

Vale Dr AV (Bill) Blackmore 1928 – 2022

Albert Victor (Bill) Blackmore was born in Adelaide 29 Oct 1928, the only child of James



Edward Blackmore, an English royalist (hence Bill's very Victorian first and second names) and Doris Jewkes, a very Australian woman (who gave him the moniker by which he was always known).

Bill went to Unley High School, just down the road from the Waite Agricultural



Research Institute. In February 1945 (aged 17) he joined CSIRO Soils Division as a lab assistant in the Soil Physics Section under the supervision of Dr TJ Marshall. Today, visitors to the Waite Campus may have trouble finding a parking spot among thousands of cars but this was not a problem in 1945 – he recalled there



being only one car on the campus – a sports car belonging to his eccentric colleague, Cliff Gurr!

Bill worked with many of the familiar early names in Australian Soil Physics: Roy Brewer, Bill Emerson, Bill Greacen, Cliff Gurr, John Hutton, Keith Norrish, Jim Quirk, and Geoff Stirk among many others, on fundamental projects related to the behaviour of soil clays.

While at CSIRO, Bill enrolled for a BSc at University of Adelaide but in 1951 he transferred to the Brisbane laboratories of CSIRO to work with Geoff Stirk, completing his BSc at the University of Queensland (Dec 1952). He then went to CSIRO Canberra (1954-56), where he collaborated with Jim Quirk, Casper Hovingh, Tjeerd Talsma (Deniliquin) and John Hutton¹ on soil physical problems arising from rice-growing in the Murrumbidgee Irrigation Area. While



there, he enrolled for a Master of Arts in Mathematics at the Australian National University. His first papers were published in 1956 in CSIRO Divisional Reports and in peer-reviewed journals².

In Canberra, Bill met JR Philip and a visiting soil physicist, Prof. RD (Bob) Miller from the Department of Agronomy, Cornell University, who persuaded him to take leave from CSIRO to study under his supervision on the topic (MSc degree, 1958): “Swelling pressures of homionic montmorillonites saturated with cations of the lyotropic series”. Bill's work at Cornell laid to rest the errant assertion made in the mid-1950s that Ca-montmorillonites exhibited greater swelling than was predicted and carefully measured by Keith Norrish and colleagues in the early 1950s³ (Incidentally, the error at Cornell turned out to be caused by a Na-contaminated

Sephadex ion-exchange resin). Solving this mystery opened the way to doctoral studies on osmotic swelling in calcium montmorillonites⁴.

Returning to Australia, Bill worked in the CSIRO Perth labs on soil hydrological problems



related to salinity in the Belka Valley of Western Australian⁵. There he made friends with a lifelong colleague, Graham Taylor, and they travelled around Australia in Bill's Volkswagon. He was seconded by the UN to investigate salinity issues in Turkey (1964-65), then returned to CSIRO Adelaide to work with TJ Marshall on the anisotropic nature of water movement in swelling materials.⁶

Although Bill collaborated widely within CSIRO (and co-authored some of his papers), it was typical of the period that young scientists in CSIRO were encouraged to publish on their own; this was Bill's experience, in stark contrast to today's scientific environment where multi-author collaborations are the only way to undertake research – single-author investigations are, of course, virtually impossible now, or are certainly less common.

Bill continued fundamental and practical research during the late 1960s and early 1970s at the Griffith laboratories of CSIRO, investigating the role of clays in soil structure and field hydrology, as well the nature of salt-sieving in clays and clay soils⁷. He engaged enthusiastically in the Soil Division's multi-lab collaboration to understand the nature of the phenomenon of subplasticity in soils, raised earlier by CSIRO's senior pedologist, Bruce Butler. This multi-scientist collaboration resulted in a highly interesting series of papers published in 1976 in a special issue of the *Australian Journal of Soil Research*, of which Bill co-authored two papers⁸.

In the late 1970s he transferred to CSIRO Canberra, then to CSIRO Townsville in 1980 where he remained until 1983 to pursue his interest in clays, having a particular focus on the phenomenon of 'self-mulching' behaviour in swelling clay soils. As he prepared to retire, he was not satisfied with the progress he'd made in this area, so rather than attempt journal publication, he simply wrote a letter to the Editor of "Soils News" in July 1981⁹ (Australian Society of Soil Science Inc) to provide a summary of what he understood. This letter sparked a great deal of interest in the topic, (e.g., Usha Pillai-McGarry and Neville Collis-George¹⁰ at University of Sydney, and Cameron Grant and Tony Dexter at the University of Adelaide).

By the time of his retirement, Bill had worked in, and visited, virtually all the CSIRO Soils Division labs across Australia, so he understood the culture of scientific excellence fostered in CSIRO during its halcyon years following World War 2. He keenly understood the importance of publishing, and always took the view that when a paper crossed his desk to be reviewed, it deserved top priority; he would 'drop everything' to complete such tasks, knowing that delaying a review could stall somebody's scientific career.

After retirement, Bill stayed connected with his friends in CSIRO, Waite, and in 1989 he became a CSIRO Honorary Research Fellow working with Cameron Grant. From this collaboration, several publications on the topic of 'self-mulching' in clay soils arose, which inspired others to study the phenomenon over the next 5 years¹¹.



Bill was a disciplined empirical scientist who loved to work in the lab, and who believed no experiment should be undertaken without clear questions that would produce unambiguous outcomes. When faced with a difficult scientific problem, he would sometimes disappear during lunch breaks, and be found lying under someone's desk (apparently asleep), only to re-appear after lunch with multiple suggestions on how to test a new idea. He was a strong proponent of putting the subconscious mind to work by summarizing all the available evidence immediately prior to a short, deliberate break from the lab environment.

As with many who grew up through the Great Depression in the 1930s, Bill lived frugally as an adult, and gained pleasure from modest leisure activities. He became a horse-racing enthusiast and followed the daily statistics to predict (with some accuracy) the winning horses without ever experiencing the inherent risks of laying down a bet. He was a keen bridge player, and a committed jogger who repaired the soles of his runners multiple times before investing in new ones. In fact, he boasted he got several thousand miles out of a pair of runners! In later years he took up croquet, partly for social purposes but also because he loved witnessing the physics of ricocheting objects across frictional surfaces.

Bill served as Treasurer of the SA Branch of Soil Science Australia (alongside Angus Alston) in the years leading up to the 9th International Congress of Soil Science, Adelaide, 1968. He retained an interest in the Society during retirement and followed its publications: "Soils News" and "Profile" while they occurred in printed form.

Bill met the love of his life, Virginia Rowland, through croquet, in his late 70s. They travelled widely, became expert at SUDOKU (trying only the hardest puzzles), and tackled the daily crosswords while deliberately omitting clues! Bill contracted COVID in July, declining quickly thereafter; he died after a short stay in the Queen Elizabeth Hospital on 14 Sept 2022. He will be missed and remembered as a kind mentor, with a sharp wit and an active mind.

Cameron Grant CPSS, Adelaide.

Footnotes

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3. Blackmore AV, Warkentin BP 1960: Swelling of calcium montmorillonite. *Nature* **186(4727-June 4)**:823-824.
4. Blackmore AV, Miller RD 1961. Tactoid size and osmotic swelling in calcium montmorillonite. *Soil Sci. Soc. Am. Proc.* **25**:169-173.
5. Bettenay E, Blackmore AV, Hingston FJ 1962. Salinity investigations in the Belka Valley, Western Australia. CSIRO Division of Soils, Divisional Rept 10/62; later published as Bettenay et al. 1964. Aspects of the hydrologic cycle and related salinity in the Belka Valley, Western Australia. *Aus. J. Soil Res.* **2**:187-210.
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7. Blackmore AV 1970. The Poiseuille analogue for flow of water in Wyoming bentonite. *J. Hydrol.* **11**:59-68.
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10. Pillai-McGarry UPP, Collis-George N 1990a. Laboratory simulation of the surface morphology of self-mulching and non self-mulching Vertisols. 1. Materials, methods and preliminary results. *Aus. J. Soil Res.* **28**:129-139.
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