

Rosen specialised in the design, construction and testing of heavy industrial machinery, especially high-voltage turbo-alternators, rotating dynamic electric plant and switch gear.

He was the author of several papers, and was awarded the Gold Medal of the Junior Institution of Engineers. He was also Assessor of the Mechanical Engineering Research Board and a member of the Propulsion Committee of the Aeronautical Research Council, the Admiralty Ship Welding Committee, the Admiralty Marine Propulsion Committee, the British Shipbuilding Research Association, etc.

He was elected an Associate Member in 1918 and became a Member in 1942. He is survived by his widow.

JOHN KEITH ROSS, M.A., B.Sc., who was born on 31 August, 1872, died in October 1963.

Educated at Royal High School, Edinburgh, he studied engineering at Edinburgh University, where he took the degrees of M.A. and B.Sc.(Eng.). After a year's practical training with Mr C. P. Gates (A.M.), contractor, he joined Mr Gates' firm, working as assistant engineer on sewage purification works at Heywood, Lancs., on Talbot Road New Station, Blackpool, and finally on the widening of two railway lines (Chester-Holyhead, Saltney-Rhyl) and on a viaduct at Rhyl.

From 1902 to 1904, as engineer and agent for Messrs Monk & Newell, Contractors, he worked under Mr James Glover (M) on a 20-mile stretch of pipeline between Thirlmere Aqueduct and Manchester, and on wharves for Lever Brothers at Port Sunlight. As engineer and agent for the contractors, he later worked on covered balancing reservoirs at Cricklewood for the Metropolitan Water Board.

Backed by already considerable experience, Mr Ross went to Australia in 1906 and for the rest of his working life played a large part in the development of New South Wales. As engineer for the Commonwealth Oil Corporation he was engaged for three years on the design and construction of bridges, sidings, buildings, etc, at Newnes, New South Wales, under Mr D. A. Sutherland and Mr Henry Deane (M).

In 1909 he was appointed engineer in charge of railway construction by the NSW Public Works Department and for the next eight years worked on several new lines—Lockhart to Clear Hills, Galong to Boorowa, Dunedoo to Coonabarabran and Dubbo to Merrygoen. In 1918 he became resident engineer to the Commonwealth Department of Works and Railways, in charge of the construction of Molongolo concentration camp (railway, water, and sewerage) and the completion of the water supply to Canberra from Cotton River—work which was completed in record time. From 1919 until 1927, as resident engineer to the Public Works Department, NSW, he was in charge of the construction of Hume Reservoir, designed for two million acre-feet of water, at a total cost of £5 400 000—the second biggest dam in the world at the time. There followed three years as inspecting engineer on the River Murray Construction Works, including Hume Reservoir, Nepean Dam, and the northern suburbs ocean outfall sewer at Sydney.

After a visit of inspection to Europe, Mr Ross returned to New South Wales to take up a new post with the Public Works Department, Newcastle, as engineer in charge of design and construction of sewerage works for Newcastle

and other towns—also drainage, water supplies, harbour improvements, etc. At the same time he was President of the Hunter District Water Supply.

From 1934 until his retirement in 1937, Mr Ross was appointed principal engineer of water supply and sewerage to the NSW Public Works Department.

He was elected an Associate Member in 1899 and became a Member in 1935. He is survived by a daughter.

RUSTUM KAIKHUSHRO NARIMAN, who was born on 25 May, 1877, died on 16 November, 1962.

Educated at St Xavier's College, he studied engineering from 1894 to 1899 at the College of Science and the Royal Indian Engineering College, Cooper's Hill, passing with honours.

His early experience under the late Mr H. J. Johnson (M) on the construction of Rasul Weir on the Jhelum Canal was followed by two years spent on remodelling the main line of the Delhi Branch and distributing channels. In 1904 he investigated the leakage of water in channels of the Jumna River, and the following year was in charge of the Shong Branch, as Executive Engineer. The next three years were spent on surveys and construction of the Royla Branch of the Upper Chenab Canal, on river training works, and remodelling channels in the Multan Division, and as Executive Engineer under Mr Scratchly on the Lower Chenab Canal. From 1908 onwards he served as Executive Engineer under the Government of India (Irrigation Branch), and in that year he made a study of hydraulic and irrigation works in Belgium, Holland, Italy, and Egypt.

After a year spent on river training works for Dera Ghazi Khan City, he was engaged from 1910 to 1912 on remodelling and constructing new channels in the Multan District under Messrs Davis & Pellereau. For the same firm in 1913 he worked on the water supply for Dera Ghazi Khan and constructed river flood embankments. The following year he was in charge of the Hissar Division, Western Jumna Canal, and also visited hydraulic works in Burma, Madras, Ceylon, and Bombay.

Mr Nariman was an expert on drainage and irrigation, river-training and canals, and the Indian Government facilitated his studies in Europe, Egypt, Burma, Ceylon, etc. He travelled widely, touring Iran, Russia, the Federated Malay States, China, Japan, Manchuria, Mongolia, the Dutch East Indies and Australia, and was consulted wherever he went. In 1929 he attended the World Engineering Congress in Tokyo and presented papers for discussion: he was also a delegate to the first Congress on Large Dams in Scandinavia and the centenary celebrations in Melbourne.

Mr Nariman was a member of the American Society of Civil Engineers, the Engineering Institution of Canada, the Institution of Engineers, Australia, and the Institution of Engineers (India). He was also a fellow of the Royal Geographical Society and at one time member of the Royal Asiatic Society of Bengal and of the American and Chinese Engineers' Associations.

Elected an Associate Member in March 1903, he became a Member in January 1916.

He is survived by a brother, Major J. K. Nariman (Ret'd).