

A True Gentleman of Science - TJ Marshall, PhD, OAM 26 March 1907 to 26 August 2008

By Jenny Graves and Lyn Richards

Dr T.J. (Tim) Marshall, a pioneer in Australian soil physics, died in Melbourne on 26 August, aged 101. Recently, asked by a local journalist what he was 'glad to have been around for', he replied, "A national approach to saving the Murray river system. Development of Ord river irrigation. Survival of the United Nations. Recognition of the value of science. Continuation of our family cluster".

Weeks later, at his funeral, colleagues, friends and family paid tribute to his strong advocacy of science and its relevance to society, his wisdom, gentleness and humor. To many, including us, he was a model of what curiosity, hard work, humility and generosity of spirit can achieve in the highest echelons of scholarly research.



Theo John Marshall, ("Jack" in W.A., "Tim" elsewhere) was born at Boulder, W.A. His bank manager father moved the family to a farm on the marginal wheat lands of the Wickiepin district, as drought, then war hit. With sister Millie and brother Alec, he attended an inspiring one-teacher school at Gillimanning. The family moved to Perth after the war, where Jack won a scholarship to Perth Modern School. He graduated B.Sc. (Agr.) from the University of Western Australia, helped by a Government Exhibition.

In 1929 he joined the new Division of Soils of the Council for Scientific and Industrial Research (CSIR, now CSIRO), in Adelaide, where he surveyed the soils of the Murray River irrigation area and monitored salinity. Concerned at misuse of precious Murray and Darling water, he warned in 1937 that growing cotton and rice there was unsustainable, and that the rising water table boded salinity problems (now rampant in Victoria).

His research won an M.Sc. (Agr.) degree from the University of Adelaide in 1933, and a PhD scholarship to the University of California at Berkeley. Here soil physics was a recognized discipline, and he undertook research in water retention and movement, soil structure and clay mineralogy with Geoff Bodman. He also courted a lively young University of Melbourne graduate doing a Masters in Geography at Berkeley, Ann Nicholls, whom he married in 1938 and adored for all their lives together. "Mrs M" lectured in, and ultimately chaired, the Department of Geography at the University of Adelaide.

When Japan entered World War II, Marshall was seconded to the US Army, assessing aircraft landing sites for an inland supply route. He recalled that flying with American pilots was more terrifying than any threat from the Japanese. In the Northern Territory he advised on irrigation to grow fresh vegetables for the Army, and assessed the suitability of Ord River soils for irrigation.

Postwar, Marshall was asked to lead a Soil Physics Section of the CSIR Soils Division, initiating a highly productive period of field and laboratory research on water movement and the stability and strength of soils as they affect plant growth. He was

proud of his young team, and from all accounts was a great mentor; many staff recounted how he had encouraged them and promoted their careers.

Milestones of Marshall's own work included relating particle size distribution to soil texture, adopted as an Australian standard, and an empirical equation to describe the movement of water in soils, important for managing irrigation and salinity. "The Marshall equation" engendered a high profile in Australia, and its relevance to other fluids – like oil – brought invitations to visit Texas oil giants and laboratories in the USA. In 1959 the Commonwealth Agricultural Bureau in England commissioned and published his book *Relations between Water and Soil*.

He declined to apply for the Chief of the Division of Soils when Jim Prescott retired, but was Acting Chief for years. President of the Australian Society of Soil Science in 1968 when Adelaide hosted the International Society of Soil Science meeting, he also served the International Society as Vice President of the Soil Physics Commission and President of the Technology Commission. A lifetime member and Fellow of the Australian Association of Soil Science, he received the Prescott Medal in 1974. He maintained avid interest in recent developments; he was, commented an ex-President, "a true gentleman of science and an inspiration to those worried about ageism". He received an Order of Australia Medal in 2000.

After retiring in 1972, he published *Soil Physics* in 1979 with joint author and lifelong friend John Holmes. Its third edition, co-authored by Calvin Rose, remains a leading text. Marshall wrote his last professional paper at 98, countering to criticism of his



1947 soil texture standards. The week before his death, he completed his biography of Prescott, 'the man who started me on my career,' for the Australian Dictionary of Biography.

In 1983, Ann and Tim Marshall moved to Victoria to join us and our four children on five acres of abandoned orchard and native bush at outer suburban Eltham. He reveled in taming the Eltham clay, and growing fruits and vines. He later cared for Ann through five years' illness to her death in 2001. He delighted in three great-grandchildren, and wrote, on his 100th birthday, that moving to the family cluster, 'with mutual help, happy celebrations, and a reconditioned orchard, continues to be a joy to us all.'

Contributed by Tim's daughters, Professor Jennifer Marshall Graves and Professor Lyn Richards.