

# HISTELEC NEWS

NEWSLETTER OF THE WESTERN POWER ELECTRICITY HISTORICAL SOCIETY

Web Site : [www.wpehs.org.uk](http://www.wpehs.org.uk)

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## HAPPY NEW YEAR



We look forward to a New Year heralding a wider scope for the Society, since we have changed our title and of course our focus. SWEXIT has

gone well so far with our bank account changed and now we have a new website designed by Paul Hulbert “[wpehs.org.uk](http://wpehs.org.uk)” up and running – more details from Paul below. The change has allowed us coverage in the WPD house magazine “Power Lines”, which has resulted in some new members joining from the wider territory, although 10% of the members lived outside the South West before the change! Wishing you an enjoyable festive Christmastime also.

*David Hutton, Chairman*

## NEW WEBSITE

I have moved the content from the old website to the new one, so [wpehs.org.uk](http://wpehs.org.uk) is now our official website. There’s lots to explore. Under **Museum** you will find pages of photos of appliances, meters and wiring, and technical equipment. In the **Photo Library** there are pages of photos covering commercial activities, overhead lines, substations, underground mains and generation. There is also a page of **Films** - people in Devon will find some of them particularly interesting.

Please explore and let me know how well it works on your PCs, tablets and smart-phones. Do get in touch if you would like to write any content for the site, perhaps about one of your favourite subjects. Or maybe you have a story connected with one of the photos on the site? My email address is [paul.hulbert@gmail.com](mailto:paul.hulbert@gmail.com).

*Paul Hulbert*

## MARCH AGM

Please consider standing for election to committee at the AGM. New ideas are needed to take the Society forward in its new role. **Your Society Needs You!**

## ELECTRIC LORRIES

At last an electric lorry is on the horizon. Elon Musk boss of Tesla Motors has unveiled plans for an electric lorry that can travel 500 miles with a full load before recharging. Don’t expect a quick production line since his promises on electric cars have fallen short producing only 260 in the first quarter of this year. Nevertheless it is an encouraging development.

## ENERGY PRICE CAP

A draft Bill has been published to introduce a regulated cap on all standard energy tariffs. Rachel Reeves, the Chair of the Business, Energy and Industries Strategy Select Committee has said she welcomed such a Bill, but was concerned that it should not affect competition. It should be designed to protect the most vulnerable customers. Centrica the owner of British Gas seemed the most concerned that it would affect their profits!! The Energy Regulator has said that this may have to remain in force for 10 -15 years. There is no slot in the Westminster programme to present the Bill at the moment, so don’t expect too much.

## HYDROGEN CARS ETC

With all the hype about Electric Cars, I wondered where hydrogen cars fit into this apparent stampede. Who will win - electric cars, hybrid cars or hydrogen cars? Not only are charging points being installed for electric cars all over the Country, but also there are hydrogen fuel stations being installed as well, not many only 13 this year. Two companies are making hydrogen fuel cell cars; they are Hyundai ix35 and Toyota Mirai. There is a new boy in this field, he is Hugo Spowers, founder of Riversimple, who is designing and manufacturing a new model; he calls it “The Rasa”. Full-scale production is planned for 2021. Another hydrogen experimental project is to heat homes with hydrogen using existing gas pipe lines. A Government hand-out of £25 million has been launched with Northern Gas Networks (NGN) to research this idea at Leeds. The Department for Transport are also interested in hydrogen fuelled trains.

## SMART METER DEVELOPMENT

Hopefully most of you will have received in the post a pamphlet from WPD “Power For Life” explaining how the distribution companies’ role is evolving. One of the most interesting aspects was the piece about Smart Meters. We all are aware that the main beneficiary of smart meters are the Suppliers, but we read that the Distribution companies will have access to the consumption data with some suitable formulae for converting consumption in terms of KWhr to some form of MD? But the pamphlet also says “they’ll give more control over their energy use”. I have a smart meter but I haven’t experienced any more control of my energy use; have you? Please write and let me know.

*Peter Lamb*

## STROUD WEEKEND

Stroud, a centre of the woollen industry for centuries, doesn't sound very exciting but, in September, thanks to David and Angela Peacock, 31 members and partners really enjoyed a few days there.

We started on Friday with a visit to "Ecotricity", an innovative "green" energy supply company with interests in most things "green". Their presentation was informative and persuasive and left plenty of time for questions and so much discussion followed.

Later we moved on to Stroud's "Museum in The Park" where, following tea and biscuits, the museum's curator described its history and some of the most interesting artifacts. Included was an example of the world's first lawnmower invented by Edwin Budding, a Stroud engineer, who also invented the adjustable spanner. Several members went back to explore the whole collection later.

On Saturday morning Ian, a local historian, took us on a walking tour of Stroud. His tour and commentary covered much of Stroud's history including Stroudwater Canal and finished in the town centre at the famous "farmers' market", giving us the opportunity for further exploration or a "street food" lunch. (The doughnuts were memorable!)



**Group of Members at the Gig Mill**

That afternoon we visited "Gig Mill", where, using historic looms, the process of weaving woollen cloth was explained and demonstrated. Then, at "Dunkirk Mill", we moved on to "fulling" the cloth. Here water powered machines hammered the cloth for hours in a mixture of "Fullers Earth" and water, thickening and cleaning it. Next a machine full of teasels raised the pile, before finally a shearing machine leveled it. Thank heavens we didn't see the original process, which involved labourers stamping on the cloth in tubs ankle deep in stale human urine! Dunkirk Mill is massive and has recently been redeveloped into housing (flats), but the developers had to preserve and refurbish the ground floor water mills, which enabled us to see their original operation.

On Sunday a short drive took us to Woodchester Mansion where William Leigh, a wealthy Catholic convert, having bought Woodchester Park, demolished the existing house and, in the mid 1850s, started to

build a luxury mansion. On his death in 1873, the house was still incomplete and, fortunately has remained so ever since, giving us the rare opportunity of seeing just how these wonderful old houses were actually built, since the internal architecture was remarkable. David Peacock is a volunteer at Woodchester and I was lucky enough to be in his group as he "brought the place alive" with his tour and commentary. Without doubt the most interesting country house that I have ever seen. A scenic tour back to Stroud finished the day.

On Monday some of us visited Dyrham Park or Tyntesfield on the way home. Thanks again David and Angela - a most enjoyable adventurous weekend.

*David Hole*

## ELECTRIC CARS LATEST

Many firms are jumping onto the Electric Car "bandwagon" hoping to be the best in the field. BMW is the latest car manufacturer to declare that they will build an electric model of the Mini in England at their Cowley, Oxford works. Of course it will have been designed in Munich and the prototype has been shown at the Frankfurt Motor Show recently. James Dyson has also announced that his firm will make a version, although his will be very different! His staff have been working on developing motors and batteries for some time and will invest £2billion in the project and intends that his car will be on the road by the year 2020. He said that the motor design is complete and engineers are still working on the body design.

In Britain he has keen competition from the Nissan Leaf available very shortly, the Jaguar I-Pace, which will go into production next year and from USA the Tesla Model 3. Daimler, a subsidiary of Mercedes-Benz, are intending to make an electric sports car in the German carmaker's factory in Alabama, USA. A Chinese entrepreneur, Wellen Sham from Hong Kong is planning an electric car, called the Thunder Power, which is intended to be built in Ganzhou for the Chinese market and in Spain for the European market. He is investing \$60million and has received \$80 million in state funding. How can anyone-else compete with that sort of support?

## GLOBAL COAL USE

The use of coal worldwide fell for the first time in 2016, which was mainly driven by both China and USA, which is in stark contrast to a few years ago when between 2009 and 2013 grew steadily caused by the steep rise in energy use in the Asian countries. China, which accounts for half the Global production, has introduced policies to constrain coal production and is steaming ahead with its nuclear programme. Britain's coal-fired power stations only generated 9.1% of our total electricity consumption last year.

In May this year, Britain had one day with electricity being generated without any from coal stations, the first time since Victorian times. Britain, who were the first country to use coal for generating electricity, could be the first to phase it out!!

## SMART CHARGING

Of all the companies to investigate smart charging of electric vehicles, you wouldn't expect Royal Dutch Shell, but they are planning to install rapid charging points on their petrol station forecourts. Shell is working on an intelligent system to communicate with the Grid to prevent surges on the distribution networks.

## WPD – LOOKING TO THE FUTURE

At Cairns Road on 9 November 25 members and friends gathered for a presentation by Steven Gough, WPD Innovation and Low Carbon Networks Engineer, on the recently published Company's Distribution System Operator (DSO) Strategy Document. Full details can be found on the Company's website at: <http://www.westernpower.co.uk/About-us/Our-Business/Our-network/Strategic-network-investment/DSO-Strategy.aspx>

Steven explained that his talk would be based on the content of that document which was currently being discussed at stakeholder meetings. The reasons for the change from a Distribution Network Operator to a Distribution System Operator reflected the need to consider the increasing impact of local generation (wind and solar) as well as energy storage. This change is essential to improving performance and efficiency from the network and to ensure that future energy demand can be met. The aim is to achieve a smart flexible energy system. By 2021 the aim was to have WPD's entire network actively managed. The need was now to think in terms of energy of all forms rather than simply being confined to electricity. There was a 'trilemma' with the need to meet government decarbonisation requirements whilst maintaining resilience of the distribution system to ensure security of supply, as well as providing a cost benefit to customers. The success of this strategy will be judged in years to come and the engineering solutions adopted to meet these goals will provide an interesting topic for a future meeting. Not unexpectedly the presentation prompted many questions covering a diverse range of engineering issues, all of which were very ably answered by Steven. *Chris Buck*

## RAMPION WINDFARM

Currently being built off the Sussex Coast is the Rampion Wind-farm. It's a joint adventure involving E.On, the Green Investment Bank and Enbridge, with E.On as service provider. Named after a Sussex flower the wind-farm is 12nm off-shore and can be seen in a south westerly direction between Brighton and Worthing. On-shore construction began in September 2015 and an off-shore construction stage began in January 2016. Prior to this a number of site investigations of the sea bed, involving boreholes, with 7 different survey vessels being used.

A feature of the On-shore route is that all the underground cabling runs through the South Downs National Park (SDNP). Wayleaves were granted following the Government agreeing to the scheme in spite of objections from the SDNP.

To install the turbine masts, nacelles and blades, jack up vessels are used. These are: MPI Discovery, MPI Adventure and Pacific Osprey, they can work in sea depths of up to 50m. Each vessel carries up to 8 turbine masts and associated nacelles and turbine blades. It takes some 24 hours to install one complete wind turbine. When complete the field has a capability of generating 400MW from 116 - 3.45MW Vestas turbines on monopole foundations.



**Base for Nachell installed**

Connection of the turbines to the off-shore substation is via 140km of 3 core plus fibre optic 33kV sub-sea array cables. There are 12 strings of cables laid with some 8 to 10 turbines per string. These cables are embedded 1m deep into the seabed using a jet or plough technique. Installed in September 2016, by the vessel Furgo Saltire, the off-shore substation is unmanned, remotely operated, housing all the 150kV and 33kV GIS switchgear; and two 33/150kV transformers to export the power via two 150kV undersea and underground cables to the National Grid Bolney 400/132 kV substation in Twineham village, located near to Burgess Hill.



**Nachell and Blades installed**

On-shore the buried sub-sea 150kV cables have a land connection at Brookman's Park near Lancing. There are 12 different cable sections running for some 27km taking all the cables which are buried and backfilled with no overhead line sections. Both off-shore export cables were laid in October and November 2016.

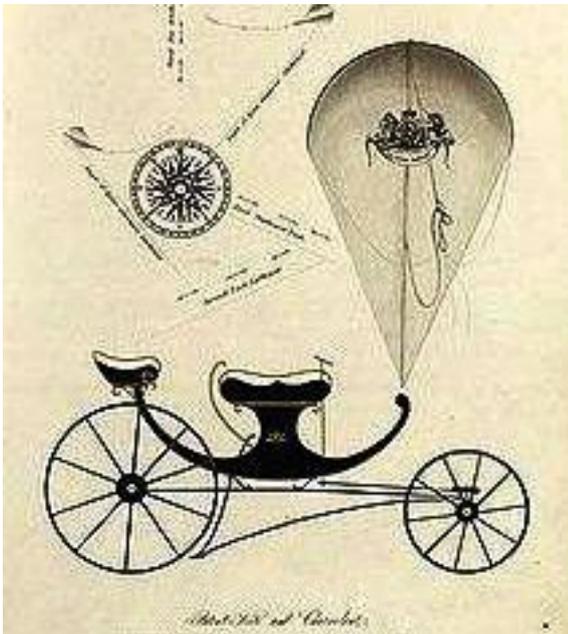
Connection of the export cables onto the local distribution system was not possible owing to the size of the export capability on to the local grid and the need to provide a connection point and the necessary reinforcement associated with the connection. It is assumed that network studies were undertaken to verify this. A new O&M base is to be opened in Newhaven Harbour later on this year and commercial operation is expected in the third quarter of 2018

*Michael J. Hearn* Member from Sussex

## GEORGE POCOCK

Most people will have heard of the great cricketer W.G. Grace, but probably not his eccentric inventor grandfather George Pocock (1774-1843). As a schoolteacher in St Michael's Hill, Bristol, he was so keen on discipline that his inventions included the Royal Patent Self-Acting Ferrule - a machine to spank multiple miscreants at the same time. In particular he experimented with man-lifting (or rather child-lifting) kites, using his own family as subjects. On one occasion he used a 30 foot kite to lift his daughter Martha 270 feet into the air. Martha would later become the mother of W.G. Grace.

Pocock then turned to experiments using kites to pull vehicles, patenting his "Charvolant" (flying carriage) in 1826. This used two kites on an extremely long line to pull a buggy carrying several passengers. In his book, *The Aeropleustic Art or Navigation in the Air by the use of Kites, or Buoyant Sails*, Pocock claimed speeds of 20 miles an hour.



George Pocock's Kite Driven Car

It was recorded that on a trip from Bristol to Marlborough, a charvolant even passed the mail coach, the speediest vehicle of the day. On another occasion a charvolant overtook the Duke of Gloucester's coach, but rather than breach etiquette they stopped to let the Duke pass them again. Charvolants never caught on despite the financial advantages - because they had no horses, they were exempt from road tolls. **Paul Hulbert**

## OFF-SHORE WIND

A Gulf-based oil-rig builder, Lamprell has won a £180 million contract to build a wind-farm in the North Sea off the East Anglian Coast for Scottish Power. Most of the work will be carried in the United Emirates, but with some of the work being done at Harland & Wolf's yard in Northern Ireland. Called East Anglia One, it is expected to generate 714 megawatts and will be commissioned in 2020. Off-shore wind turbines are

getting bigger and bigger over the years. In the year 2000 the first turbines installed only reached to the height of Big Ben 93 metres, but in 2017 they reach 164 metres tall, higher than the Gherkin; in the future it is anticipated that they will reach up to 276 metres higher than any building in London!

## FLOATING WIND FARMS!

Floating turbines sounds crazy, but there are three projects being pursued having got planning permission from the Scottish Government for these off-shore schemes. They are Statoil's Hywind 16 miles off the Peterhead coast, Kincardine and Dounreay Tri-project. The first one is the most advanced, since it is due to start generating later this year. Why floating you may ask? The answer is that they are able to be anchored in deeper water than the fixed ones, however there is no mention of the difficulty of connecting them to the mainland!! The Scottish Hywind project involves 6 – 5MW turbines, the Kincardine involves 8 – 6MW turbines and the Dounreay scheme is 3-5 MW turbines.

## FUEL CELL TECHNOLOGY

A fuel cell company in Britain, worth £300 million, has just turned in a profit. The company "Intelligent Energy" (IE) was spun out of work at Loughborough University 20 years ago. IE makes fuel cells that generate electricity using hydrogen. Its technology can be used in cars, power stations and electronic devices such as smart-phones. In Britain they have strong competition from Ceres Power and AFC Energy, the latter being backed by the Russian tycoon Roman Abramovich. Ceres Power product is described as a Steel Cell using mains gas as its fuel, whereas AFC Energy is using hydrogen.

## BRITAIN'S SECOND NUCLEAR?

With the construction of Hinkley Point C station proceeding, EDF obviously feel more confident and now say that they intend to build a second one in Britain at Sizewell C site. The boss Vincent de Rivaz, who is stepping down, says that the "sister project" will be in commission by 2033! He also stated that Hinkley will be on stream by 2025. Brave words indeed!! The apparent reason for his optimism is that now they have a definite partner in the China General Power Group (CGPG), who have agreed to put money into the two projects on the basis that CGPG are given a "chance" to build a nuclear station at Bradwell in Essex. One wonders whether Britain has a say in these conditions?

## SURPLUS SCOTTISH ENERGY

Scottish Power and National Grid have been wrestling with the problem of getting surplus Scottish energy from Scotland to England. The existing Grid links across the border do not have sufficient capacity to export all the excess available resulting in Scottish wind-farms being paid millions of pounds to switch off their turbines!! So an undersea cable from Hunterston to Deeside is being considered costing £1 billion to lay 239 miles of subsea cable providing a 2.2GW capacity link.

## COMMUNITY- OWNED HYDROPOWER SCHEME FOR THE RIVER EXE

This scheme is being proposed by Brendon Energy, a non-profit organisation dedicated to installing community funded renewable energy projects – to date these have all been pv cell based installations on schools, village halls and such, based around “Transition Town” Wellington. To read more about them see [brendonenergy.org](http://brendonenergy.org).

Early next year they will be selling shares to raise £600k for this scheme which is to install an Archimedes Screw driven generator at Bolham, on the Exe upstream of Tiverton. This will take advantage of an existing weir, (or weirs, since there is an ancient lower one close by). The project needs the cooperation of South West Water who draw water from this pool for public supply. Brendon's publicity claims the scheme will provide power for 145 homes, and seems feasible based on a head of 2.15 metres with a flow of 6 tonnes/sec, with assumed efficiency of 73%.

Nationally this should give an output of 100kW but they assume an availability of only 50% mainly I think because South West Water want to take power directly to their pumps leaving only 50kW on average going to the grid on feed-in tariff. This is where they get the 145 homes from – average consumption 3000kWh/year. South West Water can maintain the flow at Bolham by admitting water from Wimbleball Lake in the Brendon Hills, but I guess that would be to maintain water supply, not to guarantee generation!

Disappointingly the turbine is likely to be imported from Europe. Why can't a British company manage this seemingly basic technology? Is it because the Austrians or whoever have cornered the patents – anyone know?

Historically this stretch of the Exe has been exploited before. Knighthayes, Heathcoat Amory's Victorian mansion (now National Trust) was electrified from a plant on the river nearby, and Worth House further south had a 17.5kW Francis turbine installed as late as 1937. I mean to find out if anything remains of these – if any member knows anything please get in touch.

*Brian Denham*

## CORNWALL'S LITHIUM

A new company has been formed called Cornish Lithium. The Chief Executive believes that the potential for mining lithium in Cornwall could be significant. Everyone knows that the tin industry was huge in Cornwall at one time, but it appears that the water that once flooded mines in the past is rich in Lithium. The idea is to drill boreholes at least 400 metres down to access “brines” carrying lithium-rich hot water. The initial territory is the traditional mining areas of Camborne, Redruth and St. Day. The Company has also secured the rights to geothermal energy contained in the hot springs.

## ELECTROLUX BROCHURE

We are delighted to receive a 20 page 1930 Brochure by Electrolux found by member Linda Gee – the front cover is illustrated below, which is publicising a cylinder cleaner. It is a classic period document. Surprisingly it claims to be able to be used as a hair dryer as “Let the motor run and the warm air from the blowing end will quickly dry your hair”!!



## PLASTIC USE FROM CO<sub>2</sub>

A firm near Manchester has found a way of using CO<sub>2</sub> for manufacturing plastic. It is fantastic breakthrough. The firm, Eonic Technologies based at Manchester Science Partnership Alderley Park Site, Cheshire considers that they could save millions of tonnes of CO<sub>2</sub> a year with their process. The firm has developed a catalyst that allows the CO<sub>2</sub> to be used to produce polyols and polymers, which are the building blocks of polyurethane. Not only is CO<sub>2</sub> cheaper than the equivalent used in plastic production methods but also it is less wasteful than the process used from oil based products. A new range of plastic materials could be used in running shoes, car seats, mattresses and building insulation. The company was spun out of experimental work done at Imperial College, London in Catalyst Technology in 2011.

It is the aim of the company to put it on a sound sustainable footing by fund-raising, not a quick sell.

## BRIAN CHINN

It is with sadness that we announce that Brian Chinn, one of our members, passed away this year. Brian started his career as a Student Apprentice Engineering Draughtsman in the Head Office Drawing Office under the Chief Draughtsman at the time, Mr George Eveleigh. Whilst at Head Office he got involved with many things, Ambulance Centre, Civil Defence and a Dance Club. He was a very popular guy, meeting his wife, Diane, there. During his career he served at Weston-super-Mare, Planning, Torbay Operations and then returned to Head Office in Management Services.

## MARK WOOD-ROBINSON

Many ex-SWEB people, both at Electricity House Bristol and elsewhere, will have known Mark Wood-Robinson. I have just been told that Mark died in March this year aged 85. Mark was SWEB's Lighting Engineer, and he designed floodlighting schemes for many buildings in the South West, ranging from the innovative Avonbank office to ancient cathedrals such as Exeter, Bath and Bristol, plus Bath Abbey. Many of his archives have been left to the Society.

## WARTIME LMS

*Graham Warburton has sent us details of the air raids during the war over the South West of England (Bristol area) relating specifically to the LMS, his pet subject. It was very long so please find an edited version below :-*

*On 24/5 June 1940 - Bristol - The first bomb to fall on the LMS damaged Bristol Engine Shed Signal box at 00.51*

*On 24<sup>th</sup> November 1940 - First of 6 major raids on Bristol was when 134 bombers dropped 161 tonnes of HE bombs and 12,500 incendiary bombs there were 197*

*On 17<sup>th</sup> January 1941 - Feeder Road Power station destroyed.*

*On 16<sup>th</sup> March 1941 - 162 enemy aircraft were involved with 166 tonnes of HE bombs and 34,000 Incendiaries.*

*On 3<sup>rd</sup> April 1941 - The last serious attack was, known as the 'Good Friday Blitz' when about 155 planes dropped 193 tonnes of HE bombs and 25,000 incendiary bombs.*

*On 25<sup>th</sup> April 1942 - Bath - The main raid on Bath was with 151 sorties dropping 93 tonnes of HE bombs and 3,500 incendiaries and 26<sup>th</sup> April 1942 with 100 planes involved. Bristol was also hit by mistake.*

*If you wish to find out more about this period, you may contact Graham on e-mail : [grawar@quikmail.co.uk](mailto:grawar@quikmail.co.uk)*

## BLETCHLEY PARK W/E NOTICE

Apologies for the error in it being printed back-to-back involving a tear-off slip, losing front page descriptions. Nevertheless please join us and it will be replaced.

## CLEAN SELLING

A vacuum salesman appeared at the door of an old lady's cottage and, without allowing the woman to speak, rushed into the living room throwing dirt all over her clean carpet. He said, "If this new vacuum doesn't pick up every bit of dirt then I'll eat all the dirt."

The woman, who was pretty cross, said, "Sir, if I had enough money to buy that thing, I would have paid my electricity bill before they cut it off. **Now what would you prefer, a spoon or a knife and fork?"**



## NEW MEMBERS WELCOMED

We are pleased to have welcomed the following new members to the Society this year :-

Terry Checkley-James - retired Wayleave Officer, working with SWEB / WPD and EON.

David Clark of Chepstow - Interested in electrical and mechanical engineering

Peter Elsam - formerly with Cwmbran District of SWaEB and South Wales Control Centre

John Frank - former cable jointer with SWEB and for many years a full time union official. His brother-in-law Bernard Griffie is also ex SWEB and visits Cairns Road with him.

Rhys Roberts of Cardiff, who works for WPD

Don Rouse - formerly of SWEB and MEB

Gary Rowe - Retired cable jointer with SWaEB in Newport

It's good to see that we are expanding our geographical coverage.

*Paul Hulbert*

## FOR YOUR DIARIES 2017/2018

**Sat. 3<sup>rd</sup> Feb. WINTER LUNCH at DEVON HOTEL**

Talk "The Titanic & WT Stead, the First Investigative Journalist" by Peter Lamb

**Sat 24<sup>th</sup> Mar. AGM AT TAUNTON + TALK** -

At the WPD Training Centre at 11.00am followed by lunch at 12.15pm at the Merry Monk Inn. After there will be a presentation at 2.00pm by a Director of WPD.

**NEXT EDITION** - This newsletter is produced every four months. Please send articles, photographs etc to :- Peter Lamb 35 Station Rd, Backwell, Bristol BS48 3NH Telephone 01275 463160 or e-mail him on [lambpandv@btinternet.com](mailto:lambpandv@btinternet.com).