

# Four Centuries of Geological Travel: The Search for Knowledge on Foot, Bicycle, Sledge and Camel

Alan Morgan

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## Four Centuries of Geological Travel: The Search for Knowledge on Foot, Bicycle, Sledge and Camel

**Edited by P.N. Wyse Jackson**

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**Reviewed by Alan Morgan**

*Department of Earth and Environmental Sciences*

*University of Waterloo*

*Waterloo, ON, Canada, N2L 3G1*

*E-mail: avmorgan@uwaterloo.ca*

Most geologists are by nature a peripatetic group. Our science demands that we travel, observe, document and collect. In the last few decades most government agencies concerned with the geosciences have frowned on field work – mapping as well as rock, fossil, and mineral collecting. In Canada, recent changes in world demand for resources, global warming of the Arctic, the opening of the northern seaway through the archipelago and concerns over territoriality, provide some hope that this situation will reverse itself.

This volume consists of chapter-long vignettes that explore aspects of geologically based travel and researches conducted by many scientists. Some of the individuals described are clearly geologists, others are better known in related scientific fields, but many are not widely known for their past contributions to their field. This 415 page book is divided into 28 chapters and has a general introduction by the editor. “Global peregrinations” by Wyse Jackson provides a summary of the book and explains the background of the compilation for the 28<sup>th</sup> Symposium of the International Commission on the History of Geological Sciences, held in Dublin, Éire, in 2003.

When geological field parties go into the field today, lengthy and systematic preparation is required to ensure that they have what they need to operate. The same applied in the

past, and the initial chapter describes the required “scientific instructions” for “geological travels” during the 18<sup>th</sup> and 19<sup>th</sup> centuries. The remainder of the book is divided into “regional” sections, commencing with Britain and then Europe, Greenland, Russia and the Caucasus, Africa, the Atlantic Islands, North America, South America, Australasia and Japan. A concluding chapter describes “Geophysical travellers” and concentrates not on geological travel, but on the worldwide perambulations of a group of dedicated magneticians from the Carnegie Institute in Washington who operated during the first 35 years of the twentieth century.

Within the body of the book, chapters describe the work and travels of Robert Hooke (1635–1703), who was perhaps best known for his microscope work, but also for his investigations into many other areas of science. Apparently he was a keen observer of geology, particularly of his home area on the Isle of Wight, and his observations of crystal growth were even more significant than those of his contemporary, Nicholas Steno. Mention is also made of his contributions to stratigraphy, his thoughts on fossils, and lectures that inspired others (such as Hutton) to develop the basic premises of geology. The Isle of Arran and the observations of Robert Jameson (founder of the Wernerian Society of Edinburgh) then follow. Jameson (a neptunist) contradicted many of Hutton’s (plutonist) observations at the same localities.

The book’s narratives then move to Europe. The first section deals with three 18<sup>th</sup> century “mineralogical” authors who recount their travel experiences in the Carpathian Mountains, and this is followed by von Goethe’s and Sternberg’s geological observations and differing philosophies in the Habsburg region. Chapters follow on “Geological Travellers in Auvergne” (with a fine foldout reproduction of a 1771 map of the Clermont region), and on “J.D. Forbes and Naples” (with Forbes’s visits and observations of Vesuvius, Pompeii and other areas of the Bay of Naples).

Many readers will be aware that Charles Lyell and Roderick Impey Murchison and his wife Charlotte trav-

elled to France and northern Italy together in 1828, and a succeeding chapter describes this trip in some detail. It explains the different working styles (and some differing geological interpretations) of these men, and the invaluable assistance provided by Charlotte in translation, observation, recording and collecting. Another chapter describes the work of Nery Delgado (Portuguese Geological Survey) in Spain in 1878, and his attempts to rationalise the mapping of trans-border geological contacts between Spain and southern Portugal. Grenville Cole, a geologic educator from Ireland, is featured in “Grenville Cole (1859–1924): Cycling Geologist”. This chapter describes his exploits in Europe and Ireland, where he tried to educate students in the geology of that country by taking them on cycling fieldtrips. Karl Ludwig Giesecke (later also known as Sir Charles Lewis Giesecke) has a chapter devoted to his early career in the theatre in Germany and then on his later life as a geologist and explorer in Greenland before his appointment to the Geology Chair of the Royal Dublin Society in 1813. He was (perhaps) responsible for large parts of the libretto, “The Magic Flute”, but he also discovered many new mineral species including sodallite, allanite, and gieseckite, was responsible for exploring both eastern and western Greenland, and provided assistance in the planning of several arctic voyages to the Northwest Passage.

Alexander von Humboldt is the subject of another chapter. Although perhaps best known for his work in the New World as a naturalist and scientist, a chapter is devoted to his expedition into Siberia in 1829. On this journey he averaged an amazing (even by modern standards) 300 km a day by coach and horseback whilst still making observations of the geology, geomorphology and mining sites! The Eurasian content is completed with a chapter on Herman Abich and his travels, over 30 years, in the Caucasus and Armenian highlands.

Moving on to Africa, the next chapter describes a fascinating montage of four French geological explorers of the Sahara Desert who literally travelled thousands of kilometres on foot and by camel. This is followed by

another very readable chapter that deals with Théodore Monod and the on and off, three-quarters of a century-long search for the lost *Fer de Dieu* meteorite of Mauritania.

Two related chapters cover the travels and geological observations of Charles Lyell on the Canary Islands and Madeira and Georg Hartnung on Madeira and the Azores. Continuing with an island theme, the following chapter covers Charles Darwin's visit to the Cape Verde Islands and more specifically examines his (then) catastrophist views and his "conversion" to the more gradualist views of landscape modification expressed by Charles Lyell.

Work in the Americas is highlighted by several chapters including "Naturalists from Neuchâtel", which refers to the Swiss scientists that accompanied Louis Agassiz to America. Also discussed are Clarence Dutton's work on western North American volcanic activity, isostasy, and the geology of the Utah Plateau, and the journeys of J.B. Tyrrell (of Royal Tyrrell Museum of Palaeontology fame) and J.W. Tyrrell across the "Barren Lands" of Canada in 1893 and 1894. This chapter describes the Tyrrells' observations on an epic journey from Edmonton to Lake Athabasca, Baker Lake, Chesterfield Inlet, Churchill and, eventually, Winnipeg, and would be of interest to many Canadian geologists.

A tour of several continents takes the readers first to South America, with two chapters that describe, respectively, native geological travellers in the Portuguese Empire of the late 1700 and early 1800s, and the travels of Charles Darwin (and others) in Patagonia. In Australasia, a chapter is devoted to the search for limestone in colonial New South Wales; another to the works of Thomas Mitchell, a soldier and a geologist who compiled perhaps the first geological maps of southeastern Australia in 1834; and lastly to nineteenth century observations of the Mt. Dun (of Dunite fame) Ophiolite belt of South Island, New Zealand. One other chapter describes the work of Franz Hilgendorf who introduced evolutionary theory to Japan around 1873.

Anyone interested in additional information on any of these topics

would be well-served by the comprehensive bibliographic references that accompany each chapter.

Is the book of general interest? Certainly some sections are, and different readers will find items that will attract and keep their attention. The editor is to be congratulated in pulling together a very diverse set of contributions in a logical pattern. However, some topics will appear more "academic" and of less general interest — albeit still providing material that should broaden knowledge of some areas geographically far removed from North America and Europe. The book is not easy to read, as it contains a large amount of information in a visually condensed format; although the text is clear (no problem with the chosen fonts) there is a problem with the point size and especially with the quotations of abstracted text that appear to be in 5 or 6 point. All illustrations are clear, within the limitations of the original diagrams, maps and photographs.

In summary, this rather expensive book (US\$180.00) book is likely of more interest to the academic reader than to a casual reader of geological information.

## **Paleozoic Evolution and Metallogeny of Pericratonic Terranes at the Ancient Pacific Margin of North America, Canadian and Alaskan Cordillera**

**Edited by M. Colpron and J. Nelson**

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**Reviewed by John W.F. Waldron**

*Department of Earth and Atmospheric Sciences*

*1-26 Earth Sciences Building*

*University of Alberta*

*Edmonton, AB, Canada, T6G 2E3*

*E-mail: john.waldron@ualberta.ca*

This volume represents the culmination of several years of systematic mapping of large areas of the Canadian Cordillera and adjacent Alaska, with a focus on those regions that have traditionally been assigned to the Yukon–Tanana and other pericratonic terranes. Most of the papers represent contributions under the umbrella of the 1999–2003 Pacific Margin NATMAP program, in which provincial and territorial surveys combined with the Geological Survey of Canada to focus mapping efforts on terranes related to the Paleozoic and Mesozoic margins of the Laurentian plate. Additional contributions on Alaska were supported by the United States Geological Survey. The volume represents the culmination of that five-year effort, and provides documentation of the major conclusions of those programs.

This volume contains a huge amount of information, which partly accounts for the length of time it has taken to complete this review. In addition to 18 papers, and two fold-out maps and charts, a CD-Rom (provided in a pocket inside the back cover) contains, in its 345 Mb of data, a prodigious amount of additional information.

The volume can be divided into two somewhat unequal parts. The first twelve papers deal mainly with