Ecotricity have teamed up to ease your transition from expensive, centrally supplied energy to clean, locally supplied energy at home (and at work). Our combined research and practical expertise will ensure that the options we recommend for reducing demand and generating your own supply will work without costing you a fortune.

ecologist READER OFFER

PEDALITE

Cyclist in the family? Give them a Pedalite – the flashing kinetic cycle pedal – this Christmas. It could be a lifesaver.



Flashing front, back and sideways – normally the bicycle blind spot for motorists – Pedalite provides a highly visible catherine-wheel of light. Battery-free and powered by kinetic energy, Pedalites start flashing as soon as you put foot to pedal. Inside, a micro-generator energises three super-bright LEDs. They flash every fraction of a second – white in front, amber at the side, red at the back – visible half a mile away in the dark. They continue to flash for up to five minutes when you stop, so you don't feel vulnerable at traffic lights.

Simple to fit, Pedalites are made of a special glass-reinforced polymer used in the aircraft industry, and are incredibly tough and hard-wearing. In *RoadCycling UK* earlier this year, the review of Pedalite concluded: 'We can't see why these shouldn't be fitted as standard on all bikes sold to commuters...'

THE ecologist PRICE:
£34.95 (per pair)
normal price: £39.95

To order Go to: www.pedalite.com or tel: 0800 422 0484, quoting Discount Voucher number: A4FF-1BB4-3B4F-21F9. Offer ends 31 January 2007

ECO-POWER CAMPAIGN

SWITCH TO ECOTRICITY

No matter where you live, you can switch your electricity supply to Ecotricity. And we'd encourage you to do so...

WHY ECOTRICITY?

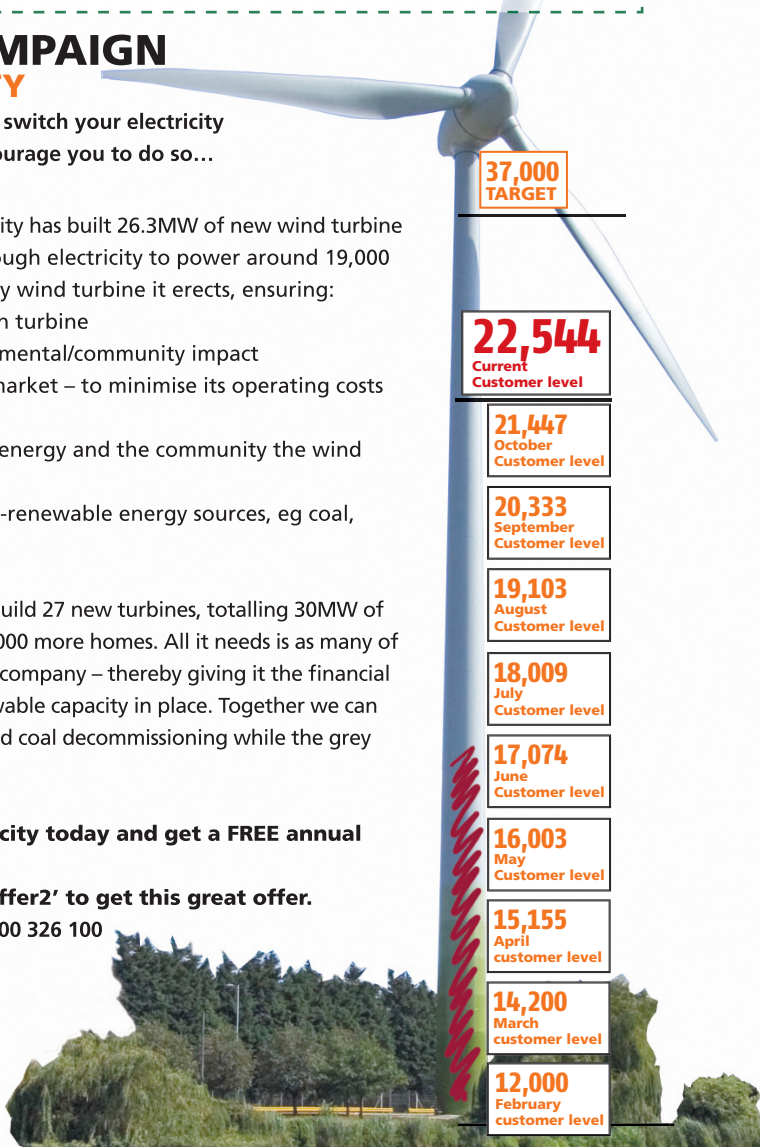
Since it was founded in 1995, Ecotricity has built 26.3MW of new wind turbine capacity, and currently supplies enough electricity to power around 19,000 homes. It retains ownership of every wind turbine it erects, ensuring:

- Total community support for each turbine
- Optimal siting – minimal environmental/community impact
- Best turbine technology on the market – to minimise its operating costs and noise impact
- Long-term commitment to wind energy and the community the wind turbine supplies

Ecotricity refuses to invest in non-renewable energy sources, eg coal, gas or nuclear power.

WHY SWITCH NOW?

For 2007, Ecotricity has approval to build 27 new turbines, totalling 30MW of clean energy – enough to power 20,000 more homes. All it needs is as many of us to buy our electricity through the company – thereby giving it the financial leverage to put this additional renewable capacity in place. Together we can fill the gap threatened by nuclear and coal decommissioning while the grey suits in Westminster fiddle.



Switch your electricity to Ecotricity today and get a FREE annual subscription to the ecologist.
Sign up today and quote 'Eco Offer2' to get this great offer.
To make the switch, call free on **08000 326 100**
Mon to Fri 8.30am–5:30pm or visit
www.ecotricity.com/ecologist
Terms and conditions apply.

HOME ENERGY

ELECTRICITY

RENEWABLE ENERGY TECHNOLOGIES
(wind, hydro, solar PV)
Dulas Ltd
www.renewable-resources.com
HiTech Energy Ltd
www.hitechenergy.co.uk
British Eco
www.britisheco.com

LIGHT BULBS
Energy Saving World
www.energysavingworld.co.uk
Energy Savers Direct
www.energysavers-direct.com
Nigel's Eco Store
www.theinsightecostore.com

SUPPLIERS
Ecotricity
www.ecotricity.co.uk

GROUND SOURCE HEAT PUMPS

Conservation Engineering Ltd
www.heating-designs.co.uk
Eco Heat Pumps
www.ecoheatpumps.co.uk
Geothermal Heating International
www.geoheat.co.uk
Green Systems
www.greensystems.net
Groenholland UK Ltd
www.groenholland.com
Ice energy
www.iceenergy.co.uk
Kensa Engineering Ltd
www.kensaengineering.com
Powertech Solar
www.powertech-solar.com

INSULATION

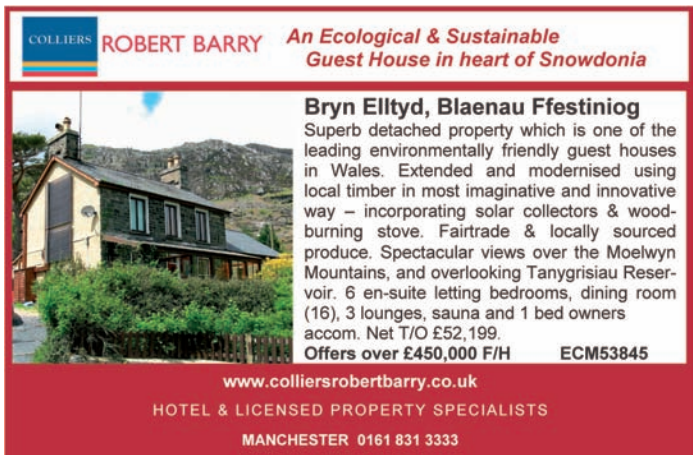
Second Nature
www.secondnatureuk.com

SOLAR WATER PANELS

Solar Twin
www.solartwin.com
British Eco
www.britisheco.com
Power Tech Solar
www.powertech-solar.com



For detailed information please contact:
Second Nature UK Ltd
BUILDING ON WHAT COMES NATURALLY
BBA BRITISH BOARD OF AGREMENT CERTIFICATE No 02/3950
SOULANDS GATE, DACRE, PENRITH, CUMBRIA CA11 0JF
Tel: 017684 86285 Fax: 017684 86825 e-mail: info@secondnatureuk.com
www.secondnatureuk.com





ECOTIP

INSULATION

Heat lost from your walls, loft and floor can account for up to 35, 25 and 15 per cent of your heating bill respectively. Of these, lofts are the easiest to insulate. With a new layer of loft insulation, you can cut your heating bills by up to £100 a year – meaning that it could pay for itself in just two to three years.

The ecologist offers producers of organic and ethically produced goods and services an audience of 400,000 potential new customers. To advertise, call Zayda on 020 7351 3578.



CLOTHING

ecologist READER OFFER



15% off





ECOBTQ

Launched in July 2006, the online boutique Ecobtq is one place you're sure to find innovative design and desirable fashion made from sustainable resources.

The designers featured by Ecobtq work with recycled fabrics, organic fibres and azo-free dyes, and the designs are manufactured in sweatshop-free factories. What's more, for every purchase of more than £5, Ecobtq will donate £3.50 to either The World Wildlife Fund, Oxfam or Friends of the Earth.

Ecobtq is offering **ecologist** readers a 15 per cent discount off all purchases. Visit **www.ecobtq.com** to choose from clothing by Ciel, Orinocco and Traid, accessories by Ting and jewellery by Rosie Weisencrantz.

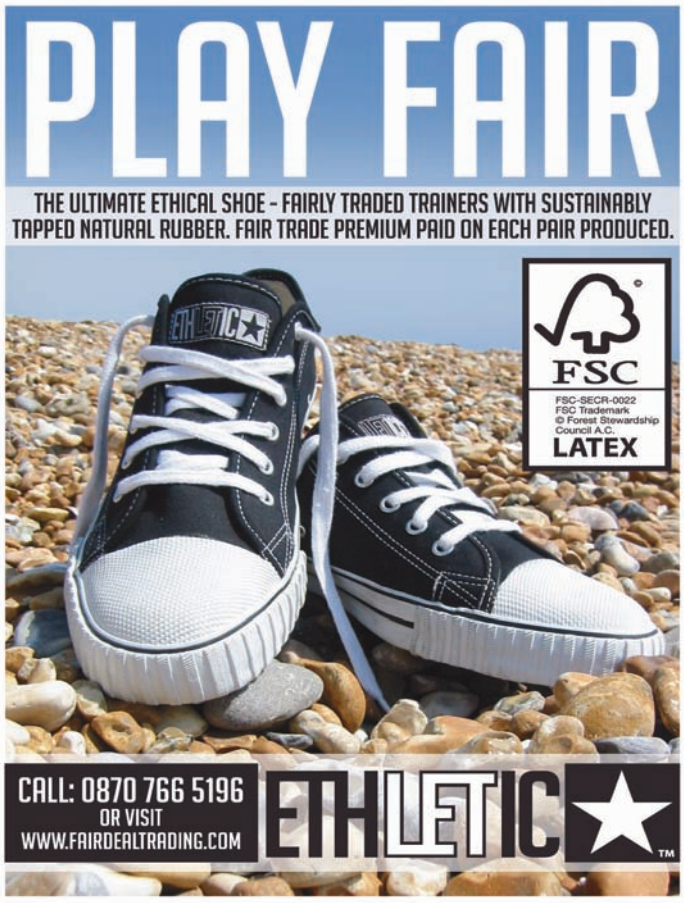
To order, tel: 07966 369499, quoting 'ecologist-234573'.
Offer ends 31 January 2007.

CLOTHING DESIGNERS

Adili
www.adili.com
Ciel
www.ciel.ltd.uk
ClothWORKS
www.clothworks.co.uk
Ecobtq
www.ecobtq.com
Enamore
www.enamore.co.uk
Junky Styling
www.junkystyling.co.uk
Keep and Share
www.keepandshare.co.uk
Natural Dye Company
www.naturaldyecompany.com
Natural Store
www.thenaturalstore.co.uk
Pachacuti
www.pachacuti.co.uk
Pierre Garroudi
www.pierregarroudi.com
Sari
www.saricouture.com

MEN & WOMEN'S CASUALWEAR

Bishopston Trad. Comp
www.bishopstontrading.co.uk
Ecotopia
www.ecotopia.co.uk
Green Fibres
www.greenfibres.co.uk
Howies
www.howies.co.uk
Inbi Hemp
www.inbi-hemp.co.uk
Natural Collection
www.naturalcollection.com
Pakucho
www.pakucho.co.uk
People Tree
www.ptree.co.uk
Schmidt Natural Clothing
www.naturalclothing.co.uk
Seasalt
www.seasaltorganic.co.uk
Terramar
www.terramar.co.uk
The Green Apple
www.the-green-apple.co.uk
Adili
www.adili.com



SLOGAN T-SHIRTS

Equop
www.equop.com
Funky Gandhi
www.funkygandhi.com
Icons Incorporated
www.icons-incorporated.com
Pakucho
www.pakucho.co.uk
Soliloquy Clothing
www.soliloquyclothing.com
THTC
www.thtc.co.uk
Tonic T-Shirts
www.tonictshirts.com

SHOES

Beyond skin
www.beyondskin.co.uk
Birkenstock
www.birkenstock.com
Black Spot Sneakers
www.adbusters.org
Fair Deal Trading
www.fairdealtrading.co.uk
Freerangers
www.freerangers.co.uk
Green Shoes
www.greenshoes.co.uk
Terraplana
www.terraplana.com

LINGERIE

Greenknickers
www.greenknickers.org
Buttress and Snatch
www.buttressandsnatch.co.uk

ACCESSORIES

Design Africa
www.artworksforafrica.com
Ganesha
www.ganesha.co.uk

ECOLOGIST ACTION DIY STYLE

Get your local tailor working! Buy organic and naturally dyed fabrics from the companies listed below, and have bespoke eco-clothes made in the style you want, with a perfect fit.

COTTON

Aurora Silk
www.aurorasilk.com
Green Fibres
www.greenfibres.co.uk
Peru Naturex
www.perunaturex.com

WOOL

Organic pure wool
www.organicpurewool.co.uk
Organic Wool Company
www.organicwool.co.uk
Isle of Mull Weavers
www.isleofmullweavers.co.uk













DON'T PANIC – IT'S ORGANIC

Natural bodycare and cosmetic products are just as effective as their conventional counterparts but, because they don't rely on plastics, synthetic colours and chemical preservatives, you will find that their range, application and usage can be different. Here's what to bear in mind when using natural products:

Natural cosmetics

- Lip glosses are safer than lipsticks because they contain less potentially-toxic colour, but they won't last as long, because they don't contain plastics and film formers
- Mascaras won't dry as quickly, lengthen or be waterproof like conventional mascaras because they don't contain synthetic fibres or ingredients such as plastics
- Eyeshadows will come in a more limited range of 'earth' colours because they will be based on a palette of mineral and plant dyes
- Choose cream blush instead of powder blushers, to avoid potentially cancer-causing talc
- Avoid sparkly make-up, which can contain ecologically unsound mica.

Natural bodycare products

- Choose moisturisers based on single oils (plant or animal based) rather than complex mixtures of oil, water, preservatives and film-forming ingredients. These may feel more oily on your skin at first but will be fully absorbed fairly quickly
- Natural toothpastes should be fluoride-free and won't foam as much as conventional ones because they won't contain detergents such as sodium lauryl sulphate.

ecologist READER OFFER

AKAMUTI

100% NATURAL, ORGANIC AND ETHICAL SKINCARE

15% off

Akamuti specialises in people- and planet-friendly skincare, with an emphasis on wildcrafted and organic ingredients. Its selection of 100 per cent natural, chemical- and paraben-free herbal balms, creams & lotions are nourishing blends to protect, heal and care for your skin. Many of Akamuti's products also contain fairly traded ingredients.

Akamuti is offering a special 15 per cent discount to all **ecologist** readers for orders over £10.

Choose from rejuvenating face creams, refreshing foot cream, soothing lip care, caring hand creams, moisturising baby creams and natural soap, shea butter bodycare and much more.

Visit its online shop: www.purenuffstuff.co.uk

To order, tel: 0845 4589242 and quote 'ECOAKA'. Offer ends 19 January 2007 (One offer per household.)



BODYCARE ESSENTIALS

ASPIRE TO LESS – The best way to ensure healthy skin is to maintain a healthy diet, get enough sleep and keep stress levels low. If you do buy products for your face or body, try to make sure they are based on natural ingredients. The companies listed below carry products that have not been tested on animals; they contain no parabens, no petrochemicals and no synthetic ingredients.

Akamuti
www.akamuti.co.uk
Barefoot Botanicals
www.barefoot-botanicals.com
Earthbound Organics
www.earthbound.co.uk
Ecotopia
www.ecotopia.co.uk
Essential Care
www.essential-care.co.uk
Jo Wood Organics
www.jowoodorganics.com
Life Giving Organics
www.LifeGivingOrganics.com
My Being Well
www.mybeingwell.com
The Organic Pharmacy
www.theorganicpharmacy.com
Pure Nuff Stuff
www.purenuffstuff.co.uk
Pure Skin Care
www.pureskincare.co.uk

HEALTH & HOMEOPATHY

Ainsworths
www.ainsworths.com
Helios Homeopathic Pharmacy
www.helios.co.uk
Optima
www.optimahealthcare.co.uk
Pure Potions
www.purepotions.co.uk
Revital
www.revital.com
The Organic Health Shop
www.baughdell.co.uk

PERFUME

Aromasciences
www.aromasciences.com
Ascent
www.hayspace.co.uk
Dolma
www.veganvillage.co.uk/dolma
Primavera
www.primavera.co.uk

ECOTIP

USE NATURAL HAIR DYES

Hair dye uses harsh chemicals – ammonia, peroxide, p-Phenylenediamine (PPD) or diaminobenzene. Repeatedly dying hair can increase the chance of developing certain cancers. Use natural hair dyes instead. Henna, made from the leaves of the desert shrub lawsonia is a safer alternative. It can also be customized using natural ingredients: coffee to darken, tea to lighten and apple cider vinegar to cover grey hairs.





DON'T KNOW YOUR GLYCERYL LAURATE FROM YOUR DECYL GLUCOSE?

Find out what the words in your bodycare products really mean….

THE 'BEHIND THE LABEL' SERIES IS NOW ONLINE!
Go to www.theecologist.org/behind_the_label.asp

Past features by ***Ecologist*** Health Editor Pat Thomas include:
Clearasil deep cleansing 3 in 1 wash
Nivea moisturiser
Clairol Nice 'n Easy Hair Dye
Radox Herbal Bath with Juniper
Oil of Olay



ECOLOGIST ACTION
MAKE YOUR OWN

Everyone's skin is different, so why not make your own bodycare products and cosmetics at home to suit your needs? The websites listed below will help guide you through ingredients that work for your skin and hair type, and offer a range of ideas for customising your favourite natural scents.

Aromantic
www.aromantic.co.uk
Bay House Aromatics
www.bay-house.co.uk
Cosmetics at Home
www.cosmeticsathome.co.uk
New Directions
www.newdirectionsuk.com
The Soap Tub
www.meltsandpoursupplies.com









THE MISSION

The amount of baby gear we purchase in the name of 'good' parenting – nappies, wipes, bottles, car seats, pushchairs, clothes, shoes, toys and other nursery items – is staggering. Given the ongoing expense of raising a child and the heavy competition that exists between different manufacturers for parents' custom, it's little wonder that many of the most common baby and child accessories have been made in sweatshops using chemicals that harm both our children's health and the environment.

THIS IS NOT ACCEPTABLE

We challenge the BABY & CHILD industry to make products with:
- **No potential carcinogens, neurotoxins and reproductive toxins**
- **No artificial additives, colourings or perfumes**
- **No petrochemicals**
- **No synthetic fibres**
- **Minimal packaging**
- **Organic ingredients**
- **Stop marketing to children under 16 years old.**

What we can do as consumers
- **Read and understand the label**
- **Buy fewer products**
- **Buy reusable products, eg cloth nappies**
- **Make our own, eg food**
- **Challenge stockists to sell safer products**
- **Support the small, independent and ethical producers and retailers in these listings.**

BABY & CHILD

ecologist READER OFFER

ECOTOPIA FREE DOLPHIN JIGSAW
with every purchase of a
CARDBOARD PLAYHOUSE





Manufactured from recycled cardboard, this fun structure is surprisingly robust and sturdy. It's easy to assemble and fold down after use and can be decorated and personalised using paint, collage and crayons.

Ecotopia is offering **ecologist** readers a free dolphin jigsaw with every purchase of a Cardboard Play Thing. The cardboard range includes a Playhouse (pictured, worth £25.95), Dolls' House, Rocket, Toy Fort and Toddler chair.

Established in 2002 with assistance from the Prince's Trust, Ecotopia stocks a huge range of environmentally friendly and natural products available to buy online. Ecotopia has nominations for *The Observer* Ethical Awards 2006.

To order, tel: 0845 094 2181 or go to www.ecotopia.co.uk, Ref: 'FREE DOLPHIN ECOLOGIST OFFER'. Offer ends 31 January 2007



1 Lay open baby-shaped cotton nappy



2 Place flushable liner on top for easy removal of poo



3 Close using adjustable poppers



4 Add the waterproof wrap

THE ecologist PRESENTS ITS NO EXCUSE! CLOTH NAPPY TRIAL PACK



Why use disposables when cloth nappies are easy to use, easy to clean and best for your baby? These ones are: SOFT Even after washing SECURE Cinched legs prevent leaking BREATHABLE Keeps bottoms cool and dry ECONOMICAL Saves money over your child's time in nappies

£26 25% OFF THE RRP (INC VAT)

Your trial pack includes:
- 3 leading brands of cloth nappies: Motherease, Tots Bots and Popolino
- 1 pack of flushable and bio-degradable liners
- 1 waterproof outer wrap

SIMPLY CALL 01582 520037
Mon to Fri 9.30am to 5.30pm
quoting: **Cloth Nappy Trial Pack**

BABY ESSENTIALS

Includes bedding, breastfeeding equipment, maternity clothing, nappies (both cloth and eco disposable), nursery furniture, slings, skin and body care and toys and games.

Born
www.borndirect.com
Ecotopia
www.ecotopia.co.uk
Green Baby
www.greenbaby.co.uk
Greenfibres
www.greenfibres.co.uk
Hejhog
www.hejhog.co.uk
Little Green Earthlets
www.earthlets.co.uk
Natural Collection
www.naturalcollection.com
Natural Nursery
www.naturalnursery.co.uk
See Saw
www.seesawnappies.co.uk
Smile Child
www.smilechild.co.uk

CLOTHING

Aravore
www.aravore-babies.co.uk
Baby Organics
www.babyorganics.co.uk
Belle & Dean
www.belleanddean.co.uk
Bishopston Trading Company
www.bishopstontrading.co.uk
Gossypium
www.gossypium.co.uk
Huggababy
www.huggababy.co.uk
Natural Child
www.naturalchild.com
Schmidt Natural Clothing
www.naturalclothing.co.uk

CLOTH NAPPIES

Sam I am
www.nappies.net
Snazzypants
www.snazzypants.co.uk
The Nappy Lady
www.thenappylady.co.uk

TOYS & GAMES

Arujo
www.arujo.co.uk
Escor Toys
www.escortoys.com
Gaia Distribution
www.gaiadistribution.com
Holz Toys
www.holz-toys.co.uk
Lanka Kade
www.lankakade.co.uk
Myriad
www.myriadonline.co.uk
Toyworm
www.toyworm.co.uk

SKIN & BODYCARE

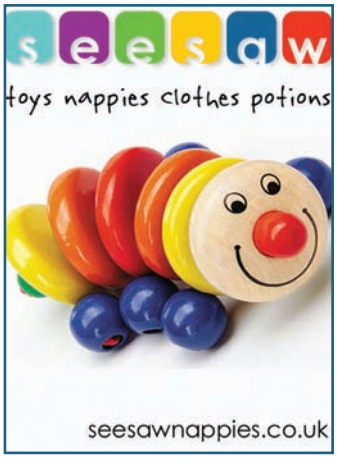
Burt's Bees
www.myburtsbees.co.uk
Earth Friendly Baby
www.earth-friendly-baby.co.uk
Earth Mama Angel Baby
www.earthmamaangelbaby.com
Earthbound
www.earthbound.co.uk
Weleda
www.weleda.co.uk















WWW.OURGREENWEDDINGLIST.COM

The online wedding list with beautiful, eco-friendly wedding gifts.



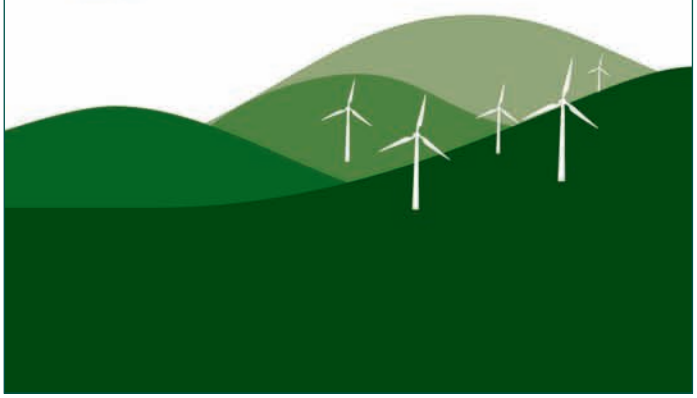
Choose from our range of beautiful, designer and unique gifts that are made in the UK, are ethical, fairly traded, recycled or hand crafted.





Organic cotton bedlinen, veggie boxes, hand thrown dinner services, wormeries, composters, recycled glass, smoked salmon hampers and much, much more....





WEDDINGS

DRESSES
Wholly Jo's
www.wholly-jo.co.uk
HONEYMOONS
Responsible Travel
www.responsibletravel.com
LISTS
Green Fibres
www.greenfibres.co.uk
RINGS
Cred Jewellery
www.cred.tv

Eco-Friendly Shop
Organic, Fairtrade, Recycled Gifts & Products
www.ecofriendlyshop.co.uk
01458 860830

Ethical Wedding Rings
www.silverchilli.com
VENUES AND CATERING
Fallow Fields
www.fallowfields.com
Penrhos Court
www.penrhos.co.uk
Montezumas
www.montezumas.co.uk

Remarkable™
UK manufacturer of recycled products...
NEW Online Shop
www.remarkable.co.uk
Recycled into something Remarkable™
The Remarkable Factory | Midland Road | Worcester | WR5 1DS
Email: sales@remarkable.co.uk | Tel: +44 (0)1905 769 999



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www.paperback.coop

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e-mail: info@athenapress.com

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- ✓ Work from home when YOU want
- ✓ Exceptional income potential
- ✓ Part or full time opportunities
- ✓ Full training and support provided
- ✓ Low start up costs

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www.PassionateAboutOrganics.com
Telephone enquiries: FREECALL 0800 970 7289



Upcoming Sustainable Building Courses at
DORSET CENTRE FOR RURAL SKILLS

Saturday 18 November 2006
Lime Day

Saturday 2 December 2006
Lime on Straw

Saturday/Sunday 9/10 December 2006
Timber Framing

Saturday 27 January 2007
Traditional House Paints

Thursday/Friday 15/16 February 2007
Straw Bale Building

D.C.R.S. EVENTS

Saturday 3rd February 2007
Sustainable Building Fair

Hosted by Rob Buckley of DCRS
Opportunity to find out more about sustainable building.
Questions answered and free advice from the professionals.

DCRS, West Farm Bran, Farrington, Near Blandford, Dorset, DT11 8RA
Tel: 01747 811099
E-mail: info@dorsetruralskills.co.uk
Web: www.dorsetruralskills.co.uk



Bamboo and Willow
Ecoffins

- Next working day delivery
- EPA tested for cremation
- Weight tested to 150kg / 24 stone
- Numerous sizes available
- Solid bases available



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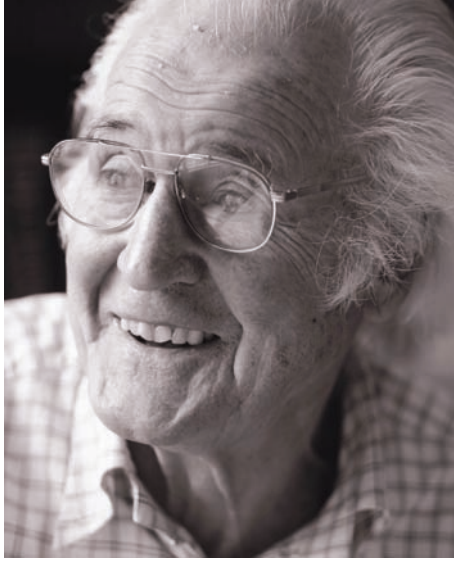
CASSANDRA

Our prophet becomes a parish pariah for daring to challenge the orthodoxy of the educational system



The newspapers in late October were full of the story of a 14-year-old boy sentenced to 12 years' imprisonment for the murder of a younger boy. Never mind asking what sort of man he will be at 26 years, when free again – we have to ask, what prompted his actions?

Over two years ago, a group of concerned American counsellors and child welfare people held a conference to discuss The Crisis of American Youth – a crisis of rising rates of aggression, truancy, classroom disruption, drugs, depression, bullying, alienation, violence, teenage pregnancies, family breakdown and suicide.

Their report reached a unanimous conclusion that one main cause of the crisis was that American schools were too large. It is a conclusion that flies in the face of several decades of UK government educational policy, as promoted by all three of our mass-membership parties. Whatever their label, they all want bigger schools.

The school attended by the jailed Michael Hamer has a roll of over a thousand pupils. How can any head possibly 'know' such a huge number of charges? How else can a lad be so murderously sick that no one is aware of his problems until it is too late?

My local village school also has all the problems that alerted the American youth workers. Daily, more than 20 busloads of teenagers from neighbouring communities are shipped in and out. The school has a lively drug culture. And in the previous year, in line with rising rates of teenage suicide across the developed world, two of the pupils took their own lives.

Yet, in secrecy, the school's governors projected a scheme to make the school even larger. They did not find it necessary to even inform the elected Parish Council of their plans, far less ask its permission (question: Why is the school not governed by the Parish Council?), and only when a village environmental committee added its voice to the objections was an official enquiry held.

Well, I had taken the trouble to research the American report (it is accessible on www. americanvalues.org/html/hardwired.html) and to alert my neighbours and the school authorities to its conclusions, including the need to make schools smaller.

So when the man from the ministry of education reached his 'independent' decision to approve the enlargement proposal, I wrote a furious article in the village magazine, explaining how differently I would have acted if I had been the school head.

It was noticeable, meanwhile, that once the announcement in favour of enlargement had been made, neither the local Parish Council nor the village environmental group made any sort of protest at this flagrant violation of democratic ethics; rather, it was regarded as a normal state of affairs, as indeed it is. Church life today seems to be dominated by a determination to adhere to political correctness at all costs: never must anyone give the least offence to anyone, albeit that its founder never seems to have done anything but the contrary.

> 'Church life today seems dominated by a determination not to offend anyone. Yet its founder never seems to have done anything but the contrary'

I was judged by some vocal elements to be guilty of making 'a personal attack', although I had named no names. Ever since, I have been labelled an ill-mannered troublemaker and presented with shoulders somewhat below normal temperatures. A storm in a local teacup perhaps, but one indicating grim levels of political realism and concern that are only too general.

The saddest aspect of this tussle was the failure of any official voice to be raised to question the effects of the enlargement on the pupils themselves. Hundreds of pupils are bussed away from their communities, while their parents are encouraged to ignore their civic responsibilities to ensure good standards in their own local schools. For what? To pursue a mirage of better exam result percentages they believe prevail elsewhere, an emphasis that ignores the majority need for vocational rather than strictly academic educational focus.

When the pupils arrive, the first lesson they learn (as they are apt to find 100 or more teachers' cars parked in the school grounds) is that global warming is happening on another planet, and that the question of moral leadership in order to combat it and make the future safe for themselves is nobody's business.

They perceive indeed all too clearly, however little they may articulate it, that they are not part of some great creative adventure in which each of their lives holds the promise of achievement and fulfilment in ways that will enrich those who come after them. Instead, they are trapped in a squalid exercise of social engineering where economic activity, instead of being a mundane means to great ends, is an end in itself – regardless of any cost to human dignity, sensitivity or prospect of nobility.

In his 85 years Cassandra has been an orphan, runaway, communist, cook, beggar, editor, presidential advisor, prisoner and priest. In a former life she was a Greek prophetess whose unerring prophecies of impending disaster were cursed to go unheeded.

PHOTOGRAPH BY **MARTIN USBORNE**

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