

**T. W. Edgeworth David:
A Life**

by David Branagan
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Reviewed Ted Lilley

While pondering the present task of reviewing Branagan's life of Edgeworth David, who lived 100 years ago in Sydney, I was given a copy of Pumfrey's life of the geomagnetician Gilbert, who lived more than 400 years ago in Elizabethan England. Addressing the Gilbert biography, which is a book on an historical figure well beyond living memory, helped me see, in Branagan's book also, its measure as a history of science. For in addition to being the definitive history and personal narrative of a founding giant of Australian geology, the Edgeworth David book is a history of science, and science achieved in Australia.



Mackay, David and Mawson at the South Magnetic Pole, 16 January 1909.

For while Edgeworth David is central to the book now under review, it is also the wider setting, meticulously researched and described with great clarity by Branagan, which comes through with powerful impact. We thus have an account of early geological education in Australia; the concept of mapping the Australian continent as a single unit; Australian universities at a critical growth phase; the first stirrings of evidence for continental drift; and first hand participation in heroic and successful Antarctic expeditions. These are all set against Australia a century ago, together with a substantial participation in the trenches in France during the First World War, as a benchmark of time. There is also material on the continent-wide organisation of science in Australia, in a forerunner of the present Australian Academy of Science. With this goes easy seamless movement from pure to applied science, still important in a country owing its prosperity to the export of mineral resources.

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Permit Area / Stage of Bids	Operating Companies	Exploration Program
Carnarvon Basin, Central Exmouth Plateau Permit WA-374-P (released as W05-16) Six bids	Chevron Australia Pty Ltd, Shell Development (Australia) Pty Ltd and Mobil Australia Resources Company Pty Ltd.	Primary work program of studies, 1800 km ² of 3D seismic, 2350 km of 2D seismic surveying and two wells, at an estimated cost of \$54.78 million. Secondary work program of studies and 3D seismic data reprocessing, at an estimated cost of \$0.3 million.
Carnarvon Basin, Barrow Sub-basin Permit WA-372-P (released as W05-17) Two bids	Holloman Corporation	Primary work program of seismic data purchase, 58 km ² of 3D seismic surveying and 2 wells, with an estimated cost of \$21.2 million. Secondary work program of studies and two exploration wells, at an estimated cost of \$20.2 million.
Carnarvon Basin, Barrow Sub-basin Permit WA-373-P (released as W05-18) Two bids	Holloman Corporation	Primary work program of seismic data purchase, 58 km ² of 3D seismic surveying and 2 wells with an estimated cost of \$21.2 million. Secondary work program of studies and two exploration wells, at an estimated cost of \$20.2 million.
Bonaparte Basin Permit WA-376-P (released as W05-1) One bid	Goldsborough Energy Pty Ltd	Primary work program of studies and 800 km ² of 2D seismic surveying with an estimated cost of \$1.75 million. Secondary work program of studies and one exploration well, at an estimated cost of \$15.6 million.
Bonaparte Basin, Permit WA-375-P (released as W05-2) One bid	Goldsborough Energy Pty Ltd	Primary work program of studies and 800 km ² of 2D seismic surveying with an estimated cost of \$1.75 million. Secondary work program of studies and one exploration well, at an estimated cost of \$15.6 million.

For those not familiar with the petroleum exploration industry, Holloman Corporation, which will explore in the Barrow Sub-basin, is a Texas-based employee-owned, company that provides engineering and construction services for the oil and gas industry, public and private water and wastewater infrastructure, and sports facilities. So this exploration venture is a little outside its core business.

Goldsborough Energy Pty Ltd is a bit of a mystery, I could find nothing about it on the internet, but I am told it is a small unlisted Australian company based in Melbourne in the Geoffrey Albers stable.

For Edgeworth David was an active leader in all these things; remarkable now, and extraordinary then, given the different logistics, communication and transport of his times. Also, 100 years ago, geophysics is encouraged by Edgeworth David, in its pioneering days of classical magnetism, gravity and seismology.

In this review I use the abbreviation ED. The "Edgeworth" was a given name, and came from his mother's family. Branagan presents a remarkable time-line. Part 1 of the book goes from the birth of ED in Wales in 1858, the oldest child in the family of an Anglican minister, and includes education at Oxford. It describes the move of ED to Australia in 1882 to accept the appointment of Assistant Geological Surveyor of New South Wales, leading to many years in the field, for example in the Hunter Valley.

Part 2 starts with the appointment of ED to the University of Sydney in 1891, to a chair in geology newly described as Professor of Geology and Physical Geography. Here his wide and creative contributions developed on many fronts, for example a drilling expedition in 1897 to the coral atoll Funafuti in the Ellice Islands, to test Darwin's theory of atoll formation.

Part 3 covers the period 1907-1914 and is devoted to "Antarctic business", especially ED's participation in Shackleton's "Nimrod" expedition of 1907-1909. At the end of their first summer in Antarctica ED led the first ascent of Mt Erebus, and then after wintering over, a four-month expedition to the South Magnetic (Dip) Pole in 1908-1909. This successful expedition, with companions Douglas Mawson and Alistair Forbes Mackay, demonstrated impressive competence in polar travelling under the notorious hardships and dangers of such conditions. The adventures captured the imagination of the public, contributing to ED's subsequent great popularity.

Part 4 is then devoted to the important scientific milestone of the meeting in Australia in 1914 of the British Association for the Advancement of Science. Noteworthy at that meeting was ED's diversion into anthropology, regarding an Aboriginal skeletal remnant found in Queensland, the "Talgai skull".

Part 5 changes to the wasteland scenes of trench warfare in the First World War. In Australia,

ED played a major part in the formation of the Australian Tunnelling Corps. Then, in the army on the Western Front in France (and some 57 years of age), he applied his geological skills to problems of groundwater and tunnelling.

Part 6, entitled "Seeing, Reading and writing Geology", covers the post-war period 1919-1928. ED is back at the University of Sydney until his retirement in 1924, and strongly engaged in science. He is knighted and, in particular, returns to mount a campaign on his long-planned "Geology of the Commonwealth of Australia". His experience and leadership is in demand from many quarters, not least in the formation of the Australian National Research Council, a national body intended to represent Australian science internationally, and forerunner of the present Australian Academy of Science.

Part 7 deals with some special and significant geological interests pursued by ED in the latter stages of his career, notably landscape development, oil occurrence, and the new ideas of continental drift. ED was an enthusiastic supporter of Wegener's ideas, and found an ally in the South African geologist, Alexander du Toit.

Part 8 covers his work 1924-1934 on the book and map of the Geology of the Commonwealth of Australia, and his search for Precambrian fossils. He started writing the book, and preparing its adjunct, the map of Australian geology, in 1922. The map was printed in 1931, with accompanying valuable printed notes, but ED did not live to see the book completed. It was finally finished in 1950, by W.R. Browne. In this part also, there is an account of ED's contribution to the establishment in Australia of the Imperial Geophysical Experimental Survey, the report of which resulted in the book "Principles of Geophysical Prospecting" by A.B. Broughton Edge and T.H. Laby (Cambridge University Press, 1931).

Part 9 covers ED's last years, 1930-1934. ED is continuing to struggle to complete his book, but is weakening physically. His death occurred in 1934. He was given a state funeral and thousands of people attended, according to ED a remarkable tribute.

Throughout the book a recurring theme is ED leading and inspiring students, whether on excursions to the cliffs of the ocean coast

of Sydney, or to the glacial lakes of Mt Kosciuszko. And while ED fades from living memory, a host of students whom he inspired, such as Browne, L.A. Cotton, Mawson, H.G. Raggatt, T.G. Taylor, L.K. Ward and W.G. Woolnough, have passed the legacy on. Present ASEG members are likely to be able to trace links down to their own geological and geophysical traditions.

The private correspondence of ED has been an important and major source of material for this biography (indeed a lot of his scientific papers were lost). There is a great deal of significant correspondence with his professional friends and colleagues, such as Mawson. The members of this group influenced each others' lives in most pivotal ways. The personal letters also allow a full account of his family life, from meeting his wife Cara on the voyage out to Australia, to their series of homes in Sydney, and to the upbringing of their children. Such material helps complete a rounded and balanced picture of the man, and offers insights into his thoughts and attitudes.

It is hard in a brief review to do justice to a book which contains so much, but the term "renaissance man" rings true. With his classical education and upbringing, ED is a renaissance geologist in the early days of palaeontology, geodynamics and sedimentology. Practising geophysicists, though, concerned with the tasks of the moment, will find satisfaction from the perspective of their science offered by this book. It records major foundations, upon which so much of the present Australian edifice is built. If it had not actually happened, what novelist would ever so strain the credulity of his readers by fitting so much into a life? It is, perhaps, truth exceeding fiction. The book reads like an adventure story from the heroic age of exploration. One might add that in Earth Sciences the age of exploration continues to the present day.

The book is published by the National Library, which supported the author by the award of a Harold White Fellowship during the book's production. It is very good value for its price, being a robustly produced paperback. I was fortunate to attend the book launching at the University of Sydney on 21 October 2005, and subsequently caught an evening bus to Canberra. With this book to read, the journey has never passed so quickly.