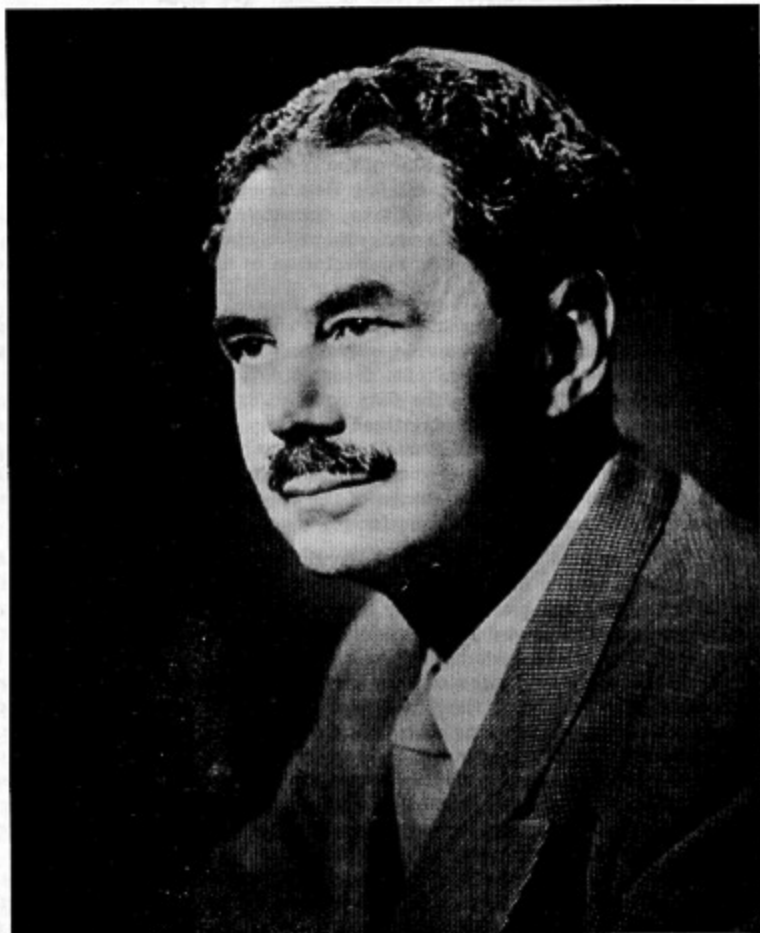


PROFILE - Dr. L.G. BRAZIER



ON THE OCCASION OF HIS RETIREMENT
AUGUST 31ST 1964

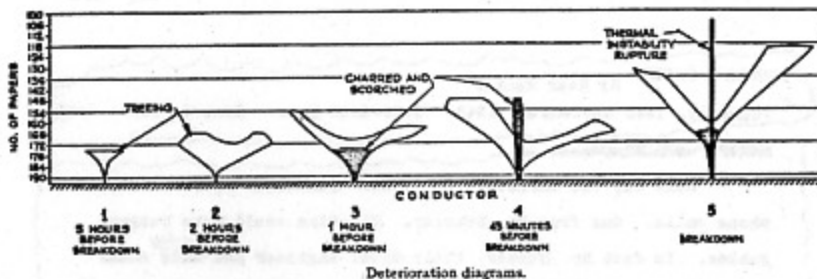
Dr. L. G. BRAZIER

B.Sc., Ph.D., M.I.E.E., Fel. A.I.E.E.,
F.C.G.I., F.Inst.P., A.F.R.Ae.S.

On the 31st August Dr. L.G. Brazier will retire after over thirty-nine years' service with the Company. To us at Wood Lane this will be a great loss, for Dr. Brazier has been associated with our research activities as Chief Physicist, Research Manager and as Director of Research since the inception of the old Research and Outside Testing Department at Ormond Yard. The present day Research Organization owes it standing in the Company and Group largely to his efforts, foresight and enthusiasm, and it is thought fitting that on the occasion of his retirement we should not only express our best wishes for his future, but also attempt an appreciation of the man who has directly, or indirectly, influenced the lives of each one of us at Wood Lane.

Born in Hertfordshire at the turn of the century, Dr. Brazier was educated at Sidcot and on leaving school during the first world war entered the Royal Flying Corps, trained as a pilot and saw service in Flanders. On demobilization from the Royal Air Force in 1919 he resumed his studies, entering the City and Guilds of London Institute where he obtained a degree in science. On leaving the University in 1923 Dr. Brazier joined the Royal Aircraft Establishment at Farnborough, where he worked on a study of aircraft structures and elastic stability. This work was later to form the subject of his Ph.D. thesis and to be published in the Proceedings of the Royal Society as a paper on "Flexure of thin cylindrical shells and other thin sections".

In 1925 Dr. Brazier was appointed Chief Physicist to the Callender Cable and Construction Company, where his brother, Mr. K.S. Brazier, was already employed, and was thus in at the beginning of the newly formed Research, Outside Testing and Telephones Department at Ormond Yard, under Mr. J. Urmston. After working for several years on problems connected with trunk telephone cable systems, Dr. Brazier specialized on high voltage transmission research and development work and came under the influence of Mr. P.V. Hunter, the Chief Engineer. His initial studies on dielectric loss angle measurements in cables using a Schering Bridge resulted in a paper in 1931 which served as part qualification for Associate Membership of the Institution of Electrical Engineers. In the early 1930's considerable trouble was being experienced with 66 kV solid type cables due to instability under test and in service, and Dr. Brazier soon became deeply involved in the work to elucidate the causes of these failures. The Research and Outside Testing Department had moved to Wood Lane, and in the laboratory Dr. Brazier made a particular study of thermal instability in cables. He developed an experimental technique in which by monitoring the temperatures along the length of the cable under test hot spots due to thermal instability could be detected, and the test stopped before all the evidence in the dielectric was destroyed by the burn out resulting from failure. The changes produced up to the breakdown could thus be studied by post-mortem dissection. From these studies a deterioration diagram, such as is shown overleaf, could be built up.



Deterioration diagrams.

This careful laboratory work of Dr. Brazier and his assistant, Dr. D.M. Robinson, added considerably to our knowledge of the mechanism of cable failure and led to the development of the compound impregnated pressure cable.

From this work it soon became evident that the behaviour of high voltage cables was intimately connected with the amount of gaseous ionization proceeding within the dielectric. Now Fisher and Atkinson in 1922 had made a comprehensive study of the advantages to be achieved by increasing the dielectric strength of the void spaces by subjecting the whole dielectric to high pressure, and taken out a number of patents, but the principle had never been exploited, although the possibilities were under investigation by a number of different laboratories. This was to result in the development of 5 main types of pressure assisted cable - the Enfield (Hochstadter, Vogel and Bowden) compression cable, the Glover (Beaver and Davey) gas filled cable, the Dunsheath gas cushion cable, the Arman dry gas pressure cable and the Hunter-Brazier impregnated pressure cable. The impregnated pressure cable was the least different from the conventional mass impregnated supertension cable, and in the single core version the gas, nitrogen at a pressure of 200 p.s.i., was accommodated in a thin continuous annular channel between the dielectric and the sheath.

With the onset of the second world war, the nature of the problems investigated by the Research Department changed and concerned matters of national importance. With the recovery of a magnetic mine from the mud in the Thames estuary at Shoeburyness during the night of the 22nd November, 1939, it became vital to devise a means to neutralize this menace to our shipping, and among the many suggestions put forward the idea was conceived of creating a magnetic field in the sea which would serve to explode the mines. This involved two minesweepers, each towing two cables of unequal lengths, capable of passing a heavy current through a circuit which was completed by the sea path between the uninsulated electrodes at the extreme ends of the cables. For this technique to be successful the cables had to be buoyant and not overheated by the large current (3,000 amperes). Mr. Hunter and Dr. Brazier, with others in the Research Department, soon achieved a practical design of cable, and filed the master patent application on the 20th December, 1939. The first cable was delivered to the Admiralty on the 18th January, 1940. While another design of cable was proposed and manufactured by Henley's, Callender's Cable Company was the first to explode a German magnetic mine, and it is recorded that on that occasion Dr. Brazier spent the night in an open boat on a mud bank in a snowstorm! This episode was recalled in a B.B.C. broadcast on the Home Service shortly after the war. An extract from the actual script is reproduced overleaf.

DOUBLE L SNEEP

By Rear Ranker

Thursday, 13th September, 1945: 8.15-8.30 p.m.: Home Service: London

~~MAKERS~~

Next day was Christmas Day 1939. Commander Goodeve had two phone calls. One from Dr. Brazier. His firm could make buoyant cables. In fact Mr. Hunter, their Chief Engineer had ^{already} made some. They were going straight into production. Their's was the first buoyant cable to explode ^{German} magnetic mines. Dr. Brazier won't forget it either! He spent the night in an open motor boat on a mudbank, in a snowstorm, after watching the mines go up.

The need to manufacture buoyant cable in America as well as in the United Kingdom necessitated the transfer of Mr. Urmston to the Okonite-Callender Company in the States and left Dr. Brazier in charge of Wood Lane. In 1945, on the merger of the B.I. and Callender Companies, he was appointed Research Manager and thus became responsible for all research over the whole field of the Company's activities. In 1950 Dr. Brazier was invited to join the Board of B.I.C.C. as Director of Research.

Dr. Brazier has always played an active part in the affairs of the Institution of Electrical Engineers. He became Chairman of the Supply Section in 1953, having served as a Member of Council and as a member of the Management Committee on Science Abstracts, of which he became Chairman in 1948. He was awarded the Sebastian de Ferranti Prize in 1946 for his paper on "Joints, Sealing Ends and Accessories for Pressure Cable" and in 1953 he shared, with Dr. A.L. Williams and Mr. D.T. Hollingsworth, the John Snell Premium for their paper "An Assessment of the Impregnated Pressure Cable". Dr. Brazier is also active on various E.R.A., C.I.G.R.E., I.E.C. and other committees.

In this rather inadequate account more emphasis has been placed on Dr. Brazier the scientist and administrator, than on the side of his nature outside the board room and laboratory. He is a man of wide and cultured interests, having a keen appreciation of literature and the arts, and prior to his recent illness, could count motoring, sailing and golf amongst his hobbies.

As Vice-President of the Athletic and Social Club (Wood Lane) Dr. Brazier has given encouraging support to its activities, presided at its principal social functions and presented the Brazier Challenge Cup to the Horticultural Section. He was also responsible for many of the more attractive features of the Wood Lane site - the poplar trees to reduce the noise from the sidings and to form an attractive screen is an early example to cite, and the fountain on the site of the chimney one of the most recent. Dr. Brazier will long be remembered at Wood Lane for his contributions to our social and scientific activities and, in both, his wise counsel based upon a lifetime of experience in the cable industry will be missed.

We wish him a long and very happy retirement.

R.M. Black