

Citation:

Lowe, D.J. 2002. Soil science at the University of Waikato: a brief history. In: J. Adams (ed.) 'Jubilee Reminiscences: Fifty years of soil science memories'. *New Zealand Society of Soil Science Occasional Publication* 3, 37-39.

# Soil science at the University of Waikato: a brief history

— David Lowe —

## ***Introduction: soil science forms the core of a broad Earth Sciences framework***

The Department of Earth Sciences, within the School of Science and Technology at the University of Waikato, was formed in 1970 under the leadership of foundation professor and head, John McCraw. The formation of a broad geosciences department, rather than a conventional department of geology or soil science, was a deliberate and, as it turns out, successful move. The Department today is one of the largest and most productive geoscience departments in New Zealand. John appointed (in 1970) as his assistants first Michael Selby and later Harry Gibbs. Both John and Harry were experienced pedologists, having worked for the New Zealand Soil Bureau of DSIR (Harry was senior pedologist at Soil Bureau), and it is not surprising that soil science was at the core of subjects taught in the Department from the beginning. Michael Selby, an Oxford graduate, was interested in geomorphology and soil erosion and so his appointment complemented those of John and Harry. Thus soil science has always been but one discipline within the Department which aimed to produce graduates with a broad understanding of geosciences including an appreciation of soils and soil resources.

Following on from the very broad year-1 geoscience papers, soil science at year-2 level has been taught as a single paper ('Introductory Soil Science') amongst four or five others, and usually as two papers ('Pedology', and 'Soil Properties and Management') at year-3 level. (Titles and contents have, of course, changed to a degree over the years.) Currently, one course, 'Soils and Land Management', is offered at year-3 level alongside 'Volcanology', 'Sedimentary Geology', 'Hydrology', 'Coastal Geomorphology and Management', and 'Engineering Geology and Environmental Monitoring'. At graduate level typically one paper, 'Advanced Soil Science', has been offered for students undertaking a masters programme, although on occasions two soil-oriented papers have been taught. Other graduate papers relating in part to soils include 'Rock and Soil Mechanics' and 'Quaternary Stratigraphy and Palaeoenvironments'. Environmental science is taught at year-1 level as an interdisciplinary paper within the School of Science and Technology. Similarly, an interdisciplinary course, 'Environmental Evaluation', is provided for masterate students. Many students taking soil and other geoscience courses within Earth Sciences today additionally take courses such as terrestrial ecology or environmental chemistry, which are offered by other science departments, and courses in environmental planning, resource

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management, or geographic information systems which are given by the Department of Geography (housed within the Faculty of Arts and Social Sciences).

### ***Staff involved with lecturing in soil science***

Academic staff who have taught in the general area of soil science in the Department of Earth Sciences include the three foundation staff noted above and (from 1975) Bob Allbrook (soil physics, soil chemistry), Peter Hodder (geochemistry), David Lowe (pedology, Quaternary science), Richard Chapman (soil and agricultural science, BSc(Tech) programme), Megan Balks (pedology, environmental science), Chris McLay (soil chemistry, soil physics) and (from 2002) Gabi Palmer (soil toxicology, environmental chemistry). Megan Balks, David Lowe, and Gabi Palmer, with peripheral help from Dave Campbell (soil microclimates, soil water) and Vicki Moon (rock and soil mechanics), are the academics currently responsible for soil science lecturing in the Department. Several staff in the Department of Chemistry including Chris Hendy (geochemistry, isotopes), Alan Langdon (physical chemistry, colloid and surface chemistry) and, in the 1970s, Alex Wilson (geochemistry, surface chemistry), have been involved with research on soil components such as allophane. Megan Balks is the fourth Chairperson of the Department of Earth Sciences, being appointed on 1 July this year (following John McCraw, Cam Nelson, and Roger Briggs). Numerous technical staff have supported the soil science programme, helping with laboratories and analytical work, and include Mary White, Peter Codlin, Vicki Blair, Tarnia Ward-Allen, Heather Windsor, Qi Ma, Caroline Huang, and (currently) Alison Burgess. Various tutors and dozens of student demonstrators have helped as well, together with secretarial and administrative staff.

### ***Research achievements in soil science***

Research activities in the Department have spanned a wide range of topics, including soil science. Over the 30-year period from 1970 to 1999 inclusive, the Department has produced 806 refereed papers at an average output rate of 2.7 refereed papers per academic staff member per year (rising to 3.5 over the 1995-99 period). Refereed papers published under the subject 'soil science' (pedology, soil physics, soil chemistry, environmental management) account for about 11% of this 30-year output. Over the same period the Department has published 602 conference papers (soil science representing 13%), 381 reports (soil science 16%), and 382 theses (soil science 17%), around 85% of these being masterates and 12% doctorates.

### ***Involvement with the New Zealand Society of Soil Science***

In terms of involvement with the Society, several staff have served on the Council, including Megan Balks and Chris McLay. Harry Gibbs was the President's Invitation Lecturer in 1975, and John McCraw was the Norman Taylor Memorial Lecturer in 1978. Seven graduates from the Department of Earth Sciences have won the Sir Theodore Rigg Award for best masterate thesis: David Lowe, Chris McLay, Brent Green, Peter de Lange, Glenn Wigley, Haydon

Jones and Rob Dragten. Seven postgraduates, from both the Chemistry and Earth Sciences Departments, have won the Morice Fieldes Memorial Award for best doctoral thesis: Keith Steele, Alan Hogg, Alan Limmer, Bryce Cooper, Tony Petch, Louis Schipper and Rob Lieffering. Society prizes for best final-year undergraduate student have been awarded to Mark Boyes, John Menneer, Rob Dragten, Victoria Gough, Loretta Garrett, Kathryn McLauchlan, Nicholas Dunn and Christian Davies-Colley.



*Emeritus Professor John McCraw, OBE, foundation head and professor of Department of Earth Sciences, University of Waikato. (Photo: Campus Photography, University of Waikato.)*