

scheme in the Sudan (as a result of which the 1951 cotton crop sold for £54 000 000), and in 1930 he was asked to redesign the entire salt field of the Sudan Salt Company—a massive project in which he was given an entirely free hand. From 1931 to 1934 he reconstructed an abandoned salt works at Port Sudan on the Red Sea, and over the next six years developed various concessions in the Near East, Africa, and South America, building up an organization to classify and market annually some £60 000 000-worth of cotton.

In World War II he served from 1940 to 1941 with the 5th Indian Division in Abyssinia and Eritrea, and for the next five years was Controller of Stocks and Distribution (later Controller of Industrial Commodities) in the Sudan Government. He was transferred in 1946 to the Department of Economics and Trade to handle emergency food supplies. After the Nile floods of 1946, he reconstructed the smashed works and protection banks.

Returning home from overseas, he became in 1948 managing director of a firm producing electrical equipment, later visiting Nyasaland as consultant on land development schemes. From 1949 to 1952, as divisional engineer (agriculture) to the Colonial Development Corporation, he initiated companies in the West Indies, East and West Africa, Nyasaland, Swaziland, Malaya, and Borneo—firms whose products varied from food crops to vegetable oils and tobacco. From 1952 to 1953 he represented the United Nations (Relief and Works) in Jordan and was responsible for 465 000 Arab refugees—their housing, food, education, and welfare generally.

From a crowded life Mr Telford was forced by ill health to retire in his late fifties.

Elected an Associate Member in December 1922, he became a Member in January 1932.

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

PROFESSOR KARL TERZAGHI, who was born in Prague on 2 October, 1883, died in Winchester, Mass. on 25 October, 1963.

Austrian by birth, he showed no interest in the military career planned by his family and was transferred from a military to a civilian school before studying engineering at the Technische Hochschule in Graz, Austria. Although in 1904 he received a degree in mechanical engineering, his chief interest was geology, and early in his career he determined to study the scientific principles of soil mechanics and to replace by scientific procedures the hit-or-miss methods of earthwork engineering practised at the time. When the results of his intensive research became available in 1925, they produced widespread interest and controversy, and from obscurity Terzaghi, at 42, rose to fame in the civil engineering profession. From then on his services as the leading expert in foundation engineering were in increasing demand in several continents, and he was free to choose the most challenging assignments.

After early experience in Vienna, St Petersburg, and the United States, he served in World War I from 1914–1916 as 1st Lieutenant in the Austrian Army. He was appointed to a teaching post at the Imperial Ottoman School of Engineering in Istanbul in 1916 and two years later became a Lecturer at the American Robert College, Istanbul. In 1925 he went to the Massachusetts Institute of Technology, Cambridge, Mass. where, during the next four years, he extended his early research work and established the subject of soil mech-

anics in the United States. In 1929 he returned to Vienna to take up a professorship at the Institute of Technology, and here he remained until 1938, working meantime as a consultant with a practice extending to Poland, European Russia, Central Asia, the Caucasus, Sweden, Germany, North Africa, and Turkey. In all he handled some seventy cases involving serious difficulties in foundations and dam construction over this period.

Terzaghi first visited this country in 1938. He was staying in France when he received a telegram asking if he would act as adviser on the construction of an earth dam in England. An interview was arranged, and a few hours later the engineer-in-charge arrived in Paris. He was a worried man. Without a word he spread out plans and records, which Terzaghi examined.

Terzaghi: Where is the dam located?

Visitor: North of London.

Terzaghi: That dam must have been designed by an enemy of the British nation because it will fail, whereupon your Parliament and Westminster Abbey may be washed into the Thames.

Visitor (now smiling): It has failed already.

Terzaghi: What instructions did you get from your boss?

Visitor: Show him the plans and watch his face. If he remains calm, take your hat and go. If he looks disturbed, bring him over on the next plane.

The same evening the two men flew to London together. The visitor was in fact Mr R. M. Wynne-Edwards, later President of the Institution.

In 1939 Terzaghi accepted an invitation to deliver the James Forrest Lecture (his subject: soil mechanics) and returned in 1957 during the Fourth International Conference on Soil Mechanics and Foundation Engineering, organized by the International Society of Soil Mechanics and Foundation Engineering, of which he became first President in 1936.

He worked unceasingly to extend the new field of knowledge in soil mechanics based on his research, and his many publications—classic textbooks and articles—are remarkable not least for their clarity and elegance of style. They total over 250 titles. (For complete bibliography, through 1959 and part of 1960, see "From theory to practice in soil mechanics", Pt V, edited by L. Bjerrum, A. Casagrande, R. B. Peck, and A. W. Skempton. Wiley, New York, 1960. For the remainder, 1960 through 1964, see *Géotechnique*, March, 1964.)

He was extraordinarily active until his late seventies. Although he suffered from ill health in his last years, he completed a number of professional assignments in this period, and up to the time of his death he was working on his article on the Mission Dam (now re-named the Karl Terzaghi Dam) for *Géotechnique*.

He was elected a Member in December 1938.

He is survived by his widow, a son, and two daughters (one by his first wife).

DAVID ERIC PATERSON, *O.B.E., M.C.*, who was born on 21 April, 1890, died on 4 February, 1964.

Educated at Grey College, Port Elizabeth and the South African College School, Cape Town, he studied engineering at the University of Cape Town, where he received the degree of B.Sc.(Eng.) in 1910.

In 1911 he joined the South African Railways and Harbours Administration