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Vale Lindsay (Lin) George Parry (1922–2016)

Lindsay George Parry in the early 1950s.

Lin Parry was born at home on a farm near Ballina, on the north coast of NSW, Australia, 29 March 1922, where he spent the first 16 years of his life. There was no bus service to the school in nearby Wardell so he had an extended pre-school with charcoal and the concrete floor of the cow bails substituting for a chalk and blackboard. With his Mother's help Lin soon learned some letters and numbers, thereby completing much of the kindergarten material. Finally, at the age of seven Lin went to school.

Starting late, Lin's primary schooling was disjointed. With continuing transport problems and completing two years by correspondence, Lin nevertheless passed the final primary school examination thereby graduating to high school. The eventual transport solution for high school was a bicycle; ride to Wardell, park the bike, cross the river by ferry, and catch the school bus to Ballina High. Due to his fragmented schooling to this point Lin was enrolled in the B class. Nevertheless, at the end of first year Lin was dux of his year. At the end of high school Lin's Leaving Certificate results were: English A; Maths I & II – Hons II; History A; French B; Chemistry B; Geography B, one of the best results on the North Coast.

Based on Lin's Leaving Certificate results he was awarded a Teachers' College Scholarship at Armidale with the aim of becoming a high school teacher. Part of his studies included university courses for which he was awarded a BSc Dip Ed from Sydney University.

Lin married Margaret in 1947 and their son Graham was born in 1948, followed by their daughter Susan in 1952. After teaching briefly at Bathurst High School Lin was appointed to the University of New South Wales (UNSW) when it was still emerging from its foundation in the Sydney Technical College. Conceived as a specialised training institute for engineers, staff were also recruited to teach ancillary subjects, such as Physics, which is where Parry fitted in. The evolution from its technical college origins to a fully-fledged university introduced new expectations of teaching staff, research and publication in particular. Lin was a founding member of the Physics Department and completed his MSc in 1955, which was presented at the first degree ceremony at UNSW. Lin was to spend his entire professional life at the UNSW.

One of the advantages of university work was sabbatical leave and Lin was able to avail himself of it on three occasions. In 1957 Lin took his family to Canberra where he was able to work on magnetic properties (particularly thermo-magnetic) of various materials and more especially with some of the leaders in the field at ANU. During this first study leave at ANU he was able to work with Frank Stacey. Lin and Margaret and Frank, and his wife Joy, were to become great friends. In his memoirs Lin recalls 'when we were considering the grains of magnetite too small to accommodate a full domain structure but not small enough to be one domain he (Frank) produced the theory in a very short time all written up and ready to publish and only needing some experimental evidence. One of the best scholars and the greatest scientist I knew'. Therefore Lin took the lead in developing a translation balance for measurement of the temperature dependence of the saturation magnetisations of rocks, to identify the compositions of their magnetically active minerals. He subsequently produced a similar instrument in Sydney and this work became central to his research.

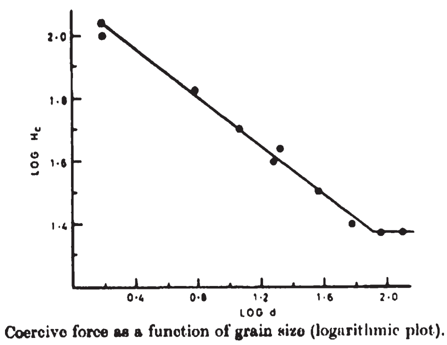

Figure 1. *The power relation between coercivity and grain-size determined by Parry (1965) confirmed Stacey's theory albeit the annealing beforehand yielded magnetically softer titanomagnetites.*

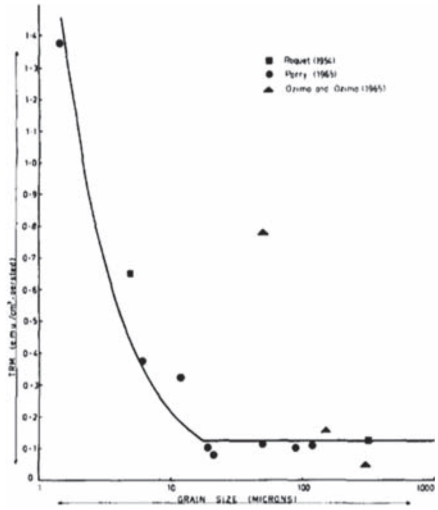

Figure 2. *Dickson et al.'s Fig. 1 combining Roquet's (1954), Parry's (1965) and Ozima and Ozima's (1965) thermoremanent magnetisation (TRM) vs grain-size results showing the abrupt onset of multidomain behaviour above 20 µm where TRM is no longer a function of grain-size or coercivity.*

The translation balance had two interesting applications resulting directly from his ANU contacts. One was with John Lovering, a geochemist with a special interest in meteorites that had magnetic remanences apparently predating their arrival on the Earth. Parry's role was to identify the Fe-Ni alloy phases, evolution of which during cooling controlled the remanences. Another ANU collaborator was Ted Irving, who was establishing the polar wander path for Australia. Irving had found rocks near Kiama, south of Sydney in NSW, which had consistently reversed remanence over a 50 million year age range. We now know of this as the Kiaman reverse superchron, but its plausibility was subject to some doubt at the time. One of the contrary postulates was that there was a subtle but systematic difference between the magnetic constituents of reversed and normally magnetised rocks, allowing the possibility of self-reversing remanence by one of the mechanisms suggested by Louis Néel.

Lin with his post-grad students in 1971. Clockwise beginning left front, A.A. Rahman (MSc PhD), L.G. Little (MSc), M.F. Westcott-Lewis (MSc PhD), A.D. Duncan (MSc) and B.W. Robins (PhD).

Parry's measurements on Irving's rocks showed no such effect.

For the second crucial sabbatical in 1964 in Newcastle, Parry joined what was then the strongest rock magnetism group anywhere, led by Keith Runcorn. By then the phenomenon of thermoremanence had been quite intensively observed but the theory was lagging. A satisfying interpretation of its grain size dependence was still needed and a basic difficulty was that there were no well controlled experiments that made clear just what the dependence was. Parry filled the gap by using an elutriator to separate magnetite grains of different sizes and dispersing them in a non-magnetic matrix to simulate rocks for which he measured all the standard properties, including thermoremanence. The result was a data set that became a standard reference for magnetic properties of dispersed fine grains. It clearly identified the range of grain sizes displaying pseudo-single domain properties, resolving the question of what distinguishes the grains that are responsible for most of the magnetically stable rocks from the single domains of Néel's pioneering theory and true multidomains. During this time Lin wrote, and Margaret typed, his PhD thesis which was awarded by UNSW in 1965.

Lin's third sabbatical in 1972 was with Rod Wilson's group, Liverpool University, where he continued studying the magnetic properties of fine particles using Rod's vast sample collection from young lavas and dykes.

By nature, Lin Parry was a collaborator, disinclined to emphasise what he, himself, was doing. He saw the physical problems that arose in other people's work and applied his experimental skills to resolving them. The names of graduate students he supervised later in his career are distributed through the literature with little indication of his role in inspiring their work. The following list of publications is far from comprehensive but gives an idea of the developments of his research interest through the years, from beach sands and meteorites to common garden rocks, while at the same time focussed very much on the magnetisation of micron to sub-micron titanomagnetite particles. Lin characteristically assumed junior authorship in publications with his students.

Selected list of publications

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Where are they now?
Sanjay Govindan: ASEG ACT 2014 Student Travel Award and 2015 Student Award winner

It felt so long ago but in reality just a year has passed since I made that frantic dash to my university to submit my final thesis, a milestone that signified the end of my five year commitment to attaining my degree in Engineering and Geology at the Australian National University.

Over the five years there was a plethora of opportunities and choices that contributed to both the success of my undergraduate degree and my ability to transition successfully into the 'real world'. With that being said, no opportunities have been greater than those offered by the Australian Society of Exploration Geophysicists (ASEG). Opportunities such as the Student Travel Award 2014 and the Student Award in 2015 were just added bonuses as the energy and support the ASEG offered through their committed Members was what made all the difference.

The financial support I received from ASEG provided me with the opportunity to present at industry leading conferences such as the Perth ASEG Conference in 2014 and the 2015 SEG Near Surface Conference held in Hawaii. Furthermore, I was able to attend a range of world class seminars that examined the current bounds of applied geophysics. These high-quality opportunities offered by ASEG led me to undertake an internship with Field Emission Incorporated (FEI) and, more specifically, to conduct a thesis investigating microporous phase flow through high resolution computed tomogram analysis.

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Throughout my time as a Member of the ASEG, I have continually been inspired by the passionate and world leading experts the ASEG attracts as speakers every year. The ability of geophysics to transcend a range of industries and to incorporate a multitude of technologies has always been able to capture my imagination. Curiosity, intrigue and binge research into theory and technology has followed every ASEG session that I attended. My obsession with examining the relationship between problems and solutions, combined with a penchant for questioning the extent to which technologies can be applied, has been fostered by ASEG and has resulted in me being where I am today.

My current role as a technical consultant for Informed Solutions has allowed me to nurture my interest in bridging the technological gap between problems and solutions in a range of industries all over the world. My current role has seen me involved with a range of bespoke geospatial solutions for clients in the public sector such as the UK central government, Australian State governments and private sector organisations such as BHP.

However, in the not too distant future, my ambition is to dust of my boots, return to the field and rekindle my desire to design digital systems for geophysical and geological applications.

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