Chapter Seven

PRE- WAR DEVELOPMENTS

The I.P. Cable - Social Club – Merger Talks
Death of Sir Tom Callender

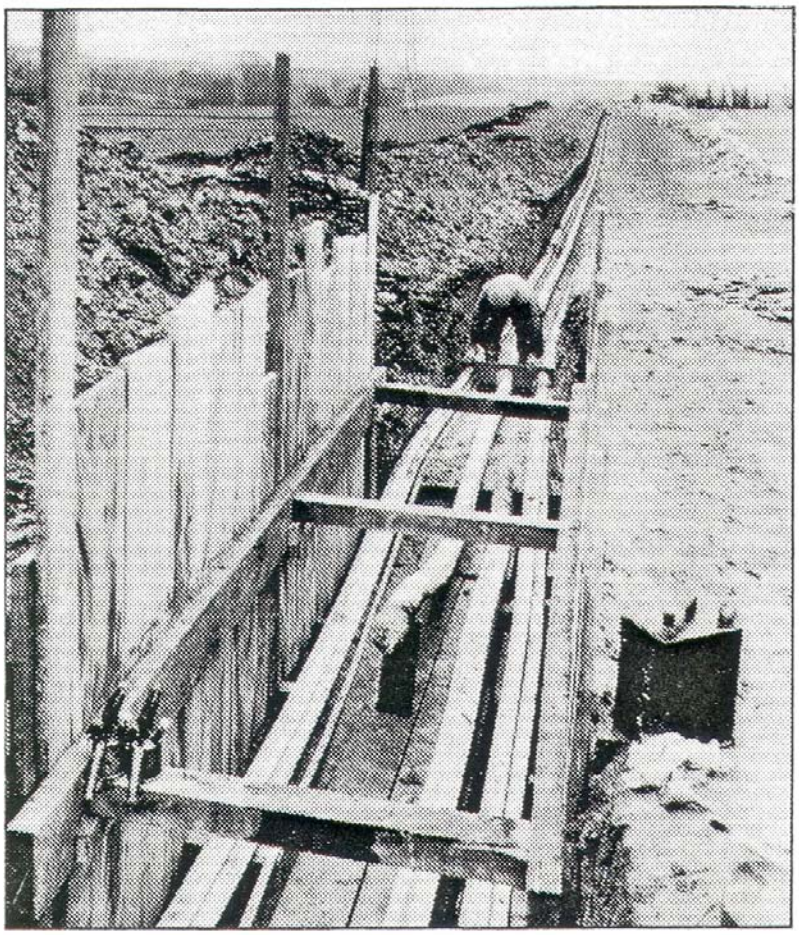
WHILST THE official opening of Wood Lane in 1934 had placed Callender's Research Laboratories firmly on the map of the electrical world at large, several major research projects were already in hand at this time. We have already mentioned the work of Dr. Arman on the dry gas pressure cable, and have briefly mentioned the advantages to be gained, namely the elimination of ionizing voids and the possibility of higher working temperatures, both due to the absence of impregnating compound. The cable, however, had two serious disadvantages (9). One of these was the difficulty of maintaining absolute dryness during manufacture and more particularly during the jointing operation, for which somewhat elaborate precautions were needed. A much graver drawback was the low surge strength of this cable which proved to be only some 40 per cent of that of its fully impregnated counterpart. These disadvantages were the reason for the dry gas pressure cable never finding commercial application.

A parallel development during the mid-thirties was destined to find universal acceptance. This was the compound impregnated gas pressure cable associated with the names of Mr. Hunter and Dr. Brazier. Of all the gas pressure cables this embodied in its design the least degree of departure from the normal mass-impregnated supertension cable. The gas (nitrogen 220 Ib/in2) was accommodated in a thin continuous annular channel between the dielectric and the lead sheath, obtained by applying the sheath with a radial clearance of the order of 50 mil.

The cable, instead of being filled with gas from one end, was charged from all the joints simultaneously by means of a gas channel pipe located in one of the filler spaces; and in another of these was included a small two core pilot cable which, in case of any fall in gas pressure, automatically signalled to the control station the position of the nearest joint. The sheath was reinforced with double armouring, designed to cater for the longitudinal as well as the radial stresses and the whole was given special protection against any possibility of corrosion.

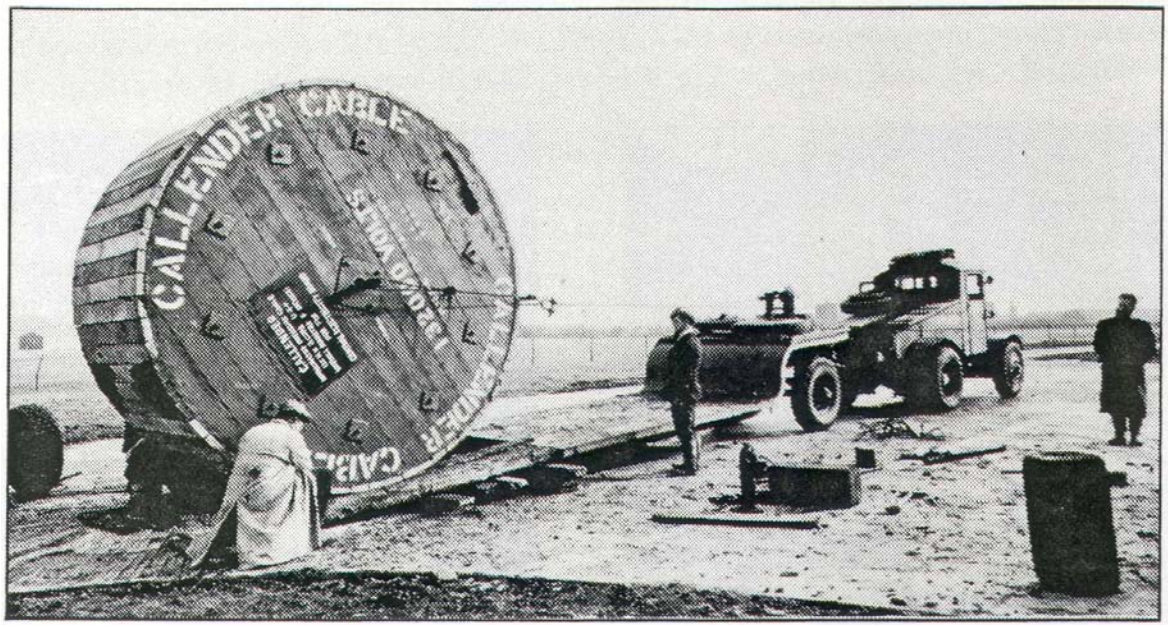
The cable and its progenitors received mention at the 41st Ordinary General Meeting of the Company in 1937 (17) when the Chairman, Sir J. Fortescue Flannery, said, "You will find distributed in your seats a copy of a paper (18) by two of our engineering staff upon the Research Department's latest development in 200,000 V impregnated pressure cable. When it is recollected that scientific advances of this nature carry with them not only the development of the cable itself, but also the technique of jointing and terminal arrangements, we feel that a great deal of credit is due to our Research Department". However, the somewhat revolutionary character of this development was not immediately acceptable in some quarters (9). Many eminent authorities were still apprehensive regarding the effect of permitting free contact

between gas and impregnating compound, but this attitude of mind was largely based on a disregard of the essential difference between oxygen, for instance, with its known characteristics of causing sludging and degradation, and an inert gas such as nitrogen. Nevertheless, ultimate conviction on this point clearly depended on practical demonstration rather than on academic proof. Such practical demonstration was, fortunately, forthcoming.
In the mid-thirties leading Companies from all over the world had submitted designs for test to the K. E.M.A. Testing Organization at Arnhem in Holland in connection with a project for an 88 kV three phase inter connector between Rotterdam and the Hague (9, 19). Later the required voltage was increased to 150 kV with a view to extending the network to link the principal undertakings throughout Holland, and the testing facilities at K.E.M.A. were enlarged accordingly, tests being carried out on a further range of cable including four gas pressure types. The results of these tests showed clearly that the non-diaphragm type of gas pressure cable could be employed with complete confidence at these extra-high voltages. Unfortunately, the outbreak of war in 1939 brought the Dutch project to an abrupt conclusion. An interesting sidelight to this account, however, is the fact that during a visit to Arnhem after the cessation of hostilities, Mr. P. R. Hartshorn found the Callender Store at the K.E.M.A. Laboratories still intact, despite the considerable activity in the area during the latter part of the war.

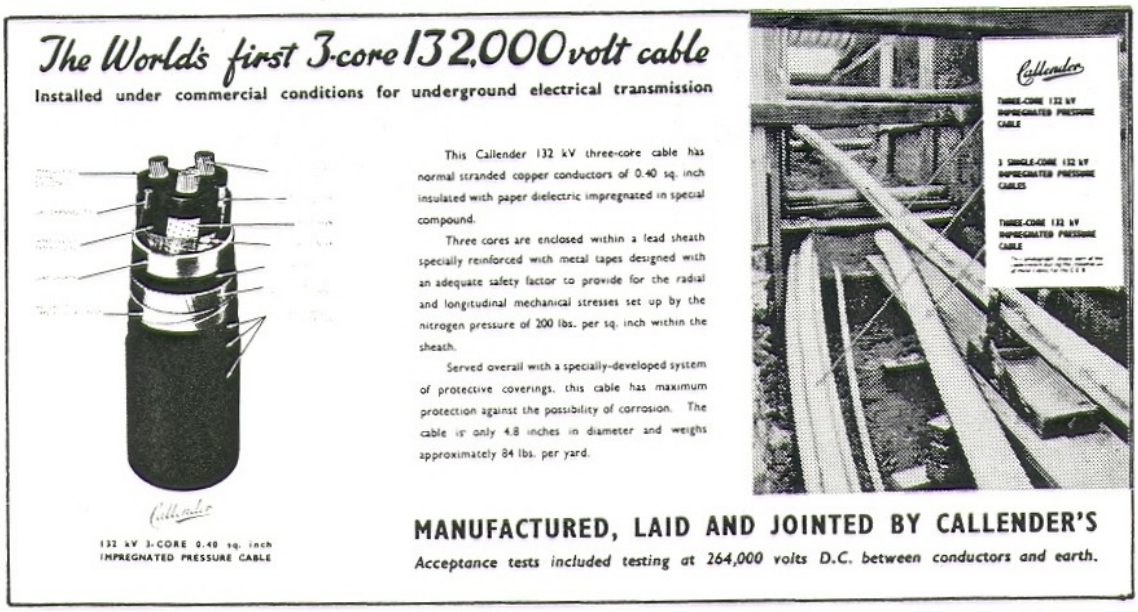


132 kV three core Impregnated Pressure Cable,
Broadwell. near Burford. Oxfordshire. 1943
Checking the cable centres

Although single core gas-filled cables had been laid experimentally as far back as 1937 for the Central Electricity Board, the first three core 132 kY impregnated gas pressure cable was laid in 1943 at Burford in Oxfordshire, when it became necessary to "underground" a mile-and-a-quarter of overhead line (part of the British Primary Grid) in order to clear the approach to a wartime aerodrome.



132 kV three core Impregnated Pressure Cable,
Broadwell. near Burford, Oxfordshire, 1943
Unloading the cable drum



Post-war (1945) advertisement for the 132 kV I. P. Cable,
first laid in 1943 at Burford

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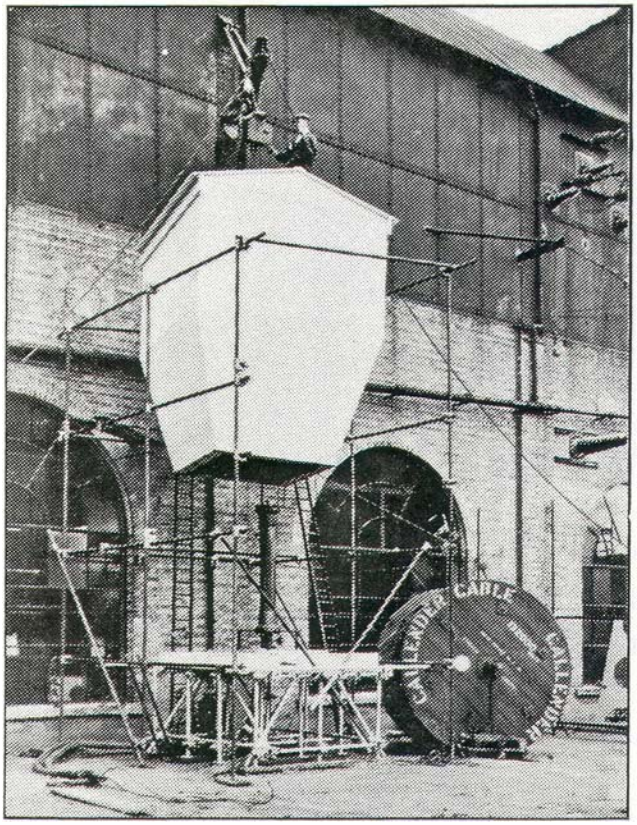
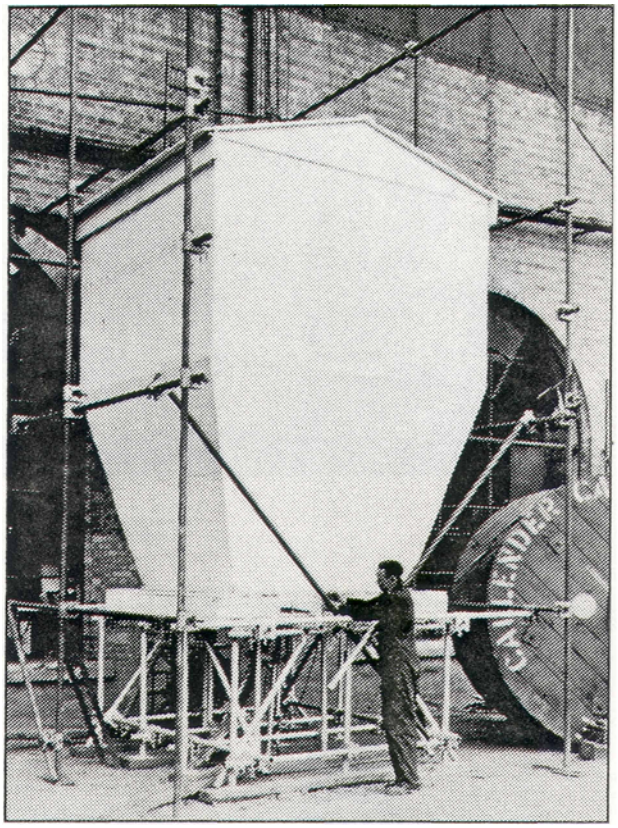
The development of extra-high voltage cables was accompanied at Wood Lane by new testing techniques. For instance, it was found that misleading results were sometimes obtained if cable sealing ends, which were under development test, were erected inside the laboratory, since it had become known that low temperatures were particularly liable to affect the performance of E.H.V. sealing ends. In order to meet this condition the Research Department built a special refrigerating chamber, this being erected on the open space outside HV3. Some people may still remember this tall, odd looking, wooden structure as it was only removed in the late 50s. In operation the



Refrigeration chamber being lowered over a cable sealing end



Refrigeration chamber in the closed position

cable sealing ends were inserted in this chamber, cooled to -15^{0}C and long-term stability tests carried out on them. The chamber required 100 lb. of solid carbon dioxide to maintain this temperature, and the thermal insulation consisted of expanded rubber six inches thick.

Departments, as well as equipment, developed rapidly during this period, including the rubber shop (about 1936) which was located initially in the area now partially covered by the McFadzean Laboratory. The stores were located at the south-western corner of HV1 .

Social activities for the staff were also taken into consideration. Prior to the outbreak of war no separate section of the Social Club existed at Wood Lane, but members of the staff participated in the activities of the London Section. Perhaps the

highlight of these activities was the amateur dramatics society, which presented a number of successful plays at the Fortune Theatre - plays such as "Ambrose Applejohn's Adventure" by Walter Hackett, 'The Ringer" by Edgar Wallace, and 'Thark" by Ben Travers. The players included Mr. P. R. Hartshon who frequently played the lead, Mr. F. de B. Hart, Mr. Booker, Mr. Morris-Goodall, Mr. A. W. Metcalf, Mr. Temple-Hazel, Mr. J. C. Condon and Mr. S. A. Tempest, many of whom were staff from Wood Lane. The name of Dr. Arman appears as stage manager in several of the programmes. The amateur dramatic society received wide acclaim for its efforts and, for instance, a review in the "Electrical Times" for the 14th April 1938, praised the performance of Mr. Hartshorn as Dr. Lomond in "the Ringer" and refers appreciatively to his "Scottish accent and humpy walk".

Dinners and similar social functions were held at a number of centres in town, and one held at Bush House Restaurant on 10th December 1937 featured a cabaret and was attended by approximately 200 people. Photographs convey the impression that a thoroughly good time was indeed had by all.

The athletic side of the club was well supported in those days and one annual event was the 10 mile walk for the Pipkin Cup. This cup was held for several years by Wood Lane. Mr. Fifield, then a member of the Wood Lane staff who later worked on the Kariba Dam Project in Rhodesia (as it then was), was persuaded by his colleagues to enter. To their, and perhaps to his, surprise, he won! This success spurred him on to further efforts and he was later well-placed in the famous London to Brighton walk.

In the middle of 1938 rumours suddenly swept the electrical world of a possible merger between Callender's Cable an d Construction Company and Crompton Parkinson. An official statement which said "that the Directors of both Companies were seeking a closer working arrangement, the formation of a Holding Company" appeared in the "Electrical Times" for the 21st July 1938. By October further statements appeared in the "Electrical Press" concerning this proposed merger and perhaps the statement which best summed it all up appeared in the "Electrical Times" for 13th October 1938. This read as follows:

> "The recent crisis produced a small crop of "war" wedding;, but it also led to the breaking off of an engagement that had been widely discussed in electrical circles. The parties in question are Callender's and Crompton Parkinson. An announcement on Saturday explains that the recent crisis and consequent unsettled condition of world trade and finance had induced both sides to agree that it would be inadvisable to proceed with the negotiations. This decision is final, but friendly."

The favourable expansion of the Company in this period was marred by the death of Sir Tom Callender on 2nd December 1938 (20). He died after a brief illness at his home, Bidborough Court, Kent, in his 84th year. Sir Tom was not only one of the founders of the Callender organization, but was also one of the pioneers of electrical transmission in this country. All through his life he played an active role in his Company's affairs, especially as an overseas business ambassador. His activities not only brought large business to his own Company, but they were the means of opening up trade channels which had a considerable influence on the British electrical industry.

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Sir Tom Callender

While he was Deputy Chairman and Managing Director of Call ender's, Sir T om was also a Director of three of the big power companies - The Lancashire, The Yorkshire and The Scottish- Chairman of the Herne Bay and District Electric Supply Company, Chairman of St. Helens Cable and Rubber Company, and a Director of the Anchor Cable Company, the Enfield Cable Works, W. T. Glover and Company Limited and Thomas Bolton and Sons Limited. Sir Tom Callender was the last survivor of those present at the Dinner held at Dartmouth House, Queen Anne's Gate, Westminster, on 10th January 1900, to mark the foundation of the Cable Maker's Association, and as the head of Callender's he had a great deal to do with the Association's development and its world-wide influence.

To everyone connected with Callenders "Sir Tom" was much more than the head of the firm. He was held in real affection by all in the Company's employ and his death was greatly mourned.