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## Princetown Electricity Supply

by Ted Luscombe

*Some notes compiled from an Archive of the Duchy of Cornwall, which are kept at the Duchy Office in the Duchy Hotel, Princetown.*

The possibility of a supply of Electricity for Princetown was initiated in 1922 by the Duchy. A generating station was built, and supplies to street lamps and properties began in 1924. The archives contain several folders of correspondence, estimates, etc., from 1922 up to the time when the system was absorbed in the West Devon Electric Supply Company Limited in 1932. From this it is possible to discern the history of this early electricity system, though, unfortunately there are no photographs or detailed plans of the system. However, the building still exists, and alongside it is the more modern (1959) 3 megawatt "pocket" power station.

The station was being planned, tenders, etc., sought in 1922/23. The consultant was a Mr. A. S. Charlwood, who was later referred to as the Duchy "head electrician"! He lived at Albaston, and was obviously connected with Hingston Down mine. (Was this operational at that time? Mention is made of an electric lighting set in store there on the 6th March 1922)

The land for the proposed station was owned by Mr. Geo. J. Rowe, the proprietor of the Duchy Hotel. He was rather loathe to sell this piece of valuable grazing land, but eventually agreed a payment of 30/- per annum for the 1/4 acre site, (Interestingly, one of his letters (5 Feb 1923) from the Hotel, regarding the sale, included ELECTRIC LIGHT in its printed heading. So presumably he had an in-house set?)

The D of C head office approved (13 Dec 1922) a report from Mr. Charlwood for the provision of electric light (as inevitably in these early days, lighting was the only concern) estimated cost £5000 - £6000. The higher cost would involve the undergrounding of cables, and this was chosen as would benefit Princetown. There would be two semi-diesel engines installed, one as a stand-by. The Council of the D of C had in mind the eventual probability of the Prison coming into the scheme. Earlier in 1922 Messrs Drake and Gorham sent a representative to meet Mr. Proudfoot (Duchy secretary at Princetown) to report on the possibility of utilising water power for the electric light, but no details of this meeting were found.

Details of the proposals. Mr Charlwood anticipated that there would be 80 consumers, with an expected income of £612 per annum (The archive contains a list showing the anticipated use and revenue for the hotels and shops, etc.). He expected to need to supply about 200 units over an 8 hour period, capacity 28 units per hour (as it is put), presumably a 25-30 kW rating. There would also be a storage battery (6 units for 10 hours), so obviously a d.c. system. The whole to be housed in a building 60ft. x 30ft. x 10ft. He proposed a Tangye 47 b.h.p Heavy Oil Engine (4 stroke horizontal), Electric Lighting Type engine. It was subsequently bought (£1000) No.31997, and prior to its installation was exhibited at the Devon County Show at Bideford.



**Fig.1 Princetown Generating Station Building**

The Duchy architects, Richardson and Gill, sent (3 May 1923) plans of the "Duchy of Cornwall Electric Supply Station at Princetown" (In the archive, but no internal layout). Mr. Walter Peacock, the secretary at Buckingham Gate wanted a special design for the roundel to be fixed over the building, and this was executed in London. There are no

details in the archive about the design. The roundel is still in place (2001) but, with the ravages of the weather, detail is difficult to discern from the ground (Thor holding a flash of lightning??) Obviously a close inspection would reveal more; maybe more details in the D of C archives at Buckingham Gate?

An order was sent (26 July 1923) to Edison Swan Electric Co. Ltd at Southampton for :-

- 1) DC Shunt Wound Interpole generator 150 A at 210-220 volts
- 2) Battery charger booster 100A 100V
- 3) Eight street lamps 60 Watt 1/2-watt lamps.

In June, tenders were being sought for the laying of the underground cables, the Devon County Council (DCC) having given planning permission on 17 May 1923. The main contractor for the electrical work was W.G.Heath of 41 George Street, Plymouth (branches at Plympton, Ivybridge, Buckfastleigh and Tavistock). This well-known firm was a pioneer of several small installations in West Devon. Mr. Heath eventually became a director of the West Devon Electric Supply Company Limited, which was setup by Frank Christy of Christy Brothers, Chelmsford.

D. Anderson & Son Ltd at Stretford, Manchester provided the roof for the building. They hadn't realised that it was such an exposed site at 1400 feet in making their tender (73ft x 31ft) at £196, although they were confident in their design. Correspondence reveals that there was some leakage, but it was all remedied by May 1925, and the roofs still there in 2001! (Incidentally, the roof of Princetown Town Hall was very similar, and probably supplied by Anderson?)

The archive contains a letter (11 July 1923) to the Duchy from the Parish Council at Gunnislake, asking whether the Duchy would be prepared to sell an electric lighting set for the Gunnislake Institute and Public Hall, as soon as the installation of electric lighting at Princetown has been completed, and the several small electric plants are available (It would be interesting to know where these several small plants were situated?)

A letter (14 Aug 1923) to the Devon County Council from Walter Peacock:- "The DCC had agreed to underground cables under certain main roads at Princetown". But said that the Duchy would be required to pay a fee of 1 guinea/annum. Mr.Peacock pointed out that, although the DCC had rights on the surface, the soil was Duchy property, and it could tunnel under the surface without any agreement! He pointed out the benefits which electric light would bring to the people in Princetown.

Correspondence of 16 October 1923 shows that the station was not quite finished, but the Tangye engine was certainly in operation on 16 February 1924. At least one presumes so, because cover against fire was then taken out in the name of the Prince of Wales with Guardian Assurance on that date.

- 1) £700 on building
- 2) £1150 on machinery - mentions one Tangyc oil engine, generator, booster, switchboard
- 3) £950 on accumulators.

### **Street Lighting**

It is not clear as to when this was first switched on. But undoubtedly this could be researched through the local papers. The order for street lamps was placed (as we have seen) on 26 July 1923. At this time the Lydford Parish Council (the Forest of Dartmoor was part of the Lydford parish) had written to the Steward (Mr. Proudfoot?) regarding the terms, under which the light could be provided. It was suggested that the lamps would be needed from 1 October to 29 March, - 180 nights. But for 8 nights of each month, in consequence of the moon, the lamps need not be lighted. So 132 nights x 5 hours, 660 hours in total. The request was repeated on 17 May 1924, when presumably the lamps had been erected. Terms had still not been agreed, but these were eventually agreed on 11 December 1924. 8 Standards, 60 Watt, 660 hours. £30/annum

The Great Western Railway was in correspondence with the Duchy on various matters. The oil would be delivered by rail to a holding tank near the railway station, and then pumped the short distance to the generating station, which would involve wayleaves on GWR land. The GWR (29 November 1924) were building some new cottages, and would wire them for the electric light. But the existing cottagers were not anxious to have electric light, but the Station Master would be pleased to have it! (He was probably in a better position to afford it!) The new installations in the cottages were reported as in a "defective condition" as soon as 22 April 1926! Would this have been the responsibility of the Duchy? Probably, if they had contracted to do the wiring.

On 2 June 1925 the Prison Officers Club were requesting an electricity supply for the officers recreation room, to enable them to have cinema shows. (The first film shows in

Princetown?)

On 27 July 1925 the Duchy approached the Prison Commissioners about supplying the prison with electric light. At a social gathering in the town Mr. Peacock said that every house (one wonders!) outside the prison had had the light installed - the charge being 1/- per unit - the same as in Tavistock, and most of the smaller towns. (In Plymouth at this time it was about 4 1/2 pence per unit). It would be cheaper for everyone, if the prison would take a bulk supply; the generating station could take a second engine (It is not clear as to whether or not the stand-by engine had been installed at this date - it seems unlikely, in view of the insurance valuation). The Duchy would be prepared to do the wiring. Mr. Charlwood could enter in to initial discussions, but the Commissioners decided that it would be too expensive. Of course the prison had its own gasworks, and was probably happy with gas. The widening possibilities of using electricity for power applications were perhaps not so apparent then.

The West Devon Electric Supply Company Limited was registered on 23 December 1931, and formed to acquire and take over the various small undertakings in West Devon, which included that at Princetown, which was transferred in March 1932. The archives contain some correspondence between the Duchy and Frank Christy the Chairman of the new Company.

### **Additional notes**

Not surprisingly the D of C archives do not contain any further reference to Electricity after the transfer of the system to the West Devon Electric Supply Company Ltd. The generating station would have continued to operate until an 11 kV line was erected from Mary Tavy through Peter Tavy, Moorshop and Merrivale. A map of the 11 kV lines dated June 1938, shows that it was still projected. It was presumably completed in the 1940's. Mr. C. Hayward of Princetown told me that he believes that mains electricity came to Princetown in 1947, which would have involved the change over from d.c. to a.c. Perhaps the link was delayed by the war? This topic needs further research, and also the date, when electricity was first used in the Prison. Certainly by 1959 Princetown was still dependent on this single link, which was often at risk due to bad weather.

### **Princetown Pocket Power Station**

The SWEB Chairman (1956-1973) conceived the idea of using an aero engine to drive a generator in a small station in a remote area. The first installation was at Princetown to give security of supply and to overcome the problems of voltage drop due to the distance from Mary Tavy. The power plant consists of a 4,250 SHP Proteus engine coupled to a 1,000 RPM, 3.2 MVA, 3 phase, 50 Hz, 11,000 volt Electric Construction Co alternator and exciter. This together with its switchgear and controls is housed in a small building on light foundations, and is remotely controlled over the public telephone system. There is no cooling water requirement or need for manning of the plant. The station was commissioned on 11 December 1959. The output was 3.0 MW. It is claimed to be the world's first unmanned power station, and is still in occasional use. It would have also enabled mains supplies to be connected to surrounding villages in the early 1960's. These details have been taken from a paper "SWEB's Pocket Power Stations" by John Gale (Histelec News December 1999).



**Fig.2 Old Generating Station alongside New One**

I have been told by Mr. Hayward that the original generating station building was for sometime used as a Masonic Hall. It is now (2001) being used by a firm, "Pressed Men", making naval memorabilia.

## Supplement to HISTELEC NEWS No.21 August 2002

### SEEBOARD EXPERIENCES

by John Perkin

*John Perkin is a member and the Electrical & Mechanical Engineer and Energy & Water Manager with Taunton Deane Borough Council. Between October 1969 and April 1970 as an Overhead Line Engineer with the South Kent District of Seaboard, he was diverted to assist with repairing the damage caused by the Blizzard of the Wednesday 4th March 1970. He was requested to transfer to Commercial Engineering the next month in April 1970.*

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Severe blizzard conditions in the South East of England on 4th March 1970 brought with it wet snow with ice formation causing the loss of many thousands of consumers due to overhead interruptions of 132, 33, 11, 6.6 kV and MV/LV circuits. A peak wind speed of 42 knots was recorded at Folkestone at 18.00hrs, with snowfall ceasing around midnight.

Around midday on that day I was undertaking surveys with a Student Engineer to the east of Folkestone when almost white-out conditions descended upon the area. I radioed into the Control Centre for instructions and was requested to return to the office. For the next three and a half days, I was immediately given HV authority and sent out with linesmen in a LandRover to replace overhead line fuses in the Romney Marsh area of the District as directed by radio communication. I was eventually sent home almost exhausted on the following Saturday lunchtime.

As a thank you to all of the many staff involved, Seaboard gave a dinner dance at one of the big hotels in Folkestone a few months later.

It is interesting to note that SWEB helicopters played a major role in making the repairs after the blizzard. One helicopter was obtained from the RAF and two helicopters from SWEB. These left their base at dawn on Thursday 5th March and following refuelling at Redhill, they were directed by the Kent Group Control at Rochester to various duties. The R.A.F. helicopter was under the direct control of the Kent Group Control and was employed patrolling the Canterbury/ Betteshanger 33kV circuits by this means five broken spans were found on the Betteshanger/ Tilmanstone section. This helicopter was also used for lifting personnel into Wingham and Snowdown together with the necessary materials to repair 33 kV faults. It was soon apparent that the RAF helicopter was of limited effectiveness, when used to patrol overhead lines. This was entirely due to the inexperience of the pilot in this type of work, together with the inexperience of the Seaboard observer. The capability of such a crew is restricted in the main to the lifting of men and materials in and out of snow bound areas. It was the opinion of the RAF during Thursday afternoon that the "disaster" aspect of the work was receding and the helicopter returned to base at 15.30 hours.

The SWEB helicopters were allocated to South Kent district and a landing site was arranged near Folkestone. By 11.00 hours on Thursday 5th March, both helicopters were in service on line patrols designed to establish points of damage on the 11kV system. They continued working or these patrols until dark and were invaluable in identifying and appraising the extent of damage. A South Kent engineer was attached to each helicopter to provide personal knowledge of the routes to the lines, thereby directing the helicopter crews more efficiently in their patrols. Both SWEB helicopters continued operating on Friday on line patrol work, gradually turning their attention to the provisions of men and materials at isolated positions. By now it had been decided to operate the helicopters from Ashford Airport, since facilities existed there for fuelling and maintenance. At one time during Friday afternoon weather conditions deteriorated with intermittent snowfall occurring and for a short time they had to return to Ashford, since flying was impossible. They had however taken off at the earliest possible moment, while weather conditions were still somewhat imperfect. It was not until mid-day Saturday 7th March that the helicopters were released, since all line patrols had been completed and all equipment and personnel transported. By now road conditions were rapidly improving enabling normal access to be gained.

An article in the Seaboard publication "South East England Blizzard 4th March 1970" is quoted as follows:-

"Mention has been made of many odd useful aspects of helicopter work. Not the least of

these was advice on passable road routes, which were given, thereby enabling access routes to damaged lines to be determined. It is quite clear that the service provided by the helicopters was invaluable in this emergency, particularly the service provided by pilots and crew experienced in overhead line patrol work. There is no doubt that in the South Kent district very considerable savings in time were effected by the information and transport provided by these aircraft. Their outstanding contribution, the evaluation of damage, transport of men and materials and rapid assessment of access facilities, cannot be over-emphasized. On Thursday 5th March, movement by road was largely impossible throughout Canterbury and South Kent Districts, but the availability of the helicopter assistance enabled line patrols to be instituted, staff to be lifted into situations and materials to be dropped at many points. Some 36 hours of flying was achieved during the emergency, 6 hours by the RAF and 30 hours by SWEB helicopters. During this flying, some 250 miles of lines were inspected, 52 major faults found and some 75 flying sorties made. The Board is currently considering entering a consortium with the SWEB, SWaEB and MEB and experience in Kent has undoubtedly contributed greatly towards Seeboard's appreciation of the use of these aircraft. Arrangements are currently in hand to evaluate the use of these aircraft for routine overhead line patrol duties. The outstanding point, which came to light from the employment of these aircraft, is the need to use specialist crews, experienced in overhead line work".

***We are indebted to John for telling this tale from outside our area, which helped to encourage the SWEB Helicopter Team to expand and cover five regional electricity companies, which is still being operated today even after privatisation and the transition to Western Power Distribution. Ed.***

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