

As this field of science is relatively new, it is important to focus the conclusions on a scientific-basis, rather than one that is driven by policy alone. Thus, a word of caution when using references from overseas—they may not apply (but may be the best surrogate information available). Using *Metal Contaminants in New Zealand* as a reference and a guide to the sources and nature of metals contamination will allow one to be well armed with the knowledge to assist one to successfully characterise the nature and extent of contamination surrounding sites of interest. This reference, in conjunction with applicable guidelines, will help the scientist or investigator to understand the possible nature, and perhaps sources, of metals contamination during the course of an investigation.

**From Sextants to Satellites: a cartographic time line for New Zealand.** by Brian Marshall *New Zealand Map Society Journal* no. 18, 2005. 136p. ISSN 0113-2458 .....book review

*Elva Leaming, Subject Librarian: Geology & Physics, University of Auckland.*

Why a time line for New Zealand cartography? It was a serendipitous idea. The project initially began when the author, Map Librarian at the University of Auckland, was approached by a biological scientist, over the compilation of a chronological listing of events and explorations that had impacted on New Zealand's botanical studies. The daunting task became increasingly detailed, and the author eventually saw the framework of a cartographic time line taking shape. So began this work, which for the delving reader, is as much an entertaining past-time read as it is an important reference work. Maps tell a story in the briefest possible form. This timeline is therefore an organized summary of a far larger story; one of adventure, practical input, hard labour and artistic skill, all which have greatly contributed to the historical mapping of New Zealand and its development as a nation.

There are a number of recently published works on the history of New Zealand surveying - Holm's *Caught mapping* (2005), Byrnes' *Boundary markers* (2001), and Conly's *Piet's eye in the sky: the story of NZ Aerial Mapping* (1986). However, Marshall's work appears to be the first "comprehensive time-line" of New Zealand cartography. As such, cartography is defined broadly; surveyors, draughtsmen, geologists, explorers and even artists are included, as are map publishing, map keeping and marine charting.

As the title suggests, the time- line entries are from antiquity to recent. Listed chronologically, the earliest entry is for ca. BC 530 when Pythagoras postulated the concept of a large southern continent to balance the land mass of the Northern Hemisphere. At the opposite end of the spectrum, the final entry (2005) records the New Zealand Automobile Association's *AA SmartMap*, an online mapping system providing a comprehensive street directory, the result of collaboration between the Automobile Association and GeoSmart. Within these extremes are revealed the tremendous contributions of marine and land surveyors and geologists who contributed to the shaping of New Zealand's infrastructure. In addition there are recordings of such episodes as the Tarawera eruption (mapped by Percy Smith in 1886), the Napier Earthquake (1931- a story in itself as valuable records were lost), the publishing of the first

map to show the full extent of the Alpine Fault (1946-47) and the recent marine mapping that established the limits of the New Zealand Continental Shelf (1996-2003).

Marshall considers the many unverified claims of earlier peoples who are claimed to have visited New Zealand. He has been selective and excluded anything questionable, but has included and given a reasoned explanation for cases where a certain amount of evidence prevails. An 11 - page index of persons and organizations complements the chronological text which is followed by *Notes* which aim to clarify any difficulties of interpretation for the reader. There are also 5 illustrations. One formatting criticism is that the printer has occasionally begun a new date at the base of a page, which can be distracting, but is of minor importance. The work is peer reviewed which adds further credibility to the content. One might observe an over abundance of geological content, but then, given that geologists were responsible for much of the country's mapping, one could hardly argue against such due recognition.

Numerous sources are referred to in this organized cartographic history. Fifteen pages of monographs, journal articles and journal titles appear after the text. Of these, the most prestigious is perhaps the *Appendix to the Journals of the House of Representatives* which traces the work of a wide range of government departments including the New Zealand Geological Survey and later the Department of Scientific and Industrial Research and the Department of Lands and Survey. He also records mapping done for the *New Zealand Geological Survey Bulletin*. Another valuable source is *Reports of Geological Explorations* 1866-1893.

As explained in his abbreviated introduction, Marshall has aimed to achieve a simple listing of events - a starting point for the recording of New Zealand's cartographic history, rather than an end product. His work allows for future expansion, whether by supplementing source material and input from other scholars, or by adding to the chronological sequence. The work could conceivably serve as a basis for further editions given time.

Marshall has been involved with maps and cartography throughout his working life; initially as Map Librarian at the Alexander Turnbull Library, Wellington, and subsequently in his current position as Subject Librarian for Geography and the Environmental Sciences combined with that of Map Librarian at the University of Auckland. He was instrumental in forming the New Zealand Map Society in 1977 (listed in this time-line) of which he is a life member. The Society has a continuing membership, an annual journal, and a newsletter "*Datum*" which he continues to edit.

The "time - line" is in paperback, A4 in format, and is published as *New Zealand Map Society Journal* no.18, 2005. It has been issued free of charge to members of the Society as part of their annual subscription. Copies are available from the author, Science Information Services, General Library, University of Auckland, Private Bag 92019, Auckland 1142, at a very reasonable cost of NZ\$35 (includes postage) or may be ordered online from the Society's website (<http://www.mapsociety.org.nz/publications.html>). Exceptional value when one considers the amount of research and time that has gone into its compilation