In 1910 he was appointed Chief Electrical Engineer to the London & North-Western Railway Company, a position he held until his retirement in 1935.

During World War I, as Lt Colonel, Royal Engineers (T.A.) he commanded a Signals Depot at Haynes Park, Bedford.

For a time he went into private practice after retiring from the LNWR.

Expert in administration, organization, and supervision of contracts, Mr Cortez-Leigh was a member of the Institution of Mechanical Engineers, the Institution of Electrical Engineers and of the Institute of Transport. He was also a Fellow of the Royal Geographical Society.

He was elected direct to membership of the Institution in 1910.

He is survived by two daughters.

JOHN CHARLES HAWKINS, who was born on 25 February, 1879, died on 13 May, 1964.

Educated at the Higher Grade School and the School of Science and Art, Torquay, he received four years' practical training under Mr H. Green (A.M.) and Mr W. Ingham (M), and passed the Associate Membership examination.

After early experience as assistant engineer to Alnwick Urban District Council, he went to South Africa for four years (1903–1907) as Chief Assistant and Resident Engineer on the Port Elizabeth new water scheme. A big future lay ahead of him in that country, but it was not until 1912 that he returned to South Africa. The intervening years he spent in England—a brief period with the Trussed Concrete Steel Company, Westminster, two years with Cardiff Corporation Waterworks preparing plans for Llywn-on Reservoir, and two years as Waterworks Engineer, Paignton.

In 1912 he was appointed Civil Engineer (2nd grade) to the South African Irrigation Department, under Mr F. E. Kanthack (M), and for the next four years worked on three irrigation schemes and a hydro-electric scheme for the Gamtoos River Valley.

In 1916 he was appointed Resident Engineer on the Vaal River barrage construction under the Chief Engineer, Mr W. Ingham (M) (pumping and water purification works)—the barrage being 1372 ft long, with 36 steel gates, each 30 ft wide, supported by 37 concrete piers. The completion of this massive project and the construction of Steenbras Reservoir works for supplying water to Capetown covered the period 1916–1927.

From 1927 onwards Mr Hawkins went into private practice as consultant to several municipalities in South Africa on water, sewerage, and irrigation schemes, also advising the Northern Rhodesian Government and several mining and estate companies. He acted as joint consultant on the Port Elizabeth water augmentation scheme, the final cost of which was £1 500 000. In 1950 he became a partner in the firm of Hawkins, Hawkins & Osborn, Johannesburg, and retired in 1956.

With his extensive knowledge of irrigation, he was often called upon to serve as arbitrator, or on water courts. He presented five papers to the South African Institution of Civil Engineers, and one on 'Irrigation in South Africa' was read before the British Association at one of its meetings there.

Mr Hawkins was a member of the South African Institution of Civil Engineers (of which he was at one time President), a member of the Association of Consulting Engineers, and of the Institution of Water Engineers. He

was an associate member of the Institution of Mechanical Engineers and a Fellow of the Royal Sanitary Institute.

Elected an Associate Member in 1909, he became a Member in 1922.

He is survived by his son, Mr R. D. Hawkins, B.Sc., M.I.C.E.

JAMES ROBERTSON FINNIECOME, M.Eng., who was born on 18 February, 1892, died on 18 May, 1964.

Educated at a grammar school in Vienna, he studied engineering at the Federal Technical University, Zurich (under Professor A. Einstein among others), and in 1915 received the degree of M.Eng. (Zurich) in mechanical, electrical, and civil engineering.

He gained practical experience on four summer vacations spent in engineering works in Austria, Germany, Czechoslovakia, and Switzerland, and later in the works and drawing offices of the British Westinghouse Manufacturing Company (steam turbines, turbo blowers, large gas and diesel engines).

With this backing, and a brilliant brain, he joined Metropolitan-Vickers Electrical Company Ltd in 1915, and remained there for the next 28 years, under Karl Bauman, Chief Mechanical Engineer and, until 1941, under the Chief Engineer, Dr H. L. Guy (M). From 1919 onwards he was in charge of theory, development, and experimental research, and the manufacture, starting up, and official acceptance tests of large power stations and industrial plants. From 1929 onwards he was also in charge of turbo blowers (design, projects, and testing), and later of turbo compressors, large radial and axial flow fans (up to 100 000 cu. ft/min), and air turbines. In 1939 he concentrated on nozzle research and later on high-pressure stresses in flanges and temperatures based on creep and corrugated expansion pieces.

Mr Finniecome relinquished his post with Metropolitan-Vickers in 1943, and after a three-months' tour of South Africa and a brief period as consulting engineer, joined the General Electric Company, Witton, Birmingham, in 1947, as Chief Mechanical and Consulting Engineer. In 1950 he was appointed Consulting Mechanical Engineer to the Ministry of Supply, Division of Atomic Energy (Production) at Risley, Warrington, where he remained until 1955.

A member of the Institution of Mechanical Engineers, a Fellow of the Institute of Fuel and a member of the Société Ingénieurs Civils (France), Mr Finniecome contributed extensively to the technical press. A brief selection from his writings is listed below. In 1946 he received the Thomas Lowe Gray Award from the Institution of Mechanical Engineers.

Elected an Associate Member in 1943, he became a Member in 1944.

He is survived by his widow, and a son and daughter.

Publications

'The friction coefficient for circular pipes at turbulent flow'. Emmott, Manchester, 1954.

'Characteristic data on the mixture of air and water vapour for atmospheric conditions'. Tract, 8vo. Vol. 722, Manchester, 1947.

'Flow through standard nozzles, orifice plates and Venturi tubes'. Tract 8vo. Vol. 723, Manchester, 1948.

'Helical Springs'. Tract 8vo. Vol. 728, Manchester and London, 1949.