

Society of Soil Mechanics, and in 1965 became a member of the Railway Engineering Divisional Board.

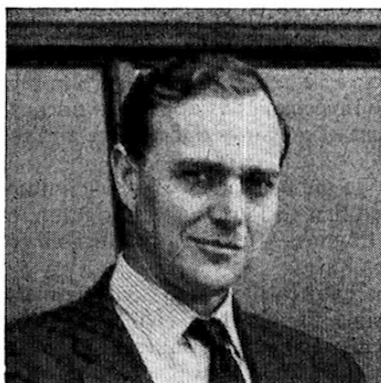
In addition to the Reports already mentioned, Armand Toms was author of several papers presented to conferences. To the Institution he contributed the following:

- 'Experiments on the stability of the self-anchored suspension bridge.' J. 10 (Nov. 1938), 91.
- 'Repairs to Railway Viaduct over London Road, Brighton, after damage by enemy action in May, 1943.' J. 24 (Oct. 1945), 353.
- 'Folkestone Warren Landslips: researches carried out in 1939 by the Southern Railway Company.' D (Railway) No. 19 (1945-46) 3. Discussion: 26.
- 'The effect of vegetation on the stabilization of artificial slopes.' Bio. 1948, 99. Discussion: 123.
- Co-author with F. W. Beatty of 'Remedial measures for the improvement of railway track formations.' D (Railway) 37 (1950). Discussion: 42. Correspondence: Div. Suppl. 1950, 11.
- Co-author with D. L. Bartlett of 'Applications of soil mechanics in the design of stabilizing works for embankments, cuttings and track formations.' P. 21 (Apr. 1962) 705.

He was twice awarded the Telford Premium (1946 and 1950).

Elected an Associate Member in 1934, he became a Member in 1956.

He is survived by his widow and a son.



Arthur Firth, MSc(Eng)

who was born on 12 March, 1925, died on 14 October, 1967.

Yorkshire born, he left school in 1939 to serve an apprenticeship in engineering with Messrs A. Blackburn & Company Ltd, textile engineers. In 1942 he became a part-time student at Bradford Technical College, at the same time apprenticed to British Belting & Asbestos Ltd. He was awarded a Whitworth Scholarship in 1946, and the following year received a BSc(Eng) external degree from London University, with first class honours. There

followed two years at Imperial College, London, where in 1949 he gained his MSc(Eng). He was awarded a Clayton Fellowship by the Institution of Mechanical Engineers in 1948.

His career began in 1949 when he joined ICI at Billingham-on-Tees as Design Engineer. Eight years later he left to take up an appointment with the United Kingdom Atomic Energy Authority (Reactor Group) as Assistant Chief Engineer (Design). Here he played an important part in the design and construction of the advanced gas-cooled reactor at Windscale. In 1960 he was appointed Deputy Chief Engineer and two years later became Chief Engineer, responsible for the design and construction of the 100 MW(e) prototype steam

generating heavy water reactor at Winfrith Heath, in which he played a crucial part.

It was only towards the end of 1965—two years after construction of the reactor was sanctioned—that Arthur Firth underwent a major operation and after a short interval resumed work, knowing that what had promised to be a brilliant career might be cut short—a fact he accepted philosophically. Until only a few weeks before his death he continued his unsparing work for the success of the project, and before the end came had the satisfaction of knowing that the reactor had gone critical and that final nuclear tests had begun according to schedule.

Quiet in manner and with an unassuming charm, Arthur Firth appraised situations without bias and brought not only engineering experience and skill as a designer to bear on the project in hand, but a firmness in management reflecting his own clear thinking.

He was elected an Associate Member in 1952.

He is survived by his widow and two children—a son and daughter.

Sir Josiah Eccles, CBE, DSc

who was born on 29 July, 1897, died on 14 October, 1967.

Educated at Cookstown Academy, he studied from 1919–22 at Queen's University, Belfast, taking a first-class honours degree in electrical engineering. Much later (1956) he received his DSc.

Service in World War I (1914–18) intervened between school and university. In 1917 he received the Military Medal.

Ahead lay a brilliant future in electrical engineering at a period of vast potential, in which his own qualities and education were reinforced by a remarkably thorough grounding with Metropolitan-Vickers Electrical Company in Manchester. Here he remained for six years, serving his post-graduate apprenticeship from 1922–24. The next two years were spent as Engineering Assistant in the Company's relay and meter department, development laboratory and test section, with finally two years as Erection Engineer—a post in which he commissioned half the Company's new plant in Scotland and was responsible for maintenance and site erection. He took charge of Motherwell's switch from local generation to bulk supply of electricity.

In 1928 Josiah Eccles was appointed Senior Technical Assistant to the Electricity Supply Department of Edinburgh Corporation, where with a staff of ten draughtsmen, he himself prepared contract specifications for all works executed and plant purchased by his Department. These included turbo-generators, pumps, pipework, coal handling plant and switchgear for 60 substations. Eight years later he was also made Construction Engineer to the Department, and in 1937 Deputy Engineer and Manager: finally (1940–44) Engineer and Manager. He then accepted a post in Liverpool as City Electrical and Lighting Engineer, and after four years there became Chairman of Merseyside and North Wales Electricity Board (1948–54). There followed three years as Deputy Chairman (Operations) to the British Electricity Authority and from 1957 he served on the Electricity Council (from 1958 as Deputy Chairman). He retired in 1961.