

# AusIMM Monograph 25 "Geology and Exploration of New Zealand mineral deposits"

Review by Roger Gregg, FAusIMM

## A milestone publication

*AusIMM Monograph 25 "Geology and Exploration of New Zealand mineral deposits" edited by Tony Christie and Bob Brathwaite (2006) was launched at the recent AusIMM New Zealand Branch conference. It is available in both hard copy and CD-ROM formats (see [www.shop.ausimm.com.au](http://www.shop.ausimm.com.au))*

This AusIMM monograph is a comprehensive summary of geological research and exploration on New Zealand mineral deposits from 1989 to the present. It joins two predecessors which are still essential reference sources for mineral explorers and researchers in NZ; Monograph 4, *Economic Geology of New Zealand* edited by Gordon Williams (1974), and Monograph 13, *Mineral Deposits of New Zealand* edited by David Kear (1989). While they are out of print in hard copy they are both available from The AusIMM as a single CD-ROM.

Monograph 25 follows the format of Monograph 13 in being a collection of short papers written by geologists, geophysicists and mining engineers most closely associated with the specific mineral deposits. This has meant that many of the papers report unpublished information, previously available only in mining company exploration reports. The statistics are: 350 pages containing 47 papers, plus an introduction, written by 70 authors from the minerals industry, universities, and government research organisations. The papers were peer reviewed by 65 reviewers. Their format includes an abstract and keywords sections, so searching at a more detailed level is best done using the CD-ROM version. The papers are individually four to 12 pages long, but are mostly six pages.

The *Introduction* by the editors sets the scene for mineral exploration. The *General topics* section includes six papers on regional or deposit type reviews: a description of NZ geology related to the mineral deposits, GIS modelling of gold prospectivity, volcanogenic massive sulphide deposits, platinum prospects, placer ilmenite deposits, and placer gold mining by L&M Mining. Regional sections begin with two papers on Northland: halloysite clay deposits and the Puhipuhi epithermal gold-silver prospect. The *Hauraki Goldfield* section begins with three regional review papers on geology, structure, and geophysical exploration, followed by 14 papers on individual epithermal gold-silver deposits. These include papers on the geology of the operating Martha mine (1.66 Moz Au and 11.45 Moz Ag from 1988-2005), the developing Favona underground mine, and the Golden Cross mine that operated between 1991-97 (0.66 Moz Au). The *Taupo Volcanic Zone* section has three papers, one on the Ohakuri epithermal gold-silver prospect, one on precious metals in geothermal systems and one on zeolite deposits in lacustrine tuffs. This is followed by three papers on *North Island Coastal Ironsands*, including descriptions of the titanomagnetite mining operations at Waikato North Head and Taharoa. The *Malborough and Nelson Regions* section has two papers, one on orogenic gold, scheelite and stibnite mineralisation in the Marlborough Schist and another on the intrusion-related gold deposit at Sams Creek, where gold is found in a peralkaline granite dike. The *West Coast Region* section has a review on orogenic gold deposits of the Reefton Goldfield and another paper specifically on the Globe-Progress deposit, now being developed as an open pit mine.



A paper describing gold-bearing veins in the Southern Alps suggests they are potential models for orogenic gold deposits. The West Coast section also has three papers on placer gold mining topics, including a description of the Grey River bucket ladder gold dredge. The *Otago and Southland Regions* section has five papers on orogenic gold and scheelite deposits. One paper describes the geology of the Macraes mine (6 Moz Au), and another the Rise and Shine Shear Zone, which has many structural similarities to the Hyde-Macraes Shear Zone that is mined at Macraes.

The last section of the monograph, *Offshore Minerals*, has three papers on sea-floor mineral deposits. Two describe exploration of sea-floor hydrothermal systems associated with volcanoes along the Kermadec Arc. The first of these describes regional exploration searching for hydrothermal

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## Geological Journeys

by Nick Norman and Gavin Whitfield.

Published by Struik Publishers, PO Box 1144, Cape Town 8000, South Africa

Reviewed by Ross Louthean, Editor, The AusIMM Bulletin

### Another great educational guide from South Africa

The South African geoscience community and supporting mining houses are pathfinders in providing another graphically illustrated book that will be of use for mining students, business journalists, stockbroker analysts and keen investors.

The review copy I received had sponsorship from De Beers and the earlier reviewed *The Story of Earth & Life* (The AusIMM Bulletin July/August 2006 edition), had a sponsorship badge of Kumba Resources and was also published by Struik with an editorial collaboration with South Africa's Geoscience Council.

Like *The Story of Earth and Life*, *Geological Journeys* clearly and simply describes such facets as rock types, the story of plate tectonics and the framework of southern Africa's geology.

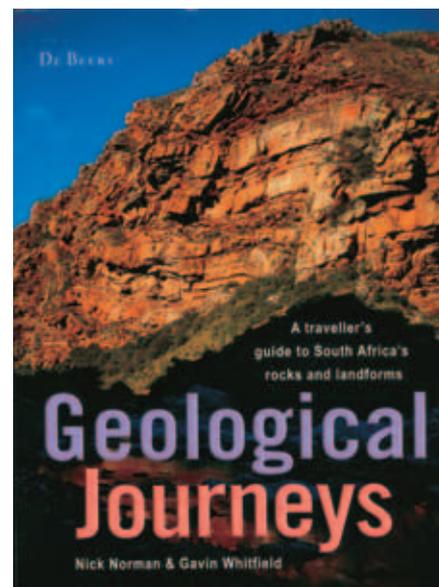
For gold buffs, the formation of the Witwatersrand gold reefs is a must and the marvellous graphics include

an impression of the formation of Witwatersrand Supergroup at the end of sedimentation.

The smart tourist should read how Table Mountain came to be, while keen fossil hunters should read the section with the imaginative heading "Dem Bones, Dem Bones".

The maps offer wonderful opportunities for geological journeys, including this reviewer when writing features on diamonds—from Kimberley on the N31 highway to Barkly West on the Vaal River where South Africa's alluvial diamond story began in 1870.

The section on the Drakensberg Mountains offers great leads on the geological and graphic features to add to history of the Zulu wars in Natal and far more impressive country than the open areas where the Zulus shamed the British at Islawanda, only to be beaten off by a smaller force at Rorkes Drift. Those great features include God's Window near Graskop and the nearby the Pinnacles—"an unusual geological phenomenon, an isolated 30 metres high quartzite tower severed



from the escarpment by erosion of the rocks that linked them".

*Geological Journeys* is a worthy addition to the family, company and university library, and should get Australian geoscientists and mining houses to consider producing a similar product. The trick would be to put it into crisp prose. ■

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plumes and the second more detailed work on the individual gold-bearing massive sulphide deposits. The last paper describes the extensive ferromanganese nodule fields on the sea floor southeast of NZ.

Illustrations within the hardback book are in black and white, whereas many of these are reproduced in colour on

the CD-ROM. The standard and quality of production of both the book and CD-ROM are high. However, some of the figures in the hard copy version are a little pale, a problem not present on the CD-ROM.

Which should you purchase; hard copy book or CD-ROM? I like to flick through a book, but the colour, and word searching facilities offered by the CD-

ROM are tempting. If you can afford it, get both.

Monograph 25 is a worthy successor to monographs 4 and 13, and like the earlier monographs, will be an essential reference source. My congratulations go to the editors, Tony Christie and Bob Brathwaite, (also prominent as authors) and all those who contributed. ■