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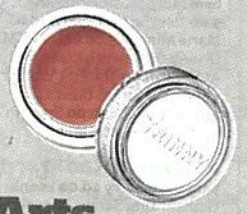

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then a further 30 per cent could have come from wind. In fact, there have already been several days in this period when half of all UK energy demand has been met with wind and solar.

When the UK's 7GW nuclear power capability is also taken into account, there have been several occasions this year when the contribution from gas and other fossil fuels has fallen to about 20 per cent of the national demand.

Yet this new solar site would still be a major milestone in the nation's generation of renewable energy and could help push things even further.

The rate of deployment of solar panels has waxed and waned over the past ten years – largely determined by the level of subsidy the Government has been willing to offer. When subsidies were high, the installation rate grew exponentially, with the peak number of installations doubling every few months. When subsidies fell, installation rates plummeted.

This boom and bust model meant companies failed and installers lost their jobs in the bad times and companies were created or changed business models in the good times.

Today, the installation rate is very low because there is virtually no subsidy and it is very hard to make money out of solar power.

However, Cleve Hill could change that by showing that money can be made without subsidy, encouraging other projects to follow suit. This could be the moment solar installations start to grow again – and it may also have a knock-on effect on DIY solar power, so to speak.

> **"It is solar plants like this that make the most sense to investors**

Public interest in using panels on their own properties to generate power is boosted by their easy integration into the built environment. Rooftop solar panels are a relatively easy sell to consumers because electricity generation is happening at the point of use, and can be installed in urban as well as rural areas.

From a grid perspective, household panels also have the advantage of being embedded deep within the electricity network at points where there is high demand.

If Cleve Hill gets the green light, a low-carbon future will be within reach GETTY

Large-scale solar power sta tions, on the other hand, have th same drawbacks as windfarms Extensive solar facilities are con troversial because the lowest-cos installations will always involv finding huge areas of land tha can be exploited cheaply; ther will always be an environmenta cost in construction.

Kent Wildlife Trust has raise concerns that Cleve Hill may re duce habitat for skylarks, wate voles and reed buntings, and wil reduce the connectivity of remain ing environments. The trust say it "is not opposed to solar farms and we have extensive experienc in advising on wildlife enhance ments for such sites", but ha many questions about the project

However, it is solar plants lik this that make the most sense t

How I got a journal to fall for my fake study on MPs' toilet habits

By Gary Lewis

Predatory journals are becoming a bit of a nuisance in science. They masquerade as legitimate publications, often with similar layouts and names – but have no standards, despite claiming to operate with rigorous peer review processes.

Most academics will know the irritation of receiving spam emails soliciting manuscripts or inviting them to join editorial boards of unfamiliar journals. Much more importantly, they are undermining the credibility of scientific publishing.

Partly out of frustration, but also out of curiosity, I wanted to see just how low the bar might be. So I decided to make up some social psychology research. Based on the theory of unconscious social priming – that words or concepts can influence our behaviours – I claimed to have found evidence that politicians from the right should wipe their bum with their right hand, and vice versa for left-wingers.

I wrote that my research assistant had essentially stalked MPs, asking which hand they wiped their bottom with. This yielded nine participants in total, including "Boris Johnski" and "Teresa Maybe", although one data point had to be discarded – that of "Nigel F 'Arage". He, rather meanly, told my research assistant to "bog off".

But the data from the remaining eight fully confirmed the theory: politicians do indeed wipe their bums with the corresponding hand.

I decided to submit my fictional findings to the first possibly predatory journal that emailed me, which turned out to be Crimson Publishers.

Having submitted the bogus manuscript, I soon got an email

investors because they are cheaper to install per unit of electricity than rooftop panels, and because their size means finance can be accessed in larger chunks and investors can make more money.

Household solar panels can create problems for the network operators because they create large and uncontrollable power flows depending on the weather. As well as the problem of balancing supply and demand, we would also need to know where all the energy was coming from – rooftop solar is hard to track and measure.

A 350MW solar farm with a battery store is a near-perfect solution: the power flows will be monitored and easy to predict as any additional generation will be stored on-site.

Perhaps a mixed approach is best. Maybe we'll see a new generation of larger, subsidy-free solar farms reducing costs of the technology, and once there are no sensible locations for solar farms left, rooftop deployment will have become more economically viable.

Cleve Hill still has to be given the go-ahead at the highest level of government and needs to be developed with input from local authorities and electricity network operators, so it can be incorporated into the national infrastructure.

But if the project can make money without subsidy then a low carbon future – which includes a large solar contribution – looks almost inevitable.

Alastair Buckley is a senior lecturer in organic electronics at the University of Sheffield

informing me that it had been received safely and was under review. A few days later, it was accepted for publication with a request for $581 – though after I negotiated with them, they agreed to publish it for free.

And so the article, *Testing Inter-Hemispheric Social Priming Theory In A Sample Of Professional Politicians – A Brief Report* by one Gerry Jay Louis from the Institute of Interdisciplinary Political and Fecal Science, was published.

When we got in touch with Crimson to tell them what we'd done, they took the paper down from their website. The journal told us: "We do strictly follow double-blinded peer review process for all the articles that we receive." Yet I didn't receive a single peer review comment, far less a request to revise my manuscript.

Journals like this have tricked respected academics into submitting genuine research and paying thousands.

They also present a serious credibility problem for science, by contaminating research with studies that are unacceptable. Work in such journals is even cited in serious public debates, such as on climate change. I can only hope my creative work is a warning.

Gary Lewis is a senior lecturer in psychology at Royal Holloway

between 5,000ft and 8,000ft, which is lower than the pressure at sea level. This is why bags of crisps look like they're about to burst when they're taken on a flight – or why shampoo will often leak out of its bottle.

Normally, as the plane climbs, the air in the inner ear is at a greater pressure than the cabin because it is still the same pressure as it was on earth – hence the eardrum bulges out.

During the climb, yawning, talking, drinking or swallowing causes the pressure in the inner ear to equal that of the cabin pressure at cruise level, causing the popping sensation.

When the aircraft descends, the air pressure in the cabin begins to increase towards that at sea level, while the inner ear remains at the lower cruise-level pressure – this forces the eardrum inwards, causing muffled hearing.

During normal ascent and descent, if you suck on a hardboiled sweet, take a drink or yawn, it can help open the eustachian tube – which runs from your middle ear to the back of the nose – to allow the pressure in the inner ear to equalise with the pressure in the cabin.

The Ryanair incident resulted from a loss of cabin pressure. This is where the cabin air escapes to outside the aircraft, where the pressure is much lower – and the air within passengers' ears tries to do the same.

At this high altitude, the pressure difference may result in "barotrauma", the rupturing of the eardrum and small blood vessels in the ear, causing

Ear problems – such as muffled hearing and popping ears – are experienced by everyone during a regular flight

hearing problems and bleeding. At this point, a packet of crisps would also explode.

Images of the Ryanair incident on social media also showed blood-filled oxygen masks. This was probably the result of the rupture of small vessels in the roof of the nose as the change in pressure occurred.

The biggest danger to passengers when a loss of cabin pressure occurs is asphyxiation.

At sea level, 21 per cent of air is oxygen, which is ideal for humans to breathe. At 30,000ft and above, there is only about a third of that amount of oxygen available in the outside air.

This is why oxygen masks deploy when cabin pressure drops – it ensures that every passenger has enough oxygen to saturate the blood.

Pilots descend as rapidly as possible to get to an altitude, usually below 10,000ft, where passengers can breathe without the aid of oxygen masks.

This is because there is only a limited supply of oxygen – about 15 minutes – that is generated by special oxygen generators in the overhead panel.

Luckily, these sorts of events are very rare. Air travel is extremely safe, with 2017 marked as the safest year to date. However, flying is probably never going to be entirely pleasant, even when things go well.

Ear problems – such as muffled hearing and popping ears – are experienced by everyone. But they are particularly uncomfortable for people with colds, as their sinuses are full of mucus, which can block the opening of the eustachian tube.

Teeth can also become sore during or after flights as air in the fillings and around the nerves expands and contracts. Unlike ear pain, chewing gum or sweets won't help.

Ears and teeth aren't the only places affected by rising and falling air pressure. During normal flight, the gas of the bowel also expands and contracts.

As the aircraft climbs, this gas expands, then on descent it becomes compressed again, often needing somewhere to escape. This is where people have to make the trade-off between social discomfort and physical discomfort.

As a result of this well-known problem, a group of researchers has suggested embedding active charcoal in aircraft seats to act as an odour absorber. Things can get better, even if they can never be perfect.

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