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West Of England Electricity

by the late Selwyn Grant OBE

Recently we have been asked for details from our Archives of a certain West Country engineer called Dr. John Purves. It transpired that he was the main instigator of the Devon conglomerate called "West of England Electricity" wholly owned by Whitehall Securities Corporation Ltd, a national finance company. John Archibald Purves was born in Taunton in 1870 and gained a doctorate at Edinburgh University, after which he gained some experience in Scotland with electricity undertakings. He then moved to Devon in 1902, where he with his brother set up the Paignton Electric Light and Power Company in 1908. At that time he had set himself up as a consultant at 82 Queen Street, Exeter as the Western Electricity Corporation, with one intention of promoting hydro-electric schemes on Dartmoor. The 1920 Parliamentary Bill for hydro-schemes on five rivers was thrown out after opposition from the Dartmoor Preservation Society. The story continues in the pamphlet published in 1948 by the late Selwyn Grant below on behalf of W of E. There is no record of Mr. Grant transferring to SWEB in 1948, so one must assume that he retired.

Chapter I - Inception Of The Scheme

The association of Whitehall Securities Corporation Ltd. with electricity supply in the West of England began in October, 1928, through an introduction to me of Dr. J. A. Purves, D.Sc., by the late Sir John Snell, then chairman of the Electricity Commission, who was a personal friend.

Dr. Purves was a well known figure in Devon and Somerset and had promoted electricity Special Orders in Teignmouth, South Molton, Bampton and elsewhere. It appears to have been largely through his efforts that the local authorities successfully resisted an endeavour by the Greater London and Counties Trust, an American-controlled syndicate, to include the area in the powers for supply now vested in the Wessex Company, and he had followed this up by initiating himself a scheme to be undertaken under English auspices. The information, which Dr. Purves submitted, included a report by himself on the Dulverton and West of England Special Orders which were being promoted by several small non-statutory undertakings, who had formed themselves into a company entitled "West of England Electricity Limited", and a report by the late Mr. W. B. Woodhouse of the Yorkshire Electric Power Company, a leading authority on electricity supply.

The specific proposal was to take a bulk supply from Exeter Corporation and deliver it for sale retail to six small towns and villages controlled by West of England Electricity Limited, and for bulk sale to other places such as Exmouth, Sidmouth, Seaton, Axminster, Crewkerne, Lyme Regis and Wellington, which either had a local D.C. supply or were without supply, and a total expenditure of something like £300,000 was contemplated. In Mr. Woodhouse's report, however, a wider field was covered, including the acquisition of the Minehead, Podock and Teignmouth undertakings, together with several non-statutory undertakings in West Devon.

Mr. Woodhouse's conclusions were generally favourable to the proposals, but he criticised the unit prices, which Dr. Purves had assumed, and emphasised that development to the point of obtaining a satisfactory return on the expenditure would take some years.

Included in his report was a reference to the possible acquisition of two electrical contracting businesses, W. G. Heath & Company of Plymouth and M. Partridge & Company of Exeter, as a further thought of Dr. Purves. As will be gathered, it was somewhat difficult to disentangle what was concrete in the proposition from ideas, which cropped up in supporting documents, but after conversations with Dr Purves, it became possible to form a picture that might be worked upon.

The promoting company, West of England Electricity Limited, had its registered office in Honiton and little more than nominal capital, which was not impressive for a concern which was applying in association with the equally small Dulverton Electric Lighting Company, Limited for monopoly powers over some thousand square miles of territory. The Electricity Commissioners were therefore waiting for evidence of adequate financial backing, before giving the proposal serious consideration.

Moreover, there were, before the Electricity Commissioners, competing applications from Christy Brothers for the Culm Valley area and the Power Development Company in respect to the South Somerset portion. There followed talks with Mr. Woodhouse and Sir John Snell. Eventually an inspection of the area took place with Dr. Purves at the end of November 1928, occupying four days. Starting from Torquay and Paignton, the route took in Teignmouth, Dawlish, Exmouth, Budleigh Salterton, Sidmouth, Seaton, Honiton, Tiverton, Bampton, Dulverton, South Molton, Minehead, Porlock, Wellington and the Culm Valley. We were accompanied on that occasion by Mr. F. W. W. Pattison, a director of the Exe Valley company, who then acted as Dr. Purves's secretary. In the course of time Mr. Pattison completely merged himself in West of England electricity affairs and he has for many years been a director and commercial adviser of all the operating companies.

The inspection disclosed that only 20 years ago the state of electricity supply in the area was absolutely pathetic. In nearly all the small towns the supply was direct current from a small and often antiquated generating plant, the only exceptions being Crediton as mentioned below, Teignmouth, which had rec. ently changed over to alternating current, Paignton which was taking a bulk supply but continued to sell direct current, and South Molton, where alternating current was furnished by an extraordinary mixture of water turbines and gas producers. Units sold per head per annum were generally of the order of 20, and no attempt had been made to reach out into the country beyond some limited transmission lines at Minehead, Teignmouth and Dawlish, plus a bulk supply given by Exeter to Crediton.

It was clear that any comprehensive scheme would involve a large unproductive expenditure in acquiring existing undertakings, which had in fact nothing more than scrap value, and changing consumers' installations from direct to alternating current, over and above the cost of an extensive transmission system to connect them together, and that any adequate return on this outlay would be slow in coming. The Whitehall Securities interests were, however, accustomed to taking the long view, and I was authorised to proceed.

The possibility of extending the scheme to West Devon led to another inspection tour on 16th and 17th January 1929, covering Tomes, Ivybridge, Yelverton, Tavistock, Okehampton, etc. In Totnes the undertaking was owned by the Electric Supply Corporation, and in the other places mentioned there were non-statutory undertakings belonging to W. G. Heath & Company, who were willing to dispose of them in conjunction with their electrical contracting business already mentioned. The conditions of electricity supply in all this territory were at least as backward as in the area of the Purves scheme, but an option was obtained on the Heath properties.

This brief review does not cover all the possibilities that were taken into account in the framing of a definite scheme; but it will serve to describe broadly how West of England Electricity came into being.

Chapter II - Description Of The Territory

From the point of view of electricity supply, the whole area from coast to coast contained between lines running roughly due North from Lyme Regis and Plymouth respectively was open to consideration, with the exception of the larger towns such as Taunton, Exeter, Torquay and Plymouth, in which electrical facilities were already well developed.

A leading feature of this huge area of more than 2,500 square miles-being the whole of Devonshire and a considerable part of Somerset is the large extent of moorland, occupying between them some 700 square miles of territory in which next to nothing exists.

It will be appreciated that the area as a whole was, outside the large towns, decidedly thin in population, being of the order of 150 per square mile. In the territory which later appertained to the Exe Valley Electricity Company, it was in fact as low as 71 per square mile. Moreover, broadly speaking, rich farming land existed only in the Exe Estuary, Crediton Hamlets, the district south of Dartmoor, and parts of East Devon, much of the remainder being what is known geologically as the Culm Measures, and really only suitable for grazing.

Industry on any considerable scale was represented by the textile mills at Wellington and Tiverton, a series of paper mills along the River Culm and at Watchet, and the clayfields in the Teign Valley. In none of these instances were the prospects for taking an electricity supply promising, as the textile and paper mills used largely process steam and the clayfields had available as fuel, lignite which occurred in layers with their raw material. There was therefore little industrial load to be picked up beyond quarries, brickworks and the usual village industries.

Thus, the picture was not particularly encouraging, but it did not require much prophetic vision to see that the beauties and mild climate of this West Country would in time inevitably attract a considerably larger population, and that these new residents would be mostly in better circumstances than the wretchedly poor agricultural communities at that date.

Chapter III - The Scheme Takes Form

The six months, which followed the decision of Whitehall Securities Corporation to proceed with the business, was a period of active and often delicate negotiation with the numerous parties concerned, of which the detailed record in my personal notes and memoranda was unfortunately lost in the destruction of the Exe Valley Company's offices in Exeter in the blitz of May, 1942.

The Electricity Commissioners were satisfied that there was now adequate financial backing, and in consultation with them the applications for the Special Orders were clarified by the arrangement with Christy Brothers mentioned below and by a territorial arrangement with the Power Development Corporation, under which there was relinquished to them the relatively small area in South Somerset included in the original scheme. Christy Brothers agreed to turn over their interests in Cullompton, Silverton and Bradninch and their application for the Culm Valley Electricity Special Order, 1929, under an arrangement by which they would be interested as contractors with the construction of the transmission system and changeover in this valley, and would manage the undertaking there on behalf of Whitehall Securities Corporation for a term of years.



Fig.1 Culm Valley Generating Station at Bradninch (Recent photo by Barrie Phillips)

With the conclusion also of purchases of several small non-statutory undertakings and an option agreement on the Colyton undertaking on the extreme edge of the territory, the way was thus cleared for obtaining the Parliamentary powers for carrying out Dr. Purves' original scheme in a modified form.

Another matter that required to be settled at an early stage was the bulk supply arrangement with Exeter Corporation. A provisional schedule of their charges included in Dr. Purves' original proposals was conceived on too small lines and included unit prices scaling down from 1d. to 0.4d. Sir John Snell here gave valuable assistance, representing to the City Electrical Engineer (then Mr. H. Munro) that there should be a determination on a more up-to-date basis. Friendly discussions with the Town Clerk (Mr. H. Lloyd Parry) and Mr. Munro resulted in a 20 years' agreement, of which execution had to be deferred until 24th September 1929, when the position of the various Special Orders was sufficiently advanced. The supply commenced in December 1930, when the Exe Valley Company's Sowton Substation (some three miles out) was ready to function and the 6,600 volt cables connecting with Exeter Power Station had been laid.

It was appreciated at the start that the Paignton undertaking would be a very valuable addition and the difficulty there was that the shares were widely distributed so that no individual was in control. A formal offer to purchase the majority of the shares at a generous price was accordingly made to the Board but was promptly declined. It did not look as if it were possible to proceed, but a certain individual came forward with the

suggestion that he was confident of buying up what was an adequate number of shares at that price, if he received a small commission, and as a result this was effected, I may say to our considerable surprise.

In the Teignmouth Company, W. G. Heath & Company and Christy Brothers had large holdings, neither giving control. Messrs. Heath were willing to sell, but only in conjunction with their contracting business already referred to, and Messrs. Christy's line depended on whether or no a deal was made with Heaths. This made the position delicate, because it was our view that contracting should not be associated with electricity supply, in the same way that Whitehall Securities had a definite policy of not linking themselves with any manufacturers in the electrical field. There remained some inducement to Messrs. Heath, in that we had an option on their non-statutory undertakings in West Devon and, no doubt with that in mind, this particular difficulty was overcome.

Purchase of the control of other undertakings in which there was a majority interest, and of the Wellington position, where there was no supply and the Electric Supply Corporation had held a Special Order for five years, was a matter of price, which was duly settled in time, the parties concerned appreciating that the scheme was likely to be more beneficial to the West Country than their carrying on in an isolated way.

Certain municipal undertakings needed also to be dealt with. Sidmouth and Cridton were disposed to sell and terms were agreed after protracted discussions that Mr. Pattison and I had with their councils, on one occasion going on until far into the night. The problem then arose that municipalities were not permitted to sell at a profit and they were naturally not disposed to part without a substantial premium on their outstanding debt. At Cridton this was solved by converting the premium into a reduced charge for the street lighting for a period of 10 years, and at Sidmouth, somewhat fortunately, there was opening for going to Parliament for an Act on account of the electricity and gas undertakings being both under one Order. Although there was Departmental opposition before the Parliamentary Committee, the Act was granted in March 1930. The Parliamentary Agents employed in most of these proceedings were Messrs. Sherwood & Co. The negotiations were not, of course, invariably successful, one failure being that of being unable to come to terms with the Tiverton Corporation, who were not in principle opposed to selling. Another instance was the Chudleigh undertaking, where the private owners were not open to any arrangement, because their small undertaking afforded them both an occupation and a comfortable livelihood.

In connection with the West Devon undertakings under option, Torquay Corporation came to the view that the Ivybridge area could more properly be added to their undertaking, and a local enquiry was held by the Electricity Commissioners, which resulted in that view being accepted. For the remainder of these undertakings we applied for a Special Order. As it had already been decided not to proceed with the negotiations for acquisition of the Totnes and Brixham undertakings this had the somewhat unfortunate result of leaving Paignton isolated. The remainder of the territory to be served lent itself to the formation of a compact geographical block, except for islands at Exeter, Chudleigh, Tiverton and Barnstaple. By means of Extension Orders for Exe Valley and Teignmouth and the acquisition of the Bideford, Budleigh Salterton, Porlock and Braunton undertakings, this aim was later on achieved, and statutory powers obtained over an area of nearly 1,500 square miles. In the course of 1929, I was thus able to present to my Chairman, Hon. Clive Pearson, ' estimates for a three-year programme involving nearly £900,000, with estimates of the expected revenue over a period of years, and approval was duly given.

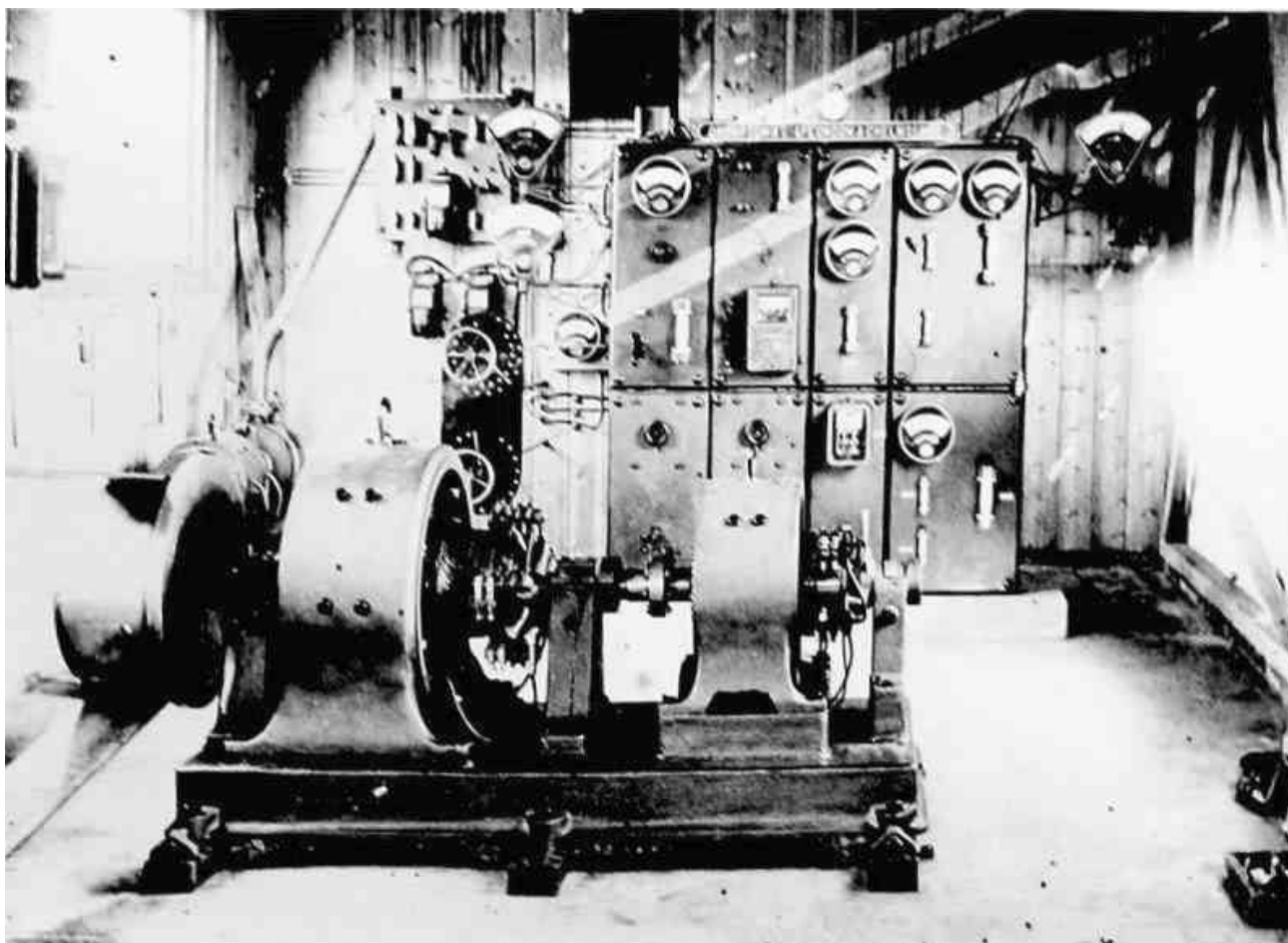


Fig.2 Braunton Generating Station taken over by the Bideford Co.
(Photo: Braunton Local History Society)

Chapter IV - Some Technical Features

At the time of the initiation of the scheme, types of construction were not standardised to quite the extent prevailing today, and a variety of questions arose. Some of the decisions taken are of sufficient interest to put on record. The technical staff of Whitehall Securities Corporation had in dealing with these questions the advantage of their extensive experience in Chile and Mexico under the aegis of Mr. A. E. Worswick, who had the faculty of adopting immediately any new development in American or British practice that improved upon existing methods, but of avoiding experimenting, and who always insisted upon the engineering work being of the best possible character in accordance with the long established principles of the firm.

In laying out the transmission system the first point to be decided was the voltages to be adopted. As to this, there was at that time some diversity of opinion as between 33,000 and 22,000 volts for the trunk lines, and there was also a school of thought, which favoured 3,000 volts for the secondary transmission on account of the economy in first cost. Guided by the experience above referred to, it was concluded that it was more important to plan well into the future, and the scheme was thus based on using 33,000 volts and 11,000 volts alone for the transmission. In the light of today most technicians will agree that that was sound.

The conception was that the whole area would be supplied from two 33,000volt trunk rings, springing from the Exe Valley Company's main substation and depot at Sowton, near Exeter, and forming a figure 8. Into the larger ring, which was to be built in stages as the growth of the business permitted, would feed the municipal generating stations at

Exeter and Newton Abbot and the future grid directly at Washford near Minehead, and also the companies own generating plants at six points, three of these being small water power stations modernised. The smaller ring was to serve the important East Devon area. In 17 years this general plan, involving over 170 route miles of 33,000volt line, has not been departed from, and it is today in operation except for a gap of about 20 miles in the large ring held over by the War. Some spur lines are planned to be added later. There are sections of copper, cadmium copper and steel cored aluminium conductors, according to what was more economical at the time, and the equivalent copper section is 0.1 sq. in. throughout.

It was also decided that the transmission lines should be over-insulated, as, for example, by employing nominal 55,000 volt insulators on 33,000 volt lines. As a corollary to this, no ground wires were installed and there were no lightning arresters, reliance being placed on horn gaps or spill-over insulators at key points. Earthing on the whole system was to be solid. Experience has shown no reason to regret these technical decisions.

Another interesting decision, taken on the advice of Mr. P. V. Hunter of Callenders' Cable Company, was to use unarmoured cables both for H.V. and L.V. throughout, excepting only the services into premises. The only precautionary measures that this involved were a relatively soft bed for the cable and the protection of a tile above it, boldly marked "Electricity". During the War the shortage of steel caused the adoption of unarmoured cables elsewhere and, it is presumed, with equally satisfactory results.

At the date of building the first sections of the transmission lines the factor of safety prescribed by the Electricity Commissioners practically prohibited the use of reinforced concrete poles, of which Whitehall Securities Corporation had had extensive experience in Mexico and Chile, and wood poles were accordingly adopted on these sections. In 1932, however, the regulations were relaxed and it was decided to use henceforward on all main 33,000 and 11,000volt lines reinforced concrete poles to the design of the Ferroconcrete Construction Company. An innovation was the adoption of reinforced concrete cross-arms on all straight lengths.

In connection with substation plant there is no point of special technical interest, except that it may be mentioned that outdoor type 1 kV main switchgear is not employed, weather cover being provided in rural substations and standard brick buildings to the design of Mr. Victor Heal, F.R.I.B.A., usually in the towns. Kiosks were considered unsightly. It may also be worth noting that in the three small water power stations, the generators are of asynchronous type operating unattended in parallel with the main supply.

As an advantage of; so to speak, "starting afresh" a considerable degree of standardisation could be applied single-phase meters, of which there was only one size and type, a nominal 10-ampere meter produced by the Rex Company and having cyclometer dials with roller trains of Swiss manufacture. The course of time has shown no need for a smaller meter (excepting a certain number of current limiters) as the 10-ampere meter will start and be sufficiently accurate on 40 watts, but the War has necessitated changing over to pointer dials although it is still felt that the cyclometer dial is the right thing for quick reading with a minimum of errors. It, must not be allowed to go unrecorded that the engineer responsible in large measure for the design and execution of the technical part of the programme from the commencement until the present day has been Mr. A. E. H. Dinham-Peren of Whitehall Securities Corporation. Construction of the 11,000 volt and low voltage overhead lines has very largely been carried out by the companies' own staff, but as a general principle the 33,000 volt lines have been contracted out, the sections in the Culm Valley and Wellington areas to Christy Brothers & Company, and the remainder to Callendefs Cable & Construction Company.

Chapter V - Organisation And Finance

Along with finding a suitable office in Exeter, to which I will refer later, the first step was

to secure a manager for the undertakings to be centred there. In this I was fortunate in obtaining, through the introduction of Dr. Purves, the consent to join the new venture of Mr. H. F. G. Woods, who had a brilliant record at Torquay as Borough Electrical Engineer. This was early in 1929, and Mr. Woods has been continuously since then manager of the Exeter Companies and has played a prominent part in their development.

We were also fortunate in finding a competent body of managers in the larger undertakings acquired, namely, Mr. A. E. Baker at Paignton, Mr. A. H. Short fit Minehead and Mr. W. J. Oxenham at Bideford, and in their having remained with us ever since in fact, the only change that has taken place in the company management positions during the whole course of the business has been due to the death of Mr. W. G Hurst of Teignmouth, who was replaced by Mr. P. S. Gram, previously district manager at Wellington.

With this personnel available, the area lent itself conveniently to organisation from five centres, the distribution of the head offices of the companies being as under :-

Exe Valley, East Devon & Culm Valley Companies at	EXETER
Paignton Company at	PAIGNTON
Minehead & Wellington Companies at	MINEHEAD
Teignmouth & Dawlish Companies at	TEIGNMOUTH
Bideford Company at	BIDEFORD

These companies with the exception of the East Devon Company as a new creation, had of course their boards of directors, when taken over and the policy was adopted of retaining such of these gentlemen as were of local prominence and willing to associate themselves with the change in ownership, subject only to the Whitehall Securities interests having a working majority on the boards. The one incidental advantage of having separate returns from nine companies is that a measure of competition ensues which facilitates the discovery of weak spots by central headquarters. Such headquarters for the group as a whole existed first in London and from 1939 onwards at Exeter.

This brings me to the subject of offices. In Exeter we were able at the start to secure accommodation in the two upper floors of Westminster Bank Chambers in the High Street and later expanded to premises in a back street nearby, but it was clear that something more ample was needed and a search went on for years for some good sized house in the outskirts that could be adapted. All sorts of possibilities were explored without success, until in 1938 the opportunity arose to acquire the extensive bottling establishment of Cart & Quick in Paul Street, near the centre. The intention, frustrated by the war, was to build modern offices on the site, and plans were prepared by Mr. Victor Heal and a tender approved unfortunately just too late. The problem existed in a minor form in the other centres, including district headquarters, because the offices of the undertakings acquired were altogether unsuitable for a progressive concern, but was in due course overcome, so that the companies became possessors or leaseholders of adequate offices and showrooms everywhere thought necessary.

With the strong backing of Whitehall Securities Corporation and its controlled finance companies, finance has at no time presented any problem, a very real help when the depression of 1930 came along. In 1932 a holding company under the title of West of England Electric Investments Limited was formed by these interests (as a subsidiary of Whitehall Electric Investments Limited) to take over the position, with ordinary share capital of £500,000 (now increased to £850,000), and in 1935 a public issue was made of £500,000. The present Chairman of the holding company is Mr. J. L. Walsh. (With Selwyn Grant as Chairman of all the nine subsidiary companies).

A superannuation scheme was inaugurated with the Sun Life Assurance Society in February 1937 for permanent employees of the companies, with the object of making provision for a lump sum to be available at 65 years of age for men and 55 years for women, or at death if earlier and a sum assured of one year's salary. The employee

contributes 4 per cent of his or her salary, used to purchase Sun Life Assurance endowment assurance without profits for an amount varying with age. At 31st March 1948 there were 378 members with total salaries of £120,902 which, together with the members' assurances of £148,324, gave total assurances of £269,226. The cost per annum was £4,840 to the members and £5,280 to the companies.

Chapter VI - Commercial Policy

All the undertakings when taken over were charging flat rates only, which did not promote development. It was therefore necessary to substitute two part "or all-in" tariffs for all purposes, and a meeting was called in London early in 1929 attended by, among others, Mr. Frank Christy and Mr. Woods, to consider the most suitable form of tariff for domestic supplies.

At this meeting the conclusion was reached that the best basis for the fixed charge of a domestic tariff was the occupied floor area of a house, as a measurement representing as near as might be the space regularly illuminated, that is to say, excluding such things as lavatories and spare bedrooms. This fixed charge should be so determined as to represent, plus the running charge for units consumed, roughly the same quarterly amount as would be paid for adequate lighting at the flat rate, thus making the use for all other purposes than lighting chargeable at low unit rate only.

According to whether an urban or rural area was concerned, it was decided that appropriate quarterly charges for a dwelling house were from 3d. to 3½d. for every 10 sq. ft. of occupied floor area, plus 1¼d. to 1¾d. per unit consumed. In the course of time reductions have been effected in the unit charge, but the general basis has been maintained. The complete schedule of charges of course includes the methods of measurement applicable to cases other than dwelling houses and maximum demand or installed horse-power fixed charges for power supplies.

Anomalies arise in this method of determining the fixed charge from the floor area and that it might have been better to have adopted, as have certain other undertakings, the external measurement and number of floors of a house as the gauge. In general the system has worked pretty well and it is undoubtedly fairer than the normal municipal method of charging according to rateable value, contrary to the economics of supply. Standard systems of accounting were also introduced. It was considered that domestic cookers presented the best field for development and it was decided, as other undertakings, to hire these at rates representing little more than the cost of maintenance and service.

Attractive showrooms were opened at all headquarters and district offices outside Exeter, and almost up to the war efforts were mainly directed towards popularising these cookers, although other appliances were also offered on hire or sale. At one stage also a preferential unit rate was introduced for cookers of normal size installed. This campaign proved most successful. A specially low rate of 1d. per unit was offered throughout the area for water heating with thermal storage, but was not sufficiently cheap to be competitive with domestic solid fuel boilers.



Fig.3 Showroom at Wiveliscombe
(Recent photo by Barrie Phillips)

Another field of activity was in hired wiring. In the days of the agricultural depression neither landlords nor tenants could in very many cases afford the cost of installation, and the facilities, which the companies offered in this way extended their business more than would otherwise have been possible. Two schemes were available, one for providing up to six points for an inclusive weekly rental and restricting the load to 80 watts for lighting by the use of a current limiter, and the other a quarterly unrestricted arrangement on the twopart tariff. In the course of time, there was more money about, a large number of consumers changed over from the first scheme to the second. The facility to make this change encouraged the consumer to expand his use of electricity, and the schemes were on that account strongly favoured in preference to slot meters.

Touching on showrooms and propaganda generally, it might be worth mentioning that a monogram representing West of England Electricity was displayed as an illuminated sign over all showrooms, and appeared on all the letter paper and literature issued by the companies, as also on all the vans, which were painted a distinctive and uniform yellow colour.

(See left of title, and on the van below)



Fig. 4 East Devon van showing common monogram

Chapter VII - Development Up To The War

Progress was uphill work in the early days. The West of England is noted for its conservatism, and in some of the towns there was a vested interest in the local gas company. There was opposition to overhead lines in the village streets and wayleaves across agricultural land were often not easy to obtain. Changing over consumers' apparatus brought its difficulties. Money went out fast on construction work and a return was slow in coming in. The first dividend on the investment was 1 per cent. in 1933/4, followed by 2, 4 and 5 per cent, in successive years, and it took until 1937/8 to reach 7 per cent.

Nevertheless, by the end of the ten years prior to the war the "electrical idea" had taken root. The following extract from an annual report of the directors of Whitehall Electric Investments, Limited, which was the parent of the holding company, gives a good general picture & what had been achieved:

"The area is mainly rural and sparsely populated, the number of inhabitants being only 151 per square mile, and the industrial load is relatively small. Nevertheless by 1939 the companies were supplying over 41,000 consumers, which is equal to 70 per cent. of the total number of occupied premises, and had built 491 miles of high voltage and 578 miles of low voltage lines. Consumption was raised in the decade from five million units annually, largely direct current, to 26 million units all alternating current at the standard voltages with the exception of the supply to one isolated village which has since been converted. There is a uniform system of tariffs, and up to the outbreak of war development was actively encouraged by facilities for rental wiring and the bite of appliances."

At the end of 1929, when the acquisition of existing undertakings was well forward and the construction programme had commenced, the combined capital assets of the

operating companies stood at £440,029. At the end of 1939 the corresponding figure was £1,606,003, ignoring dead assets in the change-over etc., which had been written down from £117,483 to £85,050. The total revenue in the same period increased from £82,283 to £351,039. It is true that the population to be served increased from 130,000 to 224,000 owing to new towns and villages being supplied, but the more than four-fold increase in revenue can mainly be attributed to the additional facilities provided.

The number of towns and villages supplied was 248, of which 70 had public lighting, and the number of showrooms was 23. Bulk supplies were given to Tiverton and Barnstaple Corporations and to Ilfracombe and Chudleigh companies.

Chapter VIII - Effect Of The War

As war became imminent the territory was declared a reception area and this produced a flood of immigrants, voluntary and otherwise, from the large towns. The population of Exeter, for example, rose from the normal 70,000 to over 100,000, and there was a corresponding inflow into the towns and villages served by the companies. During the months of the so called phony war, large numbers of these people returned to their homes, but the incursion was renewed on a lesser scale when raids began after the Battle of Britain, and this time the effect was more permanent.

As a measure of dispersal the electrical section of Whitehall Securities Corporation was moved to Exeter just before war broke out and provided with temporary accommodation from which all the technical and purchasing services for the companies were conducted. H.M. Treasury was not long in issuing instructions that electricity undertakings must conserve their resources, and development work came practically to a standstill. The demands of the additional population, however, more than offset both the lack of new business and the loss of street lighting and shop window lighting, so that throughout the war the previous annual increase in consumption was at least maintained. The progress of the war saw the establishment of a number of camps and aerodromes in the area, and in the latter period these proved very substantial consumers, but for some reason there was comparatively little migration of factories or extension of the small ones that existed. The urge to carry electricity to farms did not really show itself, until the end of hostilities.

Although the properties did suffer from air raid damage, to which I will refer later, it is amusing to remember that a greater and more continual nuisance to operations was in our own barrage balloons. These were always getting adrift from the naval and industrial areas, in which they were located and trailed across our territory creating havoc with the transmission lines. Many precautionary measures had of course to be taken against possible damage to plant or disruption of the service through enemy action. These included blast walls at the power stations and more important substations, the provision of underground shelters at such points, and the organisation of a system of key posts to be manned immediately occasion required. Full support was also given to the Home Guard movement, in which some of the companies had their own platoons. Shortage of staff, of course, became a problem. At the height of the war the combined staff of the companies had fallen from about 500 to 350, and many of the latter number were women substituted for men. The companies had the protection of the Essential Works Order when that came into force, but the reduction in numbers had occurred by that time and was to be attributed largely to the patriotic spirit of the employees.

Notwithstanding the South West having been constituted a reception area it proved to be by no means free from air raids, and our local experiences may be of interest. In July 1940, "tip and run" raids began with a daylight raid on Teignmouth, and they continued with particular concentration on Exmouth and Teignmouth, for three years, and led to a substantial diminution of the population of these and adjoining resorts.

At Exeter the bombing was for a considerable time on a small scale only, coming from detachments of aircraft passing to and from Bristol and South Wales or diverted from Plymouth or Exeter Airport. These raids, although frequent, did only isolated damage, but

in May, 1942, a large portion of the business section of the city was destroyed one night in a so-called Baedeker raid as a reprisal for our attacks on Lubeck and Rostov. Our offices, both at Westminster Bank Chambers and the overflow premises some 100 yards away, were completely destroyed with their contents, excepting only some of the papers in safes. Fortunately we had taken the precaution of having emergency offices in Exmouth kept ready with a skeleton staff, and the headquarters was moved down there forthwith and remained at Exmouth, until other accommodation could be found in Exeter. A particular unfortunate loss was that of the billing machines, making it necessary to return to hand billing from then on. Although the damage to property was so extensive all the staff mercifully escaped injury.

The Exeter blitz caused no interruption of routine work because duplicates of the consumers' accounts were maintained in the districts and duplicates of agreements and minutes also existed elsewhere. The loss of many secretarial and management records, and of a great number of plans, did however, cause considerable inconvenience. One other effect of the war was that the premises in Paul Street were promptly requisitioned, first by the Admiralty and later by the War Office. The Exe Valley company did not regain possession until November 1945, when, with the approval of the Electricity Commissioners, steps were taken promptly to adapt the premises into head offices for the three companies centred on Exeter.

Chapter IX - Conclusion

As the war approached its end, high hopes were formed that we could get down to arrears of development, involving expansion on a large scale. In 1945 a 5-year programme was prepared calling for an expenditure of approximately a million pounds, and by reaching out into remote districts increasing the percentage of the population served from 70 to 85, which was regarded as the maximum economically practicable in the period.

The course of events has largely dashed these hopes. It was not anticipated that there would be the shortage of all kinds of materials and supplies that the pent-up national demand has created, and the system of restrictions has hampered proceeding even with extensions that could be classed as essential. Nevertheless, every effort has been made to serve agricultural interests in particular and at the time of writing there are connected in the territory over 600 farms or holdings of not less than 20 acres. An agricultural development engineer was appointed, and the result of his work has been to produce, over and above the farms it has been possible to reach, a long waiting list of others ready to contract for a supply. Service of new housing accommodation has of course had precedence over all-other demands, but building schemes in the territory have not been on a large scale.

During this post war period, notwithstanding the difficulties and the discouragement of domestic consumption, the increase in units sold has been remarkable. Partly this is due to the permanent increase in population, and partly to the greater use of electricity owing to the fuel shortage, these two factors having quickly offset the loss of purely war business. For comparison with figures previously given in this account, this is the record for the year 1947 :

Number of consumers	51,680
Units sold, excluding bulk supplies	64,689,000
Average price per unit	2.19d
Capital assets	£2,039,000

The demand, still unsatisfied, is such that it seems to have no limits, and the new Authority, to whom everything will pass on 1st April, 1948, has indeed a fertile field for its activities. All will wish the Area Board success in their work, and in it they may be assured of the loyal co-operation of the officers and employees of West of England Electricity whom they take over.



**Fig.5 33kV Cable Drum being delivered for the
River Tax crossing in 1934**
(Photo Courtesy Braunton Museum)

Please note that this is an edited version and anyone wanting a full transcript should contact the Secretary.

POSTSCRIPT

West of England Electricity left a lasting legacy, not only with their strong network, but also we have found in our archives that the East Yelland Power Station was promoted by their holding company, Whitehall Securities Corporation Ltd., in conjunction with the CEB. Work commenced very shortly after nationalization and was commissioned in 1953 being one of the first stations to be completed by the nationalized industry.