

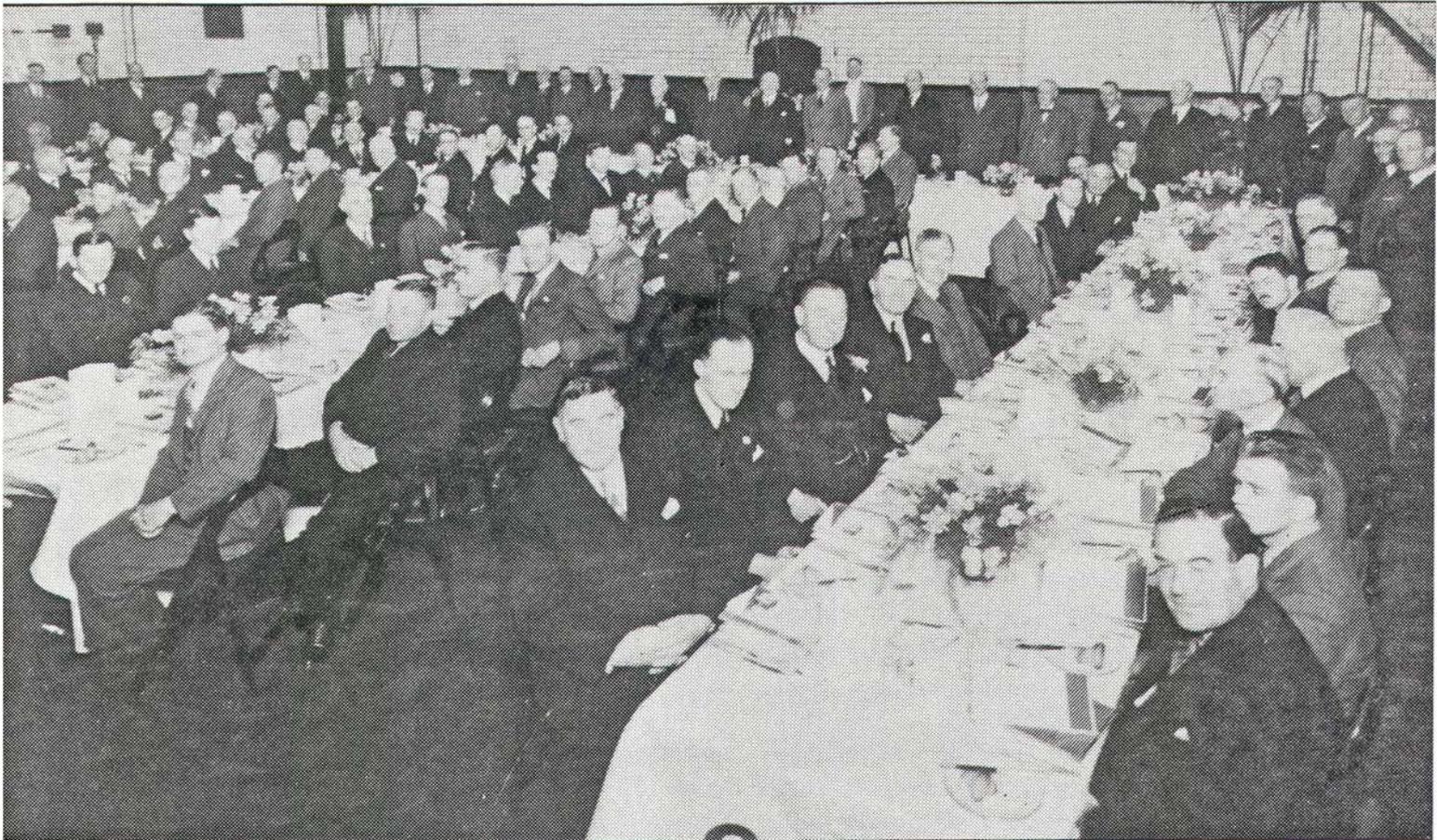
Chapter Six

THE OFFICIAL OPENING, 22nd JUNE 1934

Lord Rutherford's Speech

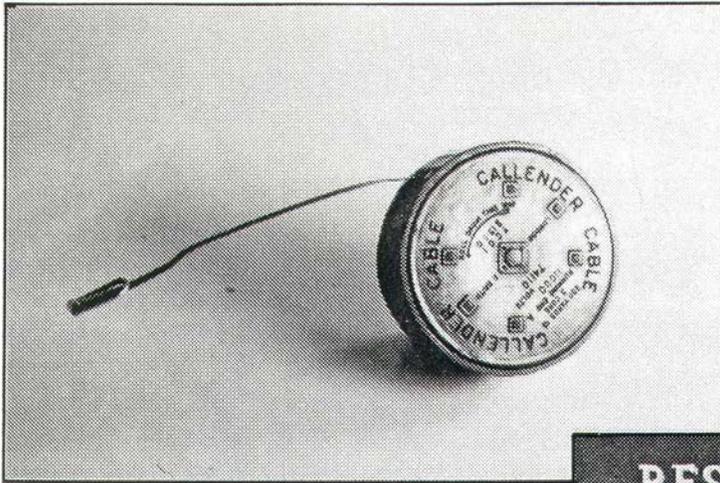
BY 1934, the Research Department at Wood Lane had become fully operational, as witnessed by the major research projects described in the foregoing. The official opening ceremony was performed by Lord Rutherford of Nelson on 22nd June of that year.

The occasion took the form of a luncheon, at which were present many eminent people in the electrical industry, and also representatives of the trade and national press. The laboratory known as HV2 was decorated for the occasion with a fitted carpet and potted plants. Catering was by J. Lyons and Company, who used substation No. 2 for the preparation of the meal. At the tables guests found a programme for the afternoon tour,

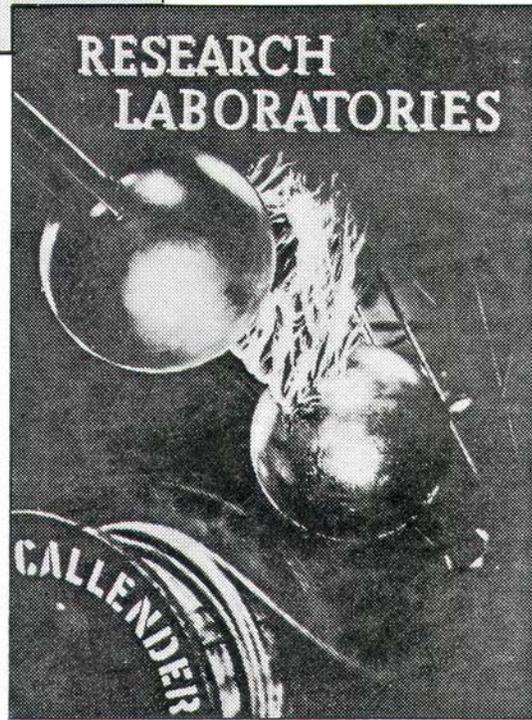


Luncheon on the occasion of the Official Opening of the Wood Lane Laboratories, 22nd June 1934.

Chapter Six



Memento tape measure



Commemorative brochure, published to coincide with the 1934 Opening

a memento which consisted of a measuring tape in the form of a miniature cable drum, and a souvenir booklet entitled "Research Laboratories". The latter described in detail the lay-out of the laboratories and the potentialities of the newly-installed equipment. Some copies of this souvenir booklet are available in the Wood Lane Library for those who may wish to look at them. A photograph taken at the luncheon shows at the top table Lord Rutherford, who performed the opening ceremony, flanked on his right hand by Sir Tom Callender, and on his left by Sir Fortescue Flannery (Chairman of the Company) and Mr. P. V. Hunter. Also in the photograph can be seen Mr. J. Urmston, Dr. L. G. Brazier, Mr. K. S. Brazier, Mr. F. S. Smith, Mr. A. S. Butler, Mr. G. M. Hamilton, Mr. H. C. Hall and other members of the staff at Wood Lane at that time.

Lord Rutherford's speech at the opening ceremony has since proved to be quite prophetic, and so interesting, that no apologies are made for reproducing it here in full.

"It is a great pleasure for me to be here today to inspect and open these new Research Laboratories. Of all industries the electrical industry is most firmly based on scientific theory, and it has always shown its faith in the value of research, not only to improve existing methods but to search for new industrial applications. This is well shown not only by the support of a vigorous Electrical Research Association for the industry as a whole, but by the provision of research laboratories, often on a large scale, by individual firms in order to deal with their special problems.

Today we have another example of this far-sighted policy in the fine Research Laboratories to be opened today for special investigations of high tension phenomena, particularly in connection with transmission of power by insulated cables, where overhead lines are either dangerous or impossible. The insulation of cables for high voltages is a most intricate and formidable problem which has worried the physicist and the electrical engineer since the time of Faraday. Here scientific theory is of little help, for insulators do not behave in practice like the ideal dielectric theory. The insulating material used for a cable today seems almost human in its capacity to break down from a variety of causes when subjected to prolonged electrical stresses, particularly of an alternating character. Progress depends on an understanding of these different types of weakness, so that we may hope if not to devise a perfect insulator, at any rate to improve greatly the efficiency of the methods in use today. Nature has dealt with this problem on a vast scale. in order to insulate us from electrical disturbances in our atmosphere. She employs the whole atmosphere for the purpose, and even then fails under abnormal conditions as witnessed by the lightning flash.

The breakdown is, however, only momentary and in this respect nature has devised a more satisfactory method than the cable engineer. Notwithstanding elaborate investigations, we are still far from understanding all the complex causes which ultimately lead to the breakdown of a cable under the existing conditions of industrial use. We can be certain that the new laboratories will play their part in adding to our knowledge and to help to devise the more perfect cable of the future. The problem is a pressing one today for there is an inevitable tendency to use even higher voltages for the transmission of power and this necessitates the production of cables to withstand still higher voltages. We are inclined to forget how recent is the use of high potentials for the transmission of power.

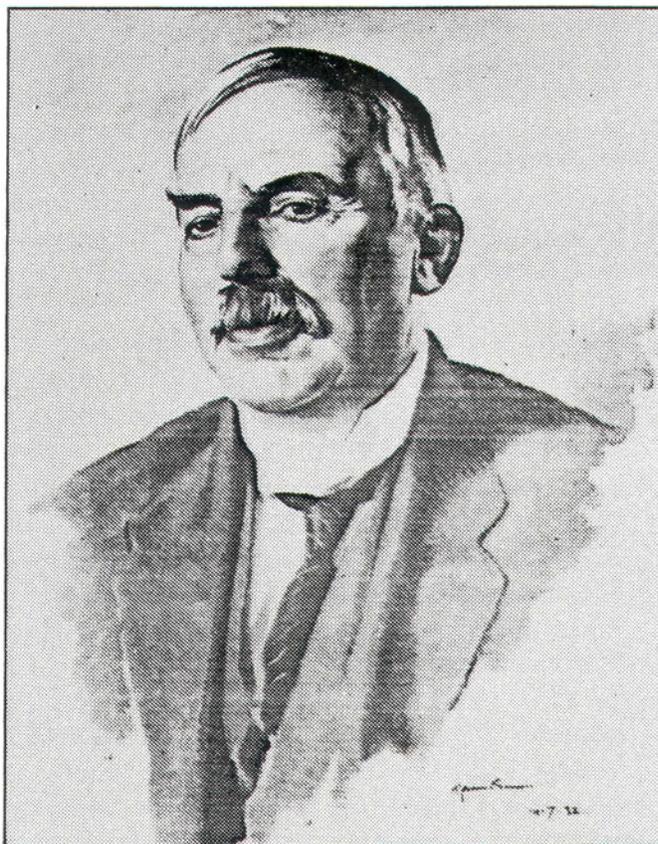
The transformer was invented in 1888 and used in 1892 to provide two kilovolts. The use of high voltages steadily increased and by 1920 the power voltage had risen to 160,000 volts, while a million volts was obtained in the laboratory. Since the war, voltages have steadily risen and the Boulder Dam installation provides 287,000 while the laboratory voltages have risen to

Chapter Six

10,000,000. Over this period of about 40 years there has been an average rise of voltage of about 6,000 volts per annum.

In recent years, I have personally been much interested in the problem of the production and use of high voltages for experiments on the transmutation of matter. A stream of charged particles generated in a discharge tube is accelerated to high speeds by a high voltage applied to a well-exhausted tube. This is a difficult technical problem when a voltage of the order of one million is employed. Cockcroft and Walton arranged an installation to give a steady voltage of 700,000 volts dc and made the first successful experiments in the Cavendish Laboratory to show that constant elements would be transformed by very fast protons generated artificially by the passage of an electrical discharge through hydrogen. This has opened up a new and powerful method of attack on the transmutation of matter by simple projectiles of different kinds. This is a type of investigation that might possibly be considered in this new laboratory, so well equipped for such a purpose, if not now, then in the days to come; for a satisfactory solution may prove of much importance in many directions.

As Chairman of the Council of the Department of Scientific and Industrial Research, I am naturally very much interested in the application of science and



Lord Rutherford of Nelson

The Official Opening

the scientific method to promote an efficient industry and I have been impressed by the importance of a close liaison between Research Institutions engaged in what may appear to be entirely different types of investigations. As an illustration of the value of such liaison, I may refer to the work done by the Electrical Research Association in the heating of buried cables which, I believe, proved of much value to industry. The production of a new lead alloy by the NonFerrous Research Association has been instrumental in overcoming serious defects in submarine cables and may even affect us individually in the future in saving us from those impressive orgies of burst lead pipes that are a common form of dissipation in this country during cold spells. It may be that a solution of some of the difficulties of a cable manufacturer may issue from an entirely unsuspected direction, possibly from the fundamental investigations in a physical or chemical laboratory. It maybe that the most perfect insulation will not be found in a naturally occurring substance but may prove to be a synthetic substance say produced from coal by the action of high pressure and temperatures. No doubt your efficient Director of these laboratories is well aware of the importance of these scientific liaisons between different types of pure and applied research. Such liaisons may not result only in direct value to the industry but indirectly will undoubtedly prove of much value in helping to broaden the outlook of the investigator - an important need in these days of extreme specializations of research.

For these reasons, I hope that this Company will not only see that the new laboratory will be kept in a state of highest efficiency to perform the valuable functions that fall to it, but will take a broad view of its responsibilities by keeping in touch and even supporting allied lines of work in other research associations or institutions. I am looking forward to the day when industry in this country will consider itself as a unit, and where results obtained in any branch will be available for industry as a whole.

I would like to say in conclusion that I am delighted to be present here today on this important occasion, the origin of which I believe owes much to the energy and enthusiasm of my old friend Hunter. May this laboratory prosper, and fulfill the most roseate dreams of its founders.”

A vote of thanks to Lord Rutherford was proposed by Sir Fortescue Flannery, and then followed short speeches by Sir Tom Callender and Mr. P. V. Hunter. The guests were then divided into a number of parties for a conducted tour of the laboratories. A highlight of the tour was a special demonstration of high voltage testing techniques, including an impressive test to demonstrate the advantages to be gained from the use of metallized stress-cones at the cable ends, a development which has been previously mentioned. During the high voltage demonstration, Lord Rutherford, on being warned that some large sparks were likely to be generated, was heard to remark, “They'll have to be bloody big to impress me!” During the afternoon the visitors were also shown a film illustrating the manufacture of cables and overhead lines.

The occasion of the official opening of Callender's new research laboratories received wide press coverage. Articles appeared during subsequent weeks in “The Times”,

Chapter Six

the "Manchester Guardian", the "Observer" and the "Illustrated London News" . Reviews of a more technical nature appeared in the trade press, in such journals as "Electrical Industries", "Electrical Review", "The Electrical Times", "The Electrician", and the "Engineer". The occasion also received mention in "Engineering", "The Railway Gazette", "The Shipbuilder", "Syren and Shipping", and "World Power". Press cuttings from these journals are available in the Library for those who wish to read them.

Later on the day of the official opening the laboratories were opened to friends and relatives of the staff for a social evening. The social atmosphere was continued the following day when certain anonymous members of the staff recall that they finished the remainder of the drinks at a "get-together" in Mr. Urmston's office. It is not known who collected the money on the empties!