

HISTELEEC NEWS

NEWSLETTER OF THE SOUTH WESTERN ELECTRICITY HISTORICAL SOCIETY

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AMAZING HOT & FINE SUMMER

The hot weather seemed to go on and on. It must have been the longest dry spell for years. We hope everyone managed to make the most of this.

NATIONAL ELECTRICITY GENERATED

The Department of Energy & Climate Change has issued the first quarter's figures for electricity generated, which showed the following percentage use of prime fuels :-

Gas 45.5% +25%, Coal 31.2% -17.3%, Nuclear 16.5% + 7.0%, Renewables 6.2% - 6.6%

Unfortunately the rise in the use of gas has been achieved by increased imports from Norway. Interestingly the Government Department put the drop in renewables to weather conditions where the wind speeds had been lower than usual!, i.e. lack of wind!! I am sure that most of our membership would not be surprised. We have stated the problem many times in these columns.

STOLEN DREAMS

At the Archive and Museum Centre at Cairns Road, we had a 20ft old substation cast-iron ventilator shaft lying on the ground outside. It was extremely heavy and would have needed four blokes to move it. We had dreamed of erecting it outside in a vertical position. At the beginning of June the gate lock was broken off and the ventilator shaft was stolen. Not content with stealing that, they smashed the handrails of the wooden stairs into our premises, which had been so carefully constructed by Roger Hughes.

BATTERSEA POWER STATION

The redevelopment has been in the news recently. The owners Real Estate Opportunities is seeking an investor to assist with the development, since the company investments had made a loss. The total cost of redevelopment is reported to cost in the region of £4.5 billion. A director Rob Ticknell, son of member Bill Ticknell, is reported to say that "We want Battersea to be a major cultural destination. We want creative tenants, designers and postgraduate artists to come here, etc". The concept of the proposed design has been discussed widely involving 20,000 members of the public so far and the intention is to make the development carbon neutral, a major challenge indeed!

ERRATUM

In the last edition I added Barrie Philips house location incorrectly. It should be **Thorverton**. Sorry Barrie!!

LATEST ON 400kV POWER LINE PROPOSAL

This is an update on the situation. National Grid has started a second series of Drop-In Events to obtain feedback from the public on their proposals to enable people to talk to members of the Project Team. The events started on the 7th June and continued until 17th July. I went to the 2nd meeting at Portbury village hall near Portishead. Up to now the issue seems to have been solely about the very high cost of the cable alternative but some serious technical difficulties have now been revealed.

It will be recalled that the cost for a sub-sea H.V Direct Current cable system would be about £1200M, while the cost for the most expensive overhead line option would be £190M. Rather than sub-sea, cables could be laid underground but this again is very expensive at 12-17 times the cost of an overhead line and likely to be very disruptive to the land and probably impracticable through built up areas. Future fault repairs would be expensive and time consuming.

Why H.V. Direct Current? The problem is that alternating voltage used on a long cable at high voltage causes a constant charging current to be taken by the cable at all times irrespective, which leads to problems of voltage control and operation of the generators. A 40 mile length of cable from Hinkley Point to Seabank would take a charging current of about 2000 amps. Direct Current avoids these problems but introduces other issues.

Another factor against long A.C. cable systems is the cross connections between cable sheaths to balance out unwanted currents in the sheaths, this would be impracticable under the sea. In conclusion for technical reasons apart from costs, the use of undersea or underground cables on this scheme is not possible

Mike Hield

WEEKEND AWAY APRIL 2012

Although the committee agreed to the idea of a Manchester venue in 2012, nobody is prepared to organise it. Two volunteers are required for weekend away anywhere, as Manchester may be too challenging, due to the distance involved. Any offers?

NEW MUSEUM ACQUISITION

We have had a roll of wallpaper given us with Hoover adverts on it including pictures of Hoover appliances circa 1950's. Who would want to paper a kitchen thus?

MERCIAN HOLIDAY REVIEW

The weekend activities in April commenced with an optional return trip on the Severn Valley Railway between Kidderminster and Bridgnorth. This is a delightful journey of around 16 miles taking just over 1 hour each way that closely follows the Severn. (see **picture overleaf**). After closure in 1963 a group of enthusiasts acquired the line and after many years of hard work it was reopened. Bridgnorth is split into High Town and Low Town with a funicular railway link built in 1892 that ascends and descends the 111ft sandstone cliffs around 150 times a day. There are two carriages that each carry a maximum of 18 passengers and are powered by an electric motor that replaced the original water displacement system in 1943/44. We spent around two hours in this interesting and attractive town that was once a busy port on the Severn. We returned to Kidderminster and it was a short drive by car to our base, The Abbey Hotel Golf and Country Club, near Redditch. In the evening after dinner, Peter Miller gave an interesting talk on the history of the Jewellery Quarter in Birmingham.

On the Saturday morning we travelled by coach to Lord Leicester's Hospital in Warwick. This is a Grade 1 listed building and the word hospital is used from an old meaning referring to a charitable establishment for providing a home to look after those in need through age or infirmity from the armed forces. We were met by The Master, Lt/Col. Gerald Lesinski, a former Grenadier Guardsman. This gregarious gent gave us a brief history and tour of the site including the 12th Century Chantry Chapel of St. James located over the Norman Gateway and the late 14th century timber framed buildings. There are reception rooms, living quarters (including Master's House and Garden), a Guildhall, Great Hall and small cafe called The Brethren's Kitchen. For two centuries, the buildings were the home of Warwick's mediaeval Guilds and then in a change of use from Queen Elizabeth I's reign it became a retirement home for old soldiers and their wives, as it is today. The regimental museum of The Queens' Own Hussars is housed on site.

Warwick is an interesting city and we had a few hours to explore the central area before heading to the Castle whose origins go back to 914AD. Notable features of the castle are the Central Courtyard, Chapel, Great Hall and State Rooms, Gaol, Mound and many Towers. The extensive grounds included Rose and Peacock Gardens, Pageant Field and River Island. The Mill and Engine House highlighted that the castle has used 'green energy' since 1644. Water diverted from the River Avon to a waterwheel provided power initially to pump river water up to the castle and from 1900, a hydro electric generator (later backed up by a gas engine) was installed with an electric water pump and 475 electric lights in the castle.

After dinner that evening, David Baker gave an interesting insight and preview of The Black Country Living Museum that was established in 1975 to re-create the industrial activities, working environment, typical types of buildings and the lifestyle of the area to the west of Birmingham. It gained the 'Black Country' tag as a result of the extensive mining of coal, ironstone and other

minerals together with its vista of furnaces, factories and smoky chimneys.

The following day, after an introduction and coffee, a trolley bus took us to the canal and our lesson with the teacher at St. James's School, recreated as it would have been in 1912. We were all given an opportunity to do our 'multiplication tables' and some 'naughty' pupils were made to stand at the front of the class and explain their behaviour. We were then given a guided tour of the 1930's style Old Birmingham Road, a reconstruction of typical premises from various Black Country localities in which SWEHS has had a direct interest advising on the type of wiring installation for the period. One of the premises is Hobbs and Sons, a fish and chip shop that is open for business – using real dripping! The Village Centre with canals on three sides has a host of shops each stocked with goods of the period, chapel and not forgetting the Bottle and Glass Inn serving Black Country real ale, run by a very bossy landlady. After a tour of industrial workshops it was time to have lunch.

In the afternoon there was a 2 hour canal barge trip into the Dudley Tunnels and old limestone mines originally excavated from 1776 to 1798. Much work has been done to stabilise the tunnel and workings recently for safety and provide feature lighting, visual displays and exhibits for visitors. Two new tunnels constructed between 1984 and 1989 allow the electrically powered narrow boats to travel on a circular route. The headroom in parts of the original tunnel meant that boats were legged through – not something that most of us would wish to consider for an every day job. The Singing Cavern is used for Civil Weddings with seating for up to 50 guests. After an interesting trip delayed slightly to allow some ducklings to clear the tunnel entrance we disembarked to continue our tour of the museum with a stroll or ride back to the Underground Mine and Newcomen Steam Engine. The latter was billowing smoke - apparently no CO₂ emissions or clean air to worry about here! One final exhibit to explore on the walk back to the main entrance was the house developed around 1925 and built from 600 panels of cast iron which were bolted together. After the journey back to our hotel and dinner we were entertained to an amusing 'Guess where I am' quiz organised by David and Chris Hole.

On Monday, the trip to Birmingham's Jewellery Quarter included a guided tour of the Museum in the old factory of Smith & Pepper, who in 1981 decided to retire, stopped trading, locked up the premises and left. Everything inside was left exactly as it was on the last day of production with overalls hung on hooks, dirty cups and tools lying around. The guide explained how jewellery was made and how the waste filings and scraps of material that fell onto sawdust were swept up and later incinerated to recover the precious metals. Birmingham still produces 40% of UK jewellery.

We had 43 booked for the holiday, but we were sorry that three had to forego it due to illness. They were Mike & Linda Gee and Roger Hughes – bad luck! All of us on the Mercian Holiday very much appreciated the detailed planning and organisation that Marcus and Peter put into

MERCIAN HOLIDAY cont.–

the weekend. Their choice of hotel, places to visit, timing, coach operator and the itinerary booklet were excellent.

David Cousins



JOHN FERRIER ON THE FOOTPLATE OF A SEVERN VALLEY ENGINE

TYNTESFIELD HOUSE (National Trust) VISIT

In spite of a late change of date, to fit in with our hosts, our visit proved extremely popular with one of our best attendances ever – so much so that the high numbers required a split over two lunch venues! Following lunch all 38 of us successfully found our way to the Tyntesfield ticket office and thence to the former estate saw mill. That building has been converted into a new education centre for use by the many school parties now visiting.

Our contact for this visit was one of our working members, Martin Merritt, of Gifford UK, an independent consultancy of engineers and specialist advisors. The company has the contract for managing the considerable amount of renovation work now going on at Tyntesfield and had contacted SWEHS for background information prior to successfully tendering for the project. Martin and his colleagues gave us an excellent introductory talk.

The Gibbs family created the spectacular house and estate of Tyntesfield with the wealth created from their guano (sea bird droppings!) fertiliser business. The Gibbs were forward thinking and liked to be abreast of technological advances. As a result, electric lighting was installed around 1897, a d.c. system supplied from accumulators charged from dynamos housed in the former saw mill building. Further extensions were undertaken to the electrical installation in the 1920/30 period, presumably to install power circuits with socket outlet provision. This was followed by a complete rewire around 1952 to replace the original wiring then contained in wooden casing typical of early installations. The aim of the current rewiring has been to retain or replicate as many of the original fittings as possible. Much of the new wiring is copper sheathed mineral insulated cable, the majority of which is routed out of sight behind the woodwork of door frames, etc. In the few cases where this was not possible the wiring has been surface clipped as unobtrusively as possible, the bare copper sheath blending in well with the patina of adjacent woodwork.

It was explained that the heating system had been similarly refurbished, now being designed specifically to

control the environment, in particular the humidity, rather than for comfort purposes. A new biomass boiler has been installed in a building adjacent to the new education centre, with insulated underground pipes running from there down to the existing boiler house sited in the house basement. Because this new part of the system operates at a higher pressure to that for which the existing system was designed it was necessary to install a plate heat exchanger to couple the two together. The existing radiators have been flushed and retained, with some new radiators added in those parts of the house where none had previously been installed (e.g. the servant's quarters!). A very sophisticated climate control system has been installed, with room sensors operating flow valves in new pipe work located in the boiler hose basement. In consequence, the old radiator valves remain in situ but are permanently fully open.

Following our introductory talk and the inevitable questions we embarked on a tour of the house with our guides pointing out the new work, discussing practical issues and answering yet more questions. One item of particular interest was the lowering/raising arrangement for the large chandeliers in the hall. Previously this had been a mechanically operated system but now had been changed to electrical operation, using a hand held remote control device. One trusts that the operating frequency and design is such so as not to suffer from electromagnetic interference, otherwise there might be some unexpected raising or lowering!

Following completion of the house tour, members were free to wander in the grounds and many later found their way to the tea rooms prior to the homeward journey. Our thanks go to Martin Merritt and Gifford UK for arranging this very interesting and informative visit. *Chris Buck*

GREAT TORRINGTON REVIEW

It has to be said that Great Torrington is not the easiest place to get to from just about anywhere, but the 25 members who managed it were rewarded with an exceptional and unusual day. We met at about 11.15 in the restaurant at "Dartington Crystal" for a snack lunch or late breakfast. A tour of the visitor centre and factory followed where the glass manufacturing process was first explained, and then demonstrated by the glass blowing teams with such skill that it appeared simple enough for anyone to do it! Finishing and packing of the products could then be observed before we exited into the shopping area where, judging by the carrier bags, several members were sufficiently impressed to part with some money for the excellent products.

Following our most interesting visit we made our way down to Rosemoor RHS Gardens for our afternoon tour. If you visit a garden, it is essential that you have good weather to make the most of it and we certainly had exceptionally good weather - clear blue sky and refreshing cool breezes. Just to add a little bit of "icing to the cake" we only paid £6.00 each for both attractions, less than half price! If you missed it you missed a treat, and if you have never been, then take my tip, go! (Don't forget it will cost you £12.50.) It was altogether a memorable day out! *David Hole*

BATH DORCHESTER STREET

Members may be interested in the new building gracing the corner in Bath, where once stood the SWEB main offices in Dorchester Street. (Picture by Steve Riches).



A NORTHERN PROSPECT!

I am still a member of Prospect Yorkshire Retired Members Section. (Prospect absorbed the EMA and its predecessor the EPEA). We usually meet at Drax Power Station's former Sports & Social Club, which is now independent of Drax Power. I always enjoy the journey from home in the Pennine "last of the Summer Wine" country to Drax. I see a cross-section of Yorkshire's topography and a glimpse into the contorted history of electricity supply.

I start near the high moorland of West Yorkshire and slowly descend into the former coalfield area in South Yorkshire travelling east over the flat lands around the lower Aire Valley. My first electrical encounter is at Honley Bridge, which was the terminus of Huddersfield Corporation Tramways route electrified in 1902 and supplied by the tramways generating station in Longroyd Bridge near the centre of Huddersfield. The Corporation had its own generating station opened in 1893. This did not supply outlying areas and Honley Urban District Council as it had its own small generating station, whose building I pass. It sheltered a 22kW Westinghouse generator driven by a gas engine fed from the adjacent gasworks and a similar 8kW generator built by the Alliance Electrical Company based in the neighbouring village of Thurstonland. Honley is still not electrically connected to Huddersfield and gets its power via a steel-girder supported line erected by the Yorkshire Electric Power Co from its Thornhill Power Station near Dewsbury. This site now houses a 50MW gas turbine which is, I think, owned by N-Power.

Travelling east and leaving the hilly country behind, I pass into South Yorkshire near the site of the former Yorkshire Electric Power Co's Barugh Diesels Power Station by the M1. Next I see (and smell) the still operational coke ovens at Royston where flames, smoke and steam engulf the works. Then back into West Yorkshire through former mining villages, now becoming somewhat gentrified, via Featherstone and Pontefract and across the A1(M) to the very industrial town of Knottingley. Nearby is Ferrybridge where the

listed building of another YEP power station, Ferrybridge "A", and the still operating Scottish & Southern owned Ferrybridge "C" 2000MW station are situated.

A little further and I pass Kellingley Colliery, still working and known as "Big K". The countryside now becomes a rural plain of agricultural land and, perhaps surprisingly, I enter North Yorkshire and the East Riding District Council area (very confusing!). Soon I pass the 1960MW former British Energy power station at Eggborough (I am not sure who owns the plant at present). In the shadow of this plant was the Arbre power station partly owned by Yorkshire Water. This was a 10MW experimental biomass plant which was to use chipped willow in a reactor, which produced gas to fuel a gas turbine whose exhaust passed to a waste heat steam boiler supplying a steam turbine. It was a very complex process and I understand it was only run for a few hours before it was abandoned. To the south, beyond the M62 motorway, a large hill rises above the flat lands at Gale Common. This is entirely man made and is composed of pulverised fuel ash from Aire Valley power stations. It is now largely clothed in grass and trees and looks as though it has been there forever. Just beyond Eggborough is the very large and fully automated Saint-Gobin plate-glass factory with a steady stream of lorries taking its products to distant parts.

After a few miles on rural roads I pass through the small town of Snaith with its ancient church and old-fashioned ironmongers shop still selling all the things B&Q have never heard about. A few miles more and I reach the giant 3600MW Drax Power Station owned by Drax Power beyond a number of very large wind generators. At the Club House I meet about 50 or 60 other Prospect members from all over Yorkshire and with many different life stories. We usually have a good buffet lunch and remember the "good old days" when clearly the world was much less complex. I am usually the only ex-nuclear engineer and until recently I often met several members who I first knew during my apprenticeship at Wakefield "B" station, now a distant memory.

Colin Hill

ELECTRIC CARS

The Sunday Times reviewed purely electric cars available or on the drawing board, avoiding the hybrids and hydrogen cars all, of which are in the "green" lobby. The article used the term "**Volts-Wagons**", and dealt with five cars Nissan Leaf, Mitsubishi Miev, G-Wiz manufactured by the Reva Car Company in India, the Ampera by General Motors (Vauxhall) and the Tesla manufactured by the Tesla Car Company in California.

They were very complimentary of the Nissan Leaf, which hasn't even started production, but is expected to come off the production line next year from their Sunderland factory and is anticipated to reach 300,000 by the year 2014. It has a top speed of 85mph and a range of 100miles. The Mitsubishi has only a range of 80miles and the G-Wiz, the cheapest electric car, only 50miles. The Tesla is the most expensive with a range of 210miles and top speed of 150mph. Who is going to win? General Motors want to hire batteries to owners of electric cars

ELECTRIC CARS continued

and then they would be able to sell them when they have passed their most productive life to wind-farms to store electricity. They say that battery packs from 25 cars housed in a truck would form an effective mobile power source storing 1MW of electricity.

With Brussels setting ambitious climate targets, the Royal Academy of Engineering has carried out a study showing that to reach the targets, all cars, buses and lorries would need to be converted to electric drive. To achieve this would need 10 new nuclear power stations!!

AVONSIDE LOCOMOTIVE WORKS

Bristol has a remarkable history in the manufacture of vehicles. Motorbikes, motor scooters, cars, lorries, buses, aeroplanes (and aero-engines), ships, locomotives, balloons, helicopters, rockets and satellites have all been made in the city. (Does anyone know about bicycles? I believe Alex Moulton worked at Bristol Aero Engines in his younger days!) Warren Marsh and Gerry Nicholls of The Bristol Railway Society have recently applied to the City Council for a Blue Plaque to be erected to commemorate the Avon Street Locomotive Works whose site at the rear of Temple Meads Station is now occupied by an Ibis Hotel. Warren and Gerry have supported their application with this brief history of the works.

“The Great Western Railway opened throughout from London to Bristol in 1841. Stothert and Slaughter received their first order from Isambard Kingdom Brunel for broad gauge engines to the design of Daniel Gooch for the GWR in 1841. Further locomotives for the Bristol & Exeter and Bristol & Gloucester Railways soon followed and the company operated the Bristol & Gloucester Railway from 1843 to 1845.

Locomotives were exported to some of the earliest railways in Portugal, Canada, Australia and India before 1855. Stothert withdrew from the partnership in 1856 and the name was changed to Avonside in 1866.

The works were expanded in 1855 and 1874 and engines were built for six different gauges. Notable were the Fairlie locomotives for Mexico and the Fell incline locomotives for New Zealand (one of which is preserved). However the constraints of the site led to further production concentrating on smaller industrial locomotives from the 1880s and the works moved to Fishponds in 1904. PORTBURY is an Avonside engine built in 1917 for the Port of Bristol Authority and is preserved in the Bristol Museum Industrial Collection.

Thus over a period of 65 years a total of 1475 steam locomotives were constructed at the Avon Street Works making it one of the larger manufacturing sites outside the major centres of Glasgow, Manchester and Leeds.”

I understand that Fell locomotives were used on steep inclines. There were 4 wheels (presumably horizontally mounted) that gripped on a raised central rail giving added traction on ascent and braking on descent. Perhaps members can give a better description of this mechanism and also describe a Fairlie locomotive? Anyway we wish The Bristol Railway Circle good luck with their initiative.

John Coneybeare

DORDOGNE

My wife and I went for a week's holiday in the valley of the Dordogne River in June, since we were to attend a family wedding at a posh chateau, Chateau les Merles at a hamlet called Tuiliere, near Bergerac. We stayed at a chateau a few miles up the road at Lalinde. I was surprised to find a large hydro-electric barrage at Tuiliere operated by EDF. Also I found some interesting industrial archaeology alongside, a chain of three redundant locks which once enabled barges from a parallel canal onto the river. The Lalinde Canal stretched back some ten miles up stream to Mausac. It was built between 1838 and 1843 to avoid rapids and rocky barriers in the main river to provide transport for a mixed industry of paper-making, wine and tobacco to Bergerac and thence on to Bordeaux. It was soon eclipsed by a railway alongside up the valley. The Canal and the River are now exclusively used for fishing with no boats on them at all!!



LALINDE CANAL LOCKS

In researching the above on the net, I found an amusing incident in the recent past, February 2006, EDF had not maintained the barrage gates adequately and they collapsed and the Dordogne River dropped three metres losing all the fish behind the dam. The local populace marched from Lalinde about three miles away to demand quick action by EDF!!



TUILIERE BARRAGE

The hydro-electric scheme was first built from 1905 being commissioned in 1908, when 8 turbines of the Kaplan design were installed. It now houses 9 turbino-alternators probably of the Alstom manufacture, since most of the larger French hydro-stations are made by them. Note that four gates are open due to extreme flooding in June.

Peter Lamb

ELECTRIC CHINA

Glenys and I have just returned from a near 3 week tour of China, which covered most of the tourist destinations with a six day cruise on the Yangtze. Local guides and full size air conditioned coaches were employed at all locations. We flew to Beijing (pop. 20M) in a group of 20 arriving at the airport with the longest runways that I've come across.

At Beijing, we were told to look out for bikes when getting off the coach. After visiting the Summer Palace and attending a Martial Arts Show I had to jump back on the coach to avoid one. It was my first encounter with Electric China! The bike was neither a bicycle nor a motor bike but can best be described as a streamlined electric motorbike. Our guide informed us that these were very popular not requiring a driving licence and could be used in pedestrian areas. The cost of a motorbike license was as much as 3 months pay.



POLICE ELECTRIC CAR

The following day Tianmen Square and the Forbidden City were busy and protected by the police in electric vehicles that looked like golf buggies. Since the Olympic Games Beijing has become a smoke free area and all the coal fires in the old town replaced by electric cookers and air conditioning.

Electricity figured in our visit to The Terracotta Warriors outside Xian (pop. 5M) following an internal flight from Beijing. It provided us with a power failure in the hall, which contained the chariots - I had been told to observe the chariot there in particular. However when the light did come on there was still no chariot – It had been taken to the Chinese Pavilion at the World Fair at Shanghai and a replica was in its place.

We visited the Han Yangling Museum on the way to the Xian airport discovered before the Terracotta Warriors. This museum has been built inside an earth pyramid that housed a Han dynasty Emperor's tomb. This too contains a terracotta army but it is an army built to scale – about quarter full size. It contains not only the people, but all their animals as well, pigs, sheep and dogs. The main display is under a glass floor that you walk on and you have to wear cloth covers for your shoes.

On to Guilin (pop. 0.9M) the smallest city we visited. We had a night cruise on the river to view the lights. The Chinese love to display their buildings, trees, gardens, bridges and monuments with coloured lights and a night ride on the river is a way to see this.

After a day time cruise to see the strange landscape of hills mountains and river, we flew on to Chongqing the largest city in China with 33 million inhabitants. Because of the hills, cycling was never an option in getting to work and the city has and is developing a rapid mono-rail system in addition to buses. Public transport buses have two classes – Air conditioned and non conditioned. Travelling on the former is twice the cost of the latter. We travelled on the mono-rail to visit a bazaar area from the centre where we had visited the zoo with live pandas. The concrete mono-rail itself features complex electrical expansion joint which implies to me that a linear motor system is being used as the drive. It was quiet, fast and effective.

We now boarded the Victoria Prince our Yangtze river cruiser and after visiting numerous sights, including hanging coffins, arrived at the Three Gorges Dam with its massive hydro-electric power stations. There are 26 sets rated at 700 MW installed giving a total capacity of 18.2 GW. This is 6 times greater than the Gezhouba Dam Project, which is further down the river and was the first dam built. It is also 10 times greater than that of the Dawawn Nuclear Plant in China. It was calculated that it would supply 15% of China's total power by 2012, but due to the rapid growth of electricity it will only be 5%.

For Shipping on the Yangtze to Navigate past the dam there are 5 stages in the system of locks that can cater for a change from 175m above sea level to 60m above sea level. In order to control flooding in areas below the dam the water level above the dam is allowed to vary between 146m summer/autumn time and 175m when the melting mountain snows would cause the annual flooding of areas further down the Yangtze. The project is based on American design – similar to the Grand Coulee Dam and its water turbines form the basis of the design. The army is in control of the site, following terrorist attacks in 2004 resulting in the deaths of police, so access is limited – for more details <http://www.swehs.co.uk/docs/coulee.html>.



THREE GORGES DAM – TURBINE HALL

Finally we docked in Shanghai (pop. 16M) beside a river crossing pylon that had a spiral staircase within and an observation platform as well. Shanghai at night provided the final electric show before we returned home.....

(See photo overleaf) **Marcus Palmén**



THREE GORGES DAM – note locks to the right

REPORT FROM PAKISTAN

As you may be aware I am currently the senior resident engineer for Mott Macdonald Ireland supervising the construction and commissioning of a 225 MW combined cycle diesel power station located approximately 130 km north east of the city of Lahore. In addition to rice and wheat a substantial amount of sugar cane is grown in the region, as I had visited the sugar factories in operation in Barbados during my time with the Barbados Light and Power Co Ltd; I was anxious to visit sugar factories in Pakistan for comparison.

It was arrange for me to visit the Noon Sugar Factory in the Sargodha district as I had been told that this factory was powered by steam reciprocating engines; I had been told that this factory was only a short distance from Lahore in actual fact it was over 180 km from the city, and as due to the usual delays we did not leave until late in the afternoon, the sun was starting to go down by the time the factory was reached so I was not able to stay as long as I would have liked.



THE PLANT REMOVED FOR MAINTENANCE

On arrival at the site I was introduced to the factory manager who was to show us around, though the factory was steam powered the cane mill and the generators were driven by steam turbines; as the next crop of rice had not been planted the factory was shut down for maintenance and refurbishment, and we had to climb over a heap of concrete rubble from a demolition in order to reach the mill house. The cane mill train was driven by about six single and multi stage back pressure steam turbines by Peter Brotherhood and KKK, through double helical reduction gearing: the mill train had been stripped down to enable the rollers and the large plain bronze bearings

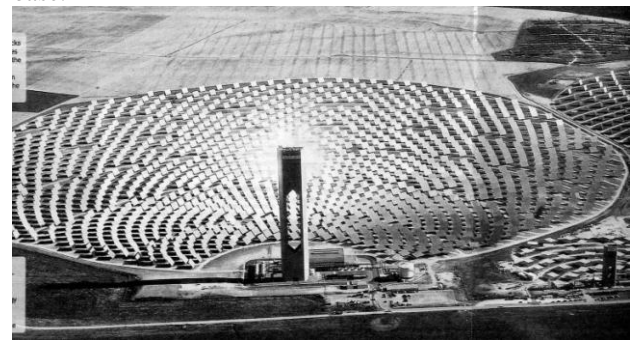
to be removed for inspection and machining where required.

Passing on to the power house we noticed a Caterpillar black start diesel generator set, the plant in the power house consisted of about six back pressure and condensing steam turbine generator sets both single and multi stage, manufacture by Peter Brotherhood and W H Allen, there were also to interesting little sets by Metropolitan Vickers, that must have been about 50 years old; to one side of the power house there was a switch board by Johnson & Phillips, as it was a Sunday there was very little lighting on and as the plant was shut down the alternators were covered with dust sheeting I was unable to see the details on the makers name plates. As the light was fading fast I was unable to get to the boiler plant but from the distance the three boilers appeared to be fairly recent.

Tom Sheriff

SEVILLE SOLAR POWER STATION

Seville is described as the hottest place in Europe, so it is not surprising that the Spaniards have built the largest solar powered station in Europe in the World there. It is called P10 at 11MW and has been supplying electricity to Seville since 2006 and it has been very successful prompting a further larger station P20 at 20MW to be constructed alongside which will be fully operational by 2013. As you can see from the picture, there is a central tower rising to a height of 115 metres, which collects the sun’s rays reflected from 1255 mirrors or heliostats as they are called (624 in the case of P10). The intensity is so great that it boils the water arranged in pipes up each tower and the steam drives turbines in buildings at the base.



THE NEW P20 INSTALLATION

BLACKOUT BRITAIN

A former Grid Control Engineer, Derek Birkett has written a book, “When Will The Lights Go Out?” It is a damning exposé of Britain’s inadequate electricity generation facilities and the over-reliance on renewable energy projects. He says “We are going to pay a very heavy price for the fact that there has been a catalogue of neglect by the former Government, which has focussed on renewable energy sources”. He warned that this reliance is creating a widespread uncertainty in the electricity supply chain. He believes that eventually the Country will have to decide whether to continue to pursue the green ideas or go back to coal and nuclear power. The above title comes from the front page of the Daily Express 19th July!!

I.K.BRUNEL

His Architecture and Ornamentation

When we think of Isambard Kingdom Brunel, our thoughts immediately go to his brilliant engineering achievements. We think of the Great Western Railway and the Clifton Suspension Bridge. We also remember his innovative iron ships, including the SS Great Britain, which now resides back in the Bristol dock where she was built.

However, we do not usually think of Brunel's artistic side, which did so much to soften the grandeur of his engineering works. From an early age Isambard was taught to draw by his French father, Marc Brunel.

At that time Marc and others were developing engineering drawings using colour and shading to 'bring them to life'. Isambard would later use this type of drawing not only to control the work process, but to impress clients. He also became a superb watercolour artist and produced some wonderful landscape and portrait paintings. These include his Clifton Suspension Bridge in its romantic Avon Gorge setting, painted several years before the bridge was actually built!

His major passenger stations were designed to impress. Bristol Temple Meads was built in the Tudor Gothic style. The original passenger shed had a hammer-beam roof and an arcade of Tudor arches supported by cast-iron columns. Paddington Station, opened in 1854, had a technically advanced cast-iron & glass roof, but also much ornamentation. This made the station seem more welcoming to those early railway passengers entering the massive engineering structure. The cast-iron columns, with studded patterns and geometric capitals, can still be seen.

Brunel's designs for his town and country stations were equally inspired. Some were built in the Italian villa style, whereas the City of Bath had a Jacobean frontage to its station, which was designed to contrast with the classical Georgian style of the surrounding buildings. Many of Brunel's railway tunnels had impressive portals, some looking like castle entrances with castellated tops. One tunnel entrance at St Anne's, Bristol, even had ivy planted, which tumbled down the left-hand side.

The original design of the world-famous Clifton Suspension bridge had Egyptian sphinxes on its two towers. Sadly, these were not included when the bridge was finally opened in 1864, but would have been an impressive sight.

So when we next travel by train, or visit the SS Gt. Britain or the Clifton area, we should look out for the architecture and ornamentation around us. If we don't we are missing things to which the great I.K.Brunel himself gave so much thought and attention. *John Haynes*

MEMBERS NEWS

John Redgrove – Having had a stroke he is no longer able to drive, so we don't see him so often, which is a shame.
Roy Dickinson – Roy also is not driving these days due to problems with his eyes, but we hope that some improvement can be effected.

CLIFF BRAZIER

We are sad to report that Cliff Brazier who only joined us last year has died. Cliff was a colourful character in SWEB as District Manager Bristol, orchestrating the amalgamation of the smaller commercial districts into one with a new office building at Feeder Road called Avonbank in 1970. Having been promoted in charge of Bristol, Bath & Weston he went on to be Devon Manager again building a new office building at Sowton. As a hobby he was a keen farmer at both Bristol and Devon

CAIRNS ROAD

A small working party of Chris Buck, Roger Hughes and John Gale has been beavering away at our Archive & Museum on Thursdays repairing the railings on our access steps, which were vandalised. Also John Ferrier has made a support bracket for the model helicopter, which has been fitted by Chris. It certainly looks impressive as if it is flying!!

JOHN FERRIER ON FILM

The Society were approached by Lion TV to be involved in filming at Morwellham. John was asked if he would represent us with some of our older electrical appliances, which were duly handed over at a committee meeting. We understand that John had to dress in Edwardian costume. The series of 12 is called "The Edwardian Farm" on BBC2 (Episode 12) commencing in November. Watch out for John!!

ELECTRIC HUMOUR !!

1. Why is the free electron so sad? He had nothing to be positive about!
2. Why did the lights go out? Because they liked each other!!
3. Why did the teacher decide to become an electrician – to get a bit of light relief!!

FOR YOUR DIARIES – COMING EVENTS

Sat. 9th Oct. TALK – "VICTORIAN SERVANTS"

2.00pm Talk by Pat Hase at Cairns Road, Bristol. Lunch beforehand at a local pub.

Sun.24th Oct. VISIT TO COLDHARBOUR MILL

Meet for lunch at 12.00noon at the Mill followed by a visit at 2.00pm. This will include seeing a working steam engine, which drives the Mill.

Thur. 4th Nov. TALK – NUCLEAR MADE CLEAR"

2.00pm Talk by Stuart Nuttall at The Highwayman's Haunt, Chudleigh. Lunch before at the pub.

Sat. 29th January 2011 ANNUAL LUNCHEON

AT THE SWAN HOTEL, WELLS

Meet at Bishop's Palace at 10.30am for coffee and then a tour at 11.00am, then retire to the hotel from 12.30 pm for pre-lunch drinks with lunch commencing at 1.00pm. Speaker Cyril Routley "**Life on Board SS Gt. Britain**".

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