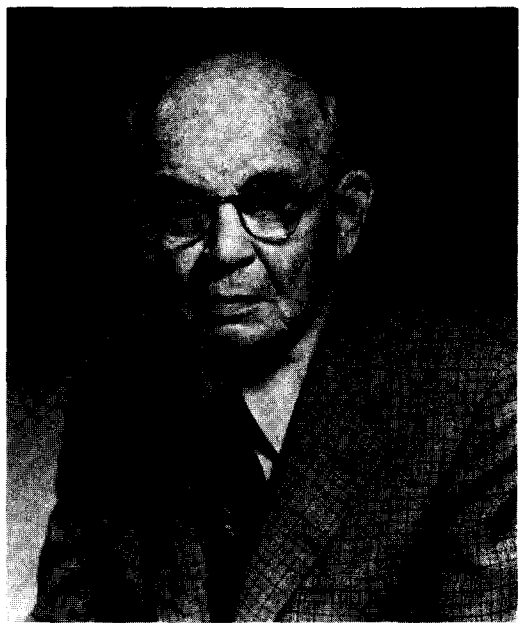
OBITUARY

Mikael Juul Hvorslev
1895–1989



If, during the three decades after the Second World War, you as a young engineer or scientist interested in soil mechanics or foundation engineering, had visited the US Waterways Experiment Station in Vicksburg, Miss., you would remember an extremely kind gentleman, who—in spite of many commitments—knew no limits to his hospitality and friendliness. He would explain the theoretical and practical aspects of the work at the station; as a tourist guide he would show you around the battlefields of the Civil War; he would describe the geology of the area and the way in which highways had to be constructed through loess deposits; and, last but not least, he would demonstrate to you how much human relationships meant to him. You had met Dr Hvorslev!

With the decease of Dr Mikael Juul Hvorslev on 7 December 1989, in his 94th year, our Society has lost the last of its great old geotechnicians.

Hvorslev was born on 25 December 1895 on Allinggaard Farm, Svostrup, Denmark, the son of Mikael Hvorslev and his wife Anna. He graduated from the gymnasium in Viborg in June 1913 and, as a civil engineer, from the Technical University of Denmark in February 1918. From 1918 to 1921 he worked with reinforced concrete and industrial structures in Denmark and France, and from 1921 to 1932 he was engaged in work with dams, hydroelectric power plants and water supply in the United States and Columbia. Then he entered the field that would hold a lifelong burning interest for him: he carried out geotechnical investigations in Austria and Denmark from 1933 to 1937.

At that time the situation with respect to the understanding of the shear strength of clays could best be described by the anecdote told by Arthur Casagrande in one of his lectures: 'When a client asked the laboratory in Vienna to determine c and ϕ, he might respond with the question: "Which c and ϕ do you want?"' Indeed, with shear boxes, varying rates of loading and undefined states of drainage led to there being many 'degrees of freedom' in the laboratory test results!

It was Hvorslev who decisively clarified the situation. This was done in the thesis that in 1936 gave him the degree Dr-Ing of the Technical University of Vienna. Under the title 'Über die Festigkeitseigenschaften gestörter bindiger Böden' ('On the strength properties of remoulded cohesive soils') the thesis was published in 1937 by Danmarks Naturvidenskabelige Samfund as *Ingeniörvidenskabelige Skrifter*, Series A, Nr. 45, Copenhagen.

An important innovation was the development of the ring shearing apparatus, with which Hvorslev eliminated the very non-uniform distribution of strains over the length of the classical shear box. This apparatus and the main test results were described in *Proc. First ICSMFE*, Harvard University, 1936 (Vol. **2**, pp. 125–29 and Vol. **3**, pp. 51–53, respectively). In order to avoid the inhomogeneities of natural soils, Hvorslev used remoulded clays. The tests were carried out during the period December 1933 to May 1936 under the supervision of Karl Terzaghi in his soils laboratory. Since the shearing was carried out after complete consolidation, Hvorslev was able to determine the true cohesion and the true angle of friction.

From 1938 to 1946 Hvorslev worked as Research Fellow and consultant at Harvard University in association with Arthur Casagrande and Karl Terzaghi. From 1946 until his retirement in 1976 at the age of 80, he worked as a research engineer and later as a consultant at the US Army Engineers' Waterways Experiment

Station, and was involved in geotechnical investigations, foundations, dams, river regulations and many other subjects in USA, Panama and Greenland. In 1946 the rector of the Technical University of Denmark invited Hvorslev to consider taking the Chair of Harbour and Foundation Engineering; he felt, however, that he had to decline.

Hvorslev was a corresponding member of the Danish Academy of Technical Sciences. He had been an active member of a number of technical committees of the American Society of Civil Engineers and the International Society of Soil Mechanics and Foundation Engineering. In 1957 he received the Walter L. Huber Civil Engineering Research Prize of the American Society of Civil Engineers, of which he became an honorary member in 1979. In 1965 he received the Karl Terzaghi Award and in 1969 he received the Department of the Army's Research and Development Achievement Award. He was also an honorary member of the Danish Geotechnical Society.

Hvorslev never married. He spent his last years in an apartment in High-land Farms Retirement Center, Black Mountain, North Carolina.

Dr Mikael Juul Hvorslev will be remembered with the greatest professional respect by all his younger colleagues and with gratitude by a large number of friends around world, many of them from the Scandinavian countries. Among other things, he used to keep in contact with colleagues and friends by means of Christmas cards with photos from the places he had visited during the year.

H. Lundgren
N. Krebs Ovesen

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