

ROBERT FERGUSON (R.F.) LEGGET (1904-1994)

Edited by Jim Graham, in 2012, from an article by C.B. Crawford in *Geotechnical Engineering In Canada: An Historical Review*, published by BiTech Publishers, Richmond BC, 1997



Robert Legget was born in Liverpool, England in 1904. He graduated from the University of Liverpool with a B.Eng. in Civil Engineering and Geology in 1925 and an M.Eng. in 1927. [He received his first of four honorary doctorates in 1963 from the University of Waterloo, Waterloo, ON.] After graduation, he joined a firm of consulting engineers working on design and construction for the Lochaber power project in Scotland.

Robert Legget came to Canada in 1929 and worked for the Power Corporation and Canadian Steel Sheet Piling Company in Montreal. After 11 years in construction, he made a career change to teaching, first at Queen's University and then at the University of Toronto. He was a superb teacher, whose lectures were sprinkled with practical examples from his own experiences or from published case histories. In 1939, he published his first major book *Geology and Engineering* (3rd edition 1983), a book that had a major influence on the early development of geotechnical engineering in Canada. Along the way, there were another dozen major books and four others where he acted as stimulator and editor. After World War II, he was among the very first to introduce the teaching of soil mechanics in Canadian universities.

In 1947, Robert Legget joined the National Research Council of Canada (NRC) as the first Director of the new Division of Building Research (DBR). Under his guidance, the DBR grew rapidly to a staff of 90 by 1953, providing a research and information service for the Canadian construction industry. Two special needs were rapidly identified – the need to revise the original National Building Code from 1941, and to provide technical support to the national housing agency CMHC. In developing these programs, Dr. Legget encouraged his staff to take an active part in professional and technical societies and to prepare publications that could be easily understood and applied by busy practitioners.

While still at the University of Toronto, his consulting projects had led to a lifetime interest in the challenges of building in the North and the development of a team of researchers dealing with the character and occurrence of permafrost. This work eventually led to the Permafrost Map of Canada and many papers dealing with design and construction in the north.

Robert Legget's opportunity to influence the development of geotechnical engineering in Canada came through his Chairmanship of the NRC Associate Committee on Soil and Snow Mechanics, later named the Associate Committee on Geotechnical Research (ACGR). Initial work was on tracked vehicles, clearly a wartime interest, but it expanded rapidly to permafrost, muskeg, soil, snow, ice, expansive clays, highly sensitive Champlain Sea clays, and soil-structure interaction.

Through the ACGR, he invited all known workers in soil mechanics in Canada to a two-day meeting in Ottawa in 1947. [Proceedings of this first Canadian Soil Mechanics Conference can be found in elsewhere on the CGS website.] Representatives from the various regions were encouraged to form local groups of practitioners and researchers, and these eventually formed the nucleus of the Canadian Geotechnical Society. Robert Legget's commitment to writing about and sharing his experience led in 1961 to the Canadian Geotechnical Journal under its first editor, Victor Milligan. His initiatives in encouraging the NRC to fund geotechnical research in the universities eventually produced the Natural Sciences and Engineering Research Council of Canada.

Robert Legget was the last survivor of the eight Canadians registered for the 1st International Conference on Soil Mechanics and Foundation Engineering at Harvard University in 1936. At the conference, he met Terzaghi and other engineering leaders from Canada, the USA and other countries. His ongoing involvement in the ISSMFE (now ISSMGE) as Vice President for North America led to the International Conference in Montreal in 1965. The conference was a technical and financial success, with the profits essentially funding the early years of the Canadian Geotechnical Society, considered by many others as an ideal combination of multidisciplinary collaboration between practical and academic research. When he retired from the NRC in 1969, the Society established the R.F. Legget Award (now Medal) in his honour.

Robert Legget is also remembered for his thorough research on the planning, construction and financing of the Rideau Canal between Ottawa and Kingston, and his admiration for the work of Lt. Colonel John By, founder of Bytown, now Ottawa. This was documented in his book *Rideau Waterway*, published in 1955, with a second edition in 1986. After retiring in 1969, he revived his contributions to engineering geology and renewed his interests in engineering history. Fortunately, his papers have been sorted catalogued and stored in the National Archives of Canada. [Information about these papers can be found elsewhere in the Canadian Geotechnical Virtual Archives on the CGS website.]

Robert Legget's many contributions to the engineering profession and its history were recognized with twelve honorary degrees, fifteen special awards from professional and learned societies, and appointment as a Companion in the Order of Canada.

Perhaps his greatest contribution to the Canadian geotechnical community was his foresight and sound organizational ability which drew together interdisciplinary workers from coast to coast into what evolved as the Canadian Geotechnical Society. In 1989, when he accepted the Royal Bank Award for '*outstanding accomplishments contributing to human welfare and the common good*', he said: "In my six decades here, I have grown to love this country and land. And I find it passing strange to be receiving this Award for what I am said to have given to it when I know that I have received far more from Canada than I have ever given in return".

[Robert Legget's contributions to Canadian geotechnical engineering were documented by C.B. Crawford in *Geotechnical Engineering in Canada: An Historical Review*, 1997, a document that resulted from the CGS's Canadian Geotechnical Heritage Project in 1986. Both the 1997 document and more information on the 1986 project can be found elsewhere in the Canadian Geotechnical Virtual Archives on the CGS website].