

# HISTELEC NEWS

NEWSLETTER OF THE SOUTH WESTERN ELECTRICITY HISTORICAL SOCIETY

No. 30

AUGUST 2005

## GOOD HOLIDAYS?

We hope that everyone has managed to get away on some splendid holidays. I have been to Italy for a three-centre holiday, Rome, Elba and Tuscany - excellent. Even with the super sights, brilliant sunshine and luscious food, I couldn't help but notice the Italian pylons – they are painted red and white striped at the top 30ft or so. They must experience a lot of low flying aircraft or are the Italian pilots a bit like their car drivers? *Peter Lamb*

## WPD CHIEF VISITS CAIRNS ROAD

Robert Symons, Chief Executive of Western Power Distribution visited Cairns Road at the end of March to view the progress we have made in developing the WPD switch-rooms at the major substation there. Sharon Cross from Corporate Communications accompanied him. They appeared impressed. It is still intended that we should have an "Open Day" for our membership sometime in the future when the threat of the mobile phone mast has gone away.

## BBC AT THE MUSEUM

A representative from the BBC visited our Cairns Road Museum to view our collection of historical appliances for a programme. The lady wished to borrow some small appliances of the 1950's for a programme on BBC4 about kitchen designs of that period. We lent them three appliances – a fire, a coffee pot and a Goblin Teasmaid.

## NEW POWER STATION IN THE WEST?

Seven gas fired power stations are being considered, so the Times (10th May) reports. However the electricity generators including Innogy and Centica are reluctant to invest in these projects until energy prices are more stable. The seven stations would be required if ageing nuclear power stations were taken out of commission. It was a surprise to read that the site of the West Country station could be at Langage in South Devon.

## WIND FARM EXPERTISE

We have wind farm expertise in the South West and in particular at Bristol. The firm is Garrad, Hassan & Ptners, based at St. Philips but employing 160 employees worldwide. Mr. Garrad, the Managing Director, made the headlines in the Bristol Evening Post recently, since he is planning to build three wind turbines at Avonmouth on industrial land far from any population, which bodes well for him gaining planning permission.

## ELECTRICITY HOUSE

Retired members of SWEB may be interested to know that Electricity House in the centre of Bristol and once the headquarters of SWEB has been given a new name. It has been renamed Westgate by its owners Royal, Sun Alliance Insurance.

## WEST END SHOW SHOCKER

We seem to be stepping back 120 years with a new show, which opened at the West End in July for one week. It was called the "Theatre of Science" at the Soho Theatre. Two scientists, Professor Wiseman and Dr Singh from the University of Hertfordshire, are behind this new venture firing bolts of lightning consisting of a million volts of electricity at each other with each of them consecutively in a cage known as the Faraday Cage. It is especially interesting that they are using Tesla Coils to obtain these very high voltages, which brings us back to our April Newsletter Supplement. It has been necessary to obtain a £12 million insurance cover, but the premium wasn't mentioned! The scientists wanted to recruit a volunteer from the audience, but were refused permission by Westminster City Council and their insurers!!

## STRIDING PYLONS?

We have many and varied enquiries via the web site, approximately 3 or 4 a month, but recently we have been asked "What was the music which accompanied the striding pylons advertisement on TV?". The enquirer cannot state when this advert took place or by whom. We think it was a national advert at the time of privatization. Has any member any idea about this? If you have any information on this, ring the Secretary on 01275 46310.

## MASSINGHAM

Arnos Vale Cemetery in Bristol is a bit like Highgate Cemetery in London in that it houses massive ornate graves and tombstones of notable Victorians. It was falling into desperate decay and has been saved by a group, who have pressurised the City Council to buy it. The preservation group advertised recently for information about people buried there. Your Secretary immediately leapt into top gear and provided them with the complete history of the Massingham family, which he researched for the supplement April 2003. What ever has this to do with electricity? – well the father of Henry Massingham, the man, who started the electricity supply companies at Taunton, Exeter and Bath, is buried there.

## **FERRANTI 10KV CABLE**

The recent acquisition for Cairns Road Museum of two short lengths of original Ferranti 10kV cable, one incorporating a joint, has prompted John Heath to give us a write-up.

### **The Grosvenor Gallery Installation**

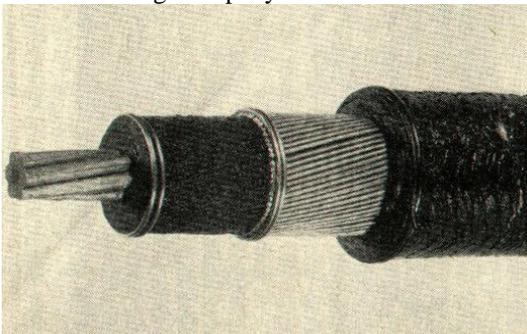
One of the most well-known early electrical generating stations was at the Grosvenor Gallery (now the Aeolian Hall), in Bond Street, London, and it had as its Chief Engineer, Sebastian Ziani de Ferranti. The generating voltage was 2,400 volts single phase a.c. In addition to the supply to the Gallery, supplies were given to adjacent premises. The entire distribution was by means of overhead conductors, radiating from a mast on the roof via masts on convenient buildings. For those taking a supply, a 1 h.p. transformer was provided.

The Grosvenor Gallery installation is of historical significance because it represented a challenge to those experts who championed low voltage d.c. for distribution. It was considered that 100 volts d.c. was a safe voltage. The main disadvantage was the short distance over which low voltage d.c. could be transmitted, namely approximately  $\frac{3}{4}$  mile. The contrary views that high voltage a.c. was superior were helped by the introduction of the transformer in 1882. By 1885 the design of transformers had advanced such that high voltage a.c. distribution over fairly large distances became a real prospect.

### **Deptford**

The London Electricity Supply Corporation was formed in 1887 by the directors of the Grosvenor Gallery Company. Ferranti was of the opinion that building a large power station in the crowded heart of London was impracticable and, as was already the trend with gas distributors, he recommended and convinced the directors that a new power station should be built away from the centre at Deptford. For the supply from Deptford, he proposed transmission at 10,000 volts, considerably higher than used up to then. Although nowadays this seems quite ordinary, it caused a sensation since, at that time, the limit of distribution voltage was around 3000V.

Ferranti experimented with two types of cable for 10kV operation; rubber and jute insulated. The first cable was rubber insulated, made by the I. R. G. P. Company. This was short lived because the high permittivity of the rubber, the charging current of a seven mile main was likely to be excessive, also the cost of the rubber was very high. For the majority of the route Ferranti adopted the jute insulated concentric cable manufactured by the Fowler-Waring Company.

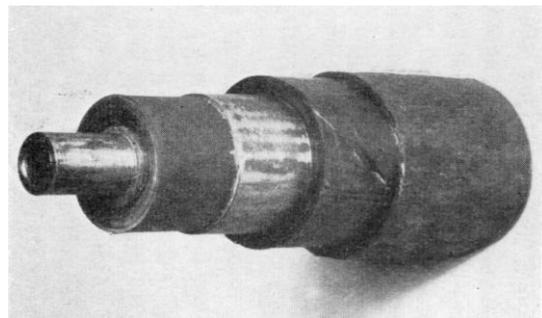


Although a few years later, the Deptford mains were laid underground, Ferranti obtained the agreement of the South Eastern Railway Company for the cables to be cleated along the parapet of their railway viaduct, this avoided the hassle of obtaining permission to excavate in the road. The electrical performance of the cable was satisfactory but its disadvantage soon became apparent. It was exposed to sparks and flying cinders from passing locomotives and exhibited a tendency to catch fire.

After this brief but disastrous experience of this type of cable, Ferranti proceeded to design and make one. The result of his work, the "Ferranti Main" carried power at 10,000 volts from Deptford to central London for over 40 years.

Ferranti's proposal for a concentric cable with the outer conductor earthed provoked tremendous criticism from fellow engineers and the Board of Trade. It was however a trait of Ferranti that once he determined he was right, there was no changing his mind. To demonstrate the safety of his proposed cable he arranged a frightening demonstration. His assistant, Harold Kolle stood on an earthed copper plate, holding a cold chisel to the live mains in his bare hands. Another assistant using a sledge hammer drove the chisel through the conductors resulting only of the blowing of the main fuse link. Kolle, when asked if he had been frightened replied yes, because the other guy had not used a sledge hammer before.

### **The "Ferranti Main"**



It was no ordinary cable, but a system of concentric conductors in 20 ft lengths. The conductors were two brazed copper tubes, each approximately 0.27 sq. in. in sectional area and  $\frac{13}{16}$  inch and  $\frac{115}{16}$  inch in external diameter. The inner copper tube was insulated by wrapping it with layers of brown paper which had been dried and then impregnated with ozokerite wax, (plentiful as a by-product of the making of candles). The paper was rolled tightly around the copper tube, while the wax was warm, in a special machine, until the built-up insulation had reached a thickness of about half an inch. Another copper tube, similarly insulated to  $\frac{1}{8}$  inch thickness, was drawn tightly over the first. The two were then slipped into an outer protective tube and melted wax forced in. The original patent included the provision of holes in the inner tube to allow the permeation of impregnant into the insulation when introduced under pressure.

Although the main was inherently rigid, bends of ten foot radius were made by shaping the tubes with a rail bender.

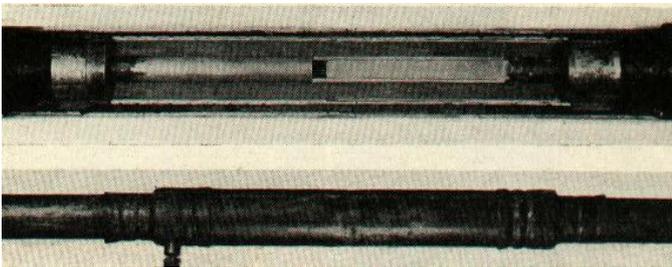
### FERRANTI CABLE continued

This caused some distortion of the paper insulation, but no problems were experienced as a result of this practice.

Special plant was installed at Deptford to manufacture the concentric mains under the supervision of H. W. Kollé and laying commenced in the summer of 1890. For a great part of the distance they were cleared to the parapet of the South Eastern Railway viaduct, but in part buried in asphalt-filled troughing beneath roads which followed the route of the railway. The four mains were looped into a switching point in Blackfriars Road and terminated at the London Electric Supply Company's Cockspur Street sub-station in Trafalgar Square. Two continued to the Grosvenor Gallery terminal in the old boiler house at Bloomfield Place. Supplies commenced on February 16<sup>th</sup> 1891, the mains remained in use until November 1933.

### **Ferranti Joints**

The cable circuit utilised mechanical joints, able to be made by unskilled labour. The connection did not use solder but relied upon intimate mechanical contact. Four cables were laid side by side, there were 1100 joints per mile of trench and out of 8000 joints, only 15 proved to be faulty.



The outer copper tube was cut back for approximately 21 inches and the insulation tapered down to form a long cone. The corresponding end of the adjacent tube was reamed out to provide an exact fit. The inner conductor was jointed by a copper rod and the outer conductor by a copper sleeve. The copper sleeve was then grooved to grip the conductors and to lock the joint firmly after it had been pulled together by means of screw jacks. The outer sleeve was of iron and topped up with bitumen compound. The joint, although electrically efficient, suffered from the lack of provision for expansion of the conductors on load. Although the system operated satisfactorily for over forty years, some problems were experienced with joints as the loads increased.

Subsequent repairs were made using a 10kV flexible paper insulated cable made by B. I. Wire Company at Prescott and the Siemens N-H cable.

*John Heath*

### **@BRISTOL VISIT**

The @Bristol visit at the end of June was a struggle to devise due the difficulty of finding a suitable restaurant nearby, so we settled for the Pumphouse Inn nearly a mile away. The good news was that the Inn had been recently refurbished and was a splendid venue, the bad news was that only 10 people attended and only 6 of those intrepid explorers went on to the @Bristol Complex on foot in the rain. A super time was had by a few and especially those who returned by ferry, which included a tour of the harbour in fine weather by then.

### **HEATH, HAYNES & TRAINS**

When I moved from Cornwall to Congresbury a year ago, I naturally took an interest in the North Somerset area and had a look at the OS map. The only one I had of the area was a 1 inch map revised in 1956!

Being interested in old railways I noticed the dotted "track of old railway" between Weston-super-Mare and Clevedon. This was obviously the shortest route between the two towns (6 1/2 miles), the road route prior to the motorway would have been via Yatton – 11 miles!

I began looking into the history of this line and spoke to John Heath (another railway buff) about it. He lent me a very interesting book on the subject (see below). I was intrigued to learn that it had been a light railway, which opened in 1897 and closed to passenger service in 1940. It was known as the "Weston, Clevedon & Portishead Railway". I found out that Colonel H.F.Stevens took over as General Manager in 1911. This name rang a bell, since when living in East Cornwall, I had read that the same man had been associated with the railway between Calstock and Callington along the River Tamar. This had originally been a 3ft 6in gauge mineral railway opened in 1872 serving the local tin mines. I had walked part of the route in my East Cornwall days.

This Tin Line linked up with the Plymouth, Devonport & South Western Railway at Bere Alston. Calstock is on the Cornwall bank of the River Tamar and it was necessary to cross the river. This was achieved with a magnificent viaduct, which still proudly stands to this day.

From John Heath's book, I realised that Col. Stevens had built a little empire of light railways stretching from Ashover Railway in Derbyshire to East Cornwall and across to the East Kent railway. In fact he was associated with 16 light railways between 1898 until his death in 1931, aged 63.

In 1923 he was offered the chance of grouping his lines into the "big four", but declined to do so and remained independent. The lines were all run on a shoe-string budget and hardly made any profit. He used second-hand engines and carriages and carried out minimum maintenance. He even designed a petrol powered rail-bus using a lorry chassis. After his death, the lines slowly declined into bankruptcy and were nearly all closed down. He was certainly an unusual person, who ruled his empire from an office in Tonbridge. However he brought public transport to many rural areas, which then reverted to their former isolation with the "Beeching Axe" 1966.

Hooray for old maps and idiosyncratic engineers!

*John Haynes*

*Notes :*

1. *The Colonel Stevens Railways by John Scott-Morgan 1978.*

2. *The Light Railway Act 1896 allowed lines to be built to various gauges and to less onerous standards (25mph maximum speed).*

## **PETER TUDBALL REMEMBERS MINEHEAD ELECTRIC SUPPLY COMPANY & BEYOND**

### **Part 2 - Continued from the last issue**

In 1946 when I started work as an apprentice at Minehead, having completed three years at Bristol Technical School, materials were hard to come by, with the war just over and we, as a company, a subsidiary of West of England Electricity, were in competition with local contractors, who went to Bristol to obtain goods on the black market. Local contracts were mainly on the new council housing estates and licences had to be obtained to get the necessary materials. The ring main system for power circuits was introduced with the 13 amp outlets. There was intense competition by many manufacturers introducing their own designs and I recall these being D & S, Revo and Wylex. The Minehead firm of Greco made adaptors and plug tops of various designs, for all types of socket outlets. The main contracting unit, with the metering department and the stores was based at Alcombe Works, but Williton and Porlock had their own smaller depots and were part of the Minehead Branch. I suppose in the 1950's we had a staff of fifty plus in the commercial department.

When we were nationalised in 1948 things changed very slowly. I was de-mobbed in August 1949, having completed my two years national service in the RAF and I found that very little had changed. It must have been in the 1950's when things altered very gradually. Transport became more available and there was then the incentive to learn to drive, which was not easy for many as owning a car was well out of reach of most people. If you had a car, a chequebook or a telephone you were someone to look up too at that time! Motorcycles became more popular and affordable, with ex-army surplus motorcycles becoming available, many staff were able to acquire this means of transport. One of the staff, who rode a pony to get to work, (which he tethered on common ground beside the depot) purchased an auto-cycle!

Many of the office staff (stores and accounts) were transferred to Taunton in the early 1950's, which caused them great hardship with travelling arrangements. Only a few could drive and even less had any transport of their own, buses and the trains were not very convenient. However after years of overcoming those travelling difficulties most gradually moved to live in Taunton. They all did well for themselves, so it all became worthwhile. Managers became more approachable, such that we were more aware of what was going on than when it was a company. In the past we didn't even know who the directors were and even the office staff never knew when or where they met. As things became more open, with work committees etc, the atmosphere in the organization became much better.

The meter department, meter reading, contracting, installation testing, the overhead and underground mains became separate units with their own foremen and transport. Rural development in this area of Exmoor was a big undertaking, as many of the villages and farms were not near to the mains supply. C.C.D. (based at Taunton) was used to a great extent in connecting these remote places to the ever-expanding network. New testing

equipment was gradually introduced and the treasured possession was the testoscope (phase tester). Gone were the days when the test-lamp was used to check that the water main was a good earth! Tariffs were introduced for different types of properties and being involved with commercial and farm tariff assessment in this area I didn't regard it as fair to the many bed & breakfast premises, which advertised in the Town Guide and thus they were considered as commercial premises with yearly assessment. I was not always popular, especially amongst people I knew!

With fuel rationing in force when I started back in 1946, immersion heaters became more popular but as there was not sufficient power available from the grid to meet the demand, houses with both cookers and immersion heaters had to be connected to a changeover switch so that only one or the other could be used at once. Sink water heaters and larger types for baths became popular. Washing machines, refrigerators and later freezers became available as luxury items, not as a necessity as we know today. The first night storage heaters introduced were Unidare manufactured in Northern Ireland, but were only available for commercial premises. We received them from the manufacturer all assembled and therefore were difficult to position in premises. It was several years before night-storage heaters were made available for domestic consumers.

I will conclude briefly that at Minehead we were part of the Industrial Civil Defence set-up, which would have been in the 1960's when the cold war was at its worse. We were involved with wardens and first-aiders from the Taunton office and with monthly exercises at Minehead we later competed with other teams from the southwest on prepared bomb damaged sites at Netham (Bristol), Bath, Honiton and Plymouth with reasonable success. Cliff Short of Bristol was the main organizer, with Don Haste of the Taunton Branch being our leader. We had many enjoyable times with these exercises, but thankfully our training was never put to the actual test!

*Peter Tudball July 2005*

## **MEMBERS NEWS**

### David Hole

Recently, committee member David, had a major heart attack in hospital, where he had been taken since he was feeling unwell. He is making good progress, and will return to committee activity, when he gets better.

### John Gale

At their May AGM, John, past Chairman of SWEHS, was elected General Secretary of the Retired Professional Engineers Club in Bristol.

### John Haynes

John was very prominent at the Glastonbury Pilgrimage in early July through the streets of Glastonbury leading the Bishop of Taunton in the procession suitably attired in a cassock, which he wears as a server at a Weston-super-Mare church.

### Ted Luscombe

Member Ted has taken on the task of writing a history of the church he attends.

## LYME LIGHT

Member, Martin Roundell Greene has written a large illustrated book on the history of electricity of Lyme Regis using the above title and weaving into his story the history of the Town over that period together with the national scene at the time, which would have involved a considerable amount of research.

## ROTTEN FINIALS

*Member, David Whitehead (ex-CEGB) has written about his early days with the GPO, following his reading about finials in a local history journal.*

I was reminded of my time as a youth in training (apprentice) in what was GPO Telephones. Must have been 1937. I was allocated to a small overhead line gang and occasionally got to ascend ancient telephone poles in Folkestone. Many were relics of the National Telephone Company days. One such had a wooden finial, which I was rash enough to touch with my hand on reaching the top of the pole. It nearly came adrift as it or the pole top was rotten – a bit scary!

*David Whitehead*

## FUSION ELECTRICITY?

The largest fusion reactor in the World is to be built in France near the Cadarache Nuclear Centre. The EU, together with five other partners Japan, USA, China, Russia and South Korea, is financing it. Why so many it will cost 10 billion euros? Don't expect any quick answers – it is said to take 10 years to build and another seven to get any results. The long term aim of course is to generate electricity direct from nuclear fusion, which would be more efficient than electro-magnet induction.

## WPD PENSION FUND

Some of you will be pensioners from SWEB/WPD and may have realised recently from reports that there has been a large deficit of the pension fund. Some of us were concerned about the situation. Your Secretary discussed this with Richard Paine (Ex-Financial Director) and was invited to join a discussion on the subject with Malcolm Carson and Keith Oxtoby. They went on to have meeting with the Trustees of the WPD Fund, including David Harris. They were reassured that the situation was in hand and were impressed with the extra steps being taken regarding the security of the pension fund.

*Peter Lamb*

## MICROGENERATION?

The Government have launched an initiative for small scale generation for individual homes. Industrialists involved in micro-generation are obviously enthusiastic, since it involves many spheres such as micro-hydro, micro-wind, solar power, fuel cells and combined heat & power units. Other organisations are sceptical that home generation will never contribute to enough energy to benefit the Sustainable Energy Policy.

## GARDEN NOTES

Daffodils at Easter are like strawberries and cream, but with the variable date of Easter, 27<sup>th</sup> March this year and 16<sup>th</sup> April next year, it's not easy to get that lovely display of yellow in the garden at the right time. Warmer winters have resulted in lots of plants flowering earlier, and this doesn't help. The answer is to read the label

when you buy your bulbs and get a selection of early and late flowering varieties. Over the years, David has noted that the plain yellow varieties flower earlier and the bi-colour and multi-headed ones later.

After flowering, the plants should be deadheaded and the foliage left undisturbed for at least 6 weeks after flowering so the bulb can build up its energy for next year. This can sometimes be a problem if you want to move the bulbs to make room for summer planting. The solution is to plant the bulbs in old plastic pots and then plant the pot of bulbs where you want them. After flowering the pot can be lifted and put somewhere else in the garden for the tops to die back. You can then plant the pot again in the autumn for the following spring. Remember to plant two layers of bulbs in the pot to give a good display. The dwarf and miniature daffodils and narcissus are becoming very popular and look good in pots and are less prone to wind damage.

Bulbs can be planted at any time in the autumn and I have had good results this year from some planted just after Christmas when the garden centre was selling them off cheap. Then settle back in your chair with the seed catalogue and think of next summer.

**PS – How do you find out the date of Easter? Well by definition it is the first Sunday after the first full moon after the spring equinox! David has a spreadsheet to do calculation, if anyone is interested. David Hutton**

## ELECTRICITY POEMS

*From the Torquay Electricity Undertaking April 1933*

There was an old woman, who lived in a shoe,  
She had so many children, she didn't know what to do,  
She gave them a whipping, she gave them some bread,  
And did all the work, when she'd sent them to bed.

The modern old woman, who lives in a shoe,  
Though she has many children, she knows what to do,  
In a "Shoe" all-electric, they are good and well fed,  
And the work is all done, e're she sends them to bed.

## FOR YOUR DIARIES – a Reminder PROGRAMME for the REST OF THE YEAR

### Fri. 28<sup>th</sup> Oct. VISIT MET. OFFICE, EXETER

Two groups (15 members each), one in morning and one in afternoon. Pub lunch at the Cat & Fiddle Pub on the A3052. More details nearer the date.

### Sat. 26<sup>th</sup> Nov. VISIT TO STEAM MUSEUM

at Swindon. Meeting there at 10.30am for coffee with a conducted tour at 11.00am. Lunch will be had from the many cafes and restaurants in the shopping mall and then a free ranging afternoon shopping

## NEXT EDITION

This newsletter is produced every four months. Please send information, articles, photographs or letters to :- Peter Lamb at 35 Station Road, Backwell, Bristol BS48 3NH or telephone him on 01275 463160 Or e-mail him on [lambvandp@uku.co.uk](mailto:lambvandp@uku.co.uk)

*Leave this for Xmas*

**ANOTHER CRACKER JOKE**

**Q.** How did Noah see the animals in the Ark at night?

**A.** By arc lamp flood-lighting of course.