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Book Reviews

Mountains and Minerals, Rocks and Rivers. A Geologist's Notes from the Field.

By M. Dane Picard
New York, London; Chapman and Hall, 168 p., 1993

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For many years now, the pages of the *Journal of Geological Education* have been enlivened by the writings of Dane Picard of the University of Utah. These are usually autobiographical, in some measure at least. Certainly, they reflect the vicissitudes and frustrations, the satisfactions and the triumphs of a contemporary academic geologist. That is good; what is better is that Dane's writings are always lively, frequently amusing and sometimes downright hilarious. In an age when too many earth science journal editors strive to excise from texts submitted to them any literary flourishes and to extinguish any sparks of humour, such writings serve both as a rare and welcome relaxation and as an exhilarating stimulus to speculation.

I must be just one of many geologists who have written to Dane, imploring him to republish his essays in a more permanent form. It is a pleasure that he has done so. There are one or two of my favourites among his writings that are not included, but most of the best are here. They are arranged more or less in chronological fashion, so that we may follow Dane's path from childhood to academic seniority. It is all excellent and enjoyable. Even so, I am hoping we may some day be presented with a full-scale autobiography from this liveliest of geological pens.

Index to the Scientific Correspondence of John William Dawson

By Susan Sheets-Pyenson
*British Society for the History of Science
 Stanford in the Vale, Faringdon,
 Oxfordshire
 1992, 275 p., Monograph Series, n.7*

Reviewed by William A.S. Sarjeant
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The life of John William Dawson (1820-1899) is so classic a tale of Canadian scientific success that it would have gratified the heart of Samuel Smiles, (who, if you do not recall his name, was the greatest 19th-century advocate of "Self-Help"!). Dawson built a career that carried him from quite humble origins in Nova Scotia to the position of Principal of McGill University, Montreal, which was at that time — if not now — unquestionably the foremost educational institution in Canada. In consequence, he was knighted: an honour not readily gained in the late 19th century by a mere colonial such as he! Along the way, Dawson made major contributions to paleobotany, stratigraphy, vertebrate paleontology and paleo-ichnology, in particular, studying the Coal Measures of what are now the Maritime Provinces. His initiatives resulted in the creation of the Royal Society of Canada, and he was to be a controlling force upon the Geological Survey of Canada in its early years. He was a prolific writer, an excellent speaker and, beyond doubt, one of Canada's most effective voices in the popularization of science.

However, for scientific historians, Dawson is of interest also for his advocacy of one concept, and his opposi-

tion to another, on which most present-day scientists hold opinions quite contrary to his. *Eozoon canadense*, the ancient structure considered by Dawson to represent "Life's dawn on Earth," is now rejected as an inorganically produced pseudofossil. In contrast, the concepts of Darwinian evolution, so sedulously opposed and so lengthily criticized by Dawson, are now embraced wholly or in modified form by all reputable natural scientists.

In this invaluable source-work, Barbara Sheets-Pyenson presents us with an excellently organized "finder's guide" by means of which we can find our way safely through the documentary labyrinth of Dawson's correspondence. (Some 6000 items are dealt with, principally in the McGill University Archives, but also scattered among some 20 other institutions.) The letters are first of all numbered and listed, then elaborately indexed by subject and by personal name.

Such documents as this are invaluable to the scientific historian; yet it is not easy to find a publisher for them. The British Society for the History of Science merits credit for making this index available and Dr. Sheets-Pyenson is to be commended for the immense labour involved in performing so difficult a task so well.

Geology of the Kelowna Area (and Origin of Okanagan Valley)

By the Kelowna Geology Committee
1993, \$19.95

Available from:

Foxview Management Ltd.
1365 Crawford Road
Kelowna, B.C. V1Y 8R3

Reviewed by E.R. Ward Neale
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This very attractive, colourfully illustrated booklet describes much more than the interesting rocks that underlie this city in central British Columbia (an attribute that probably explains why 2000 copies were sold in the four months before Christmas, 1995). The remaining 2000 should disappear in the first few weeks of the 1996 tourist season and we hope the authors, the Kelowna Geology Committee, have arrangements for a second printing well in hand. (The eight authors are geologists, engineers, an educator and an agriculturist, all residents of Kelowna. Two, Murray A. Roed and John D. Greenough, are well-known members of GAC. The Canadian Geological Foundation was the largest of 36 sponsors, which even included a local golf course!)

The text begins with a history of geological studies (featuring George Mercer Dawson, of course), then introduces readers to geologic time, to the local geological column, and to the physiographic divisions of the area. This is a suitable prelude to a concise, lucid summary of the bedrock with which Kelowna is blessed. It includes Precambrian gneisses, some remnants of a transported Mesozoic terrain, and a plethora of well-exposed Tertiary sediments and volcanic rocks. The Ice Age receives coverage of equal length, which is well deserved, as the great silt bluffs and terraces that impart much of the beauty to the Okanagan region are products of glacial Lake Penticton. A chapter on geological landmarks and two appendices lead the reader to outcrops and viewpoints representative of the rich variety of local geological offerings.

With the geological framework established, the last half or more of the book is

devoted to important corollaries and applications of our science along with informed comments on its social implications. Thus, a chapter on climatic change also covers oil development, landscapes and agriculture. A chapter on the ancient peoples of the Okanagan and their pictographs discusses the importance of geological information to archeological studies. Geologic hazards receive extensive treatment because, like so many scenic, mountain vacation and retirement paradises, the geology and topography leave the area prone to landslides, debris avalanches, and sinkholes. Flooding is common for a variety of reasons: one recent, damaging flash flood was caused by the failure of an abandoned beaver dam! Although the earthquake potential is low, Kelowna sits atop sediments that would easily liquefy under stress. This is one reason why the crossing of Lake Okanagan is made by a pontoon bridge.

The "longest floating bridge in the world" is just one of several local construction problems covered in a chapter on geotechnical conditions. Simple sketches show how engineers are able to overcome foundation problems for erecting Kelowna's major buildings on soft silts and sands. A short chapter on hydrology and watershed management will be of obvious interest to visitors and dwellers in this heavily irrigated part of the province's Interior Dry Belt. Although most water needs are met by surface waters, groundwater is of vital importance to the rural districts, and the authors point out both the pitfalls of over pumping and the presently unmet need to monitor all aspects of water use.

The mineral deposits section maintains the community interest theme. For example, we not only learn of the genesis of the ore in Brenda Mine, "the lowest-grade Cu-Mo mine in the world," but we receive details of the economic benefits it brought to the province for more than 21 years before a rock slide sounded its death knell. Then we learn something of the company's \$25 million clean up and restoration which is underway. The origin of the local Late Tertiary uranium deposits is described and the pros and cons of the current provincial moratorium on development is explored. Aggregates also receive mention; apparently housing developments have been constructed above the best nearby sources (sound familiar?)

A wind-up chapter points out that ge-

ology (in its broadest sense) affects almost every aspect of life in the region. Local governments, however, have failed to appreciate this fact. Water management is pointed out as the most challenging task. Other serious concerns are construction materials and residential development (especially sewage disposal, urban planning, and its relationship to natural hazard evaluation). One obvious conclusion is that there are unprecedented opportunities for students of earth science in this beautiful part of British Columbia.

The book has been carefully edited and I found only a few typos and other minor errors. The chapter on geological landmarks seemed out of place following those on climatic change and ancient peoples instead of being at the front with the geological chapters. But, on the whole, I can only lavishly praise the production.

Consciously or unconsciously, the Kelowna book is closely patterned on *Edmonton Beneath Our Feet*, the pathfinder of Canadian urban geology guidebooks that was produced by the Edmonton Geological Society at the time of GAC-MAC '93. However, the aim of the Edmonton book was to provide information useful to geologists and engineers and yet be understandable to the interested public, whereas the Kelowna book unabashedly announces it is specifically for the local layperson, visitor and educator, and to this we could add the politician and civic administrator; there are lots of messages for both! The print is larger, the illustrations and explanations simpler and repetition more common than in the Edmonton book. *Geology of the Kelowna Area* will appeal to elementary as well as high school teachers, which few guidebooks do. It also appeals to me, and I shall have a copy beside me when I next drive through Kelowna. In fact, I might stay over for a few days, and not just to play golf! This could also be a useful reference if you are thinking of producing a geological guidebook for your own hometown. Although they will probably use a different approach (lacking photogenic outcrops), this book served as a spur to start my fellow Calgarians on a similar project.

Redwater

By Aubrey Kerr
 912 - 80th Avenue S.W.
 Calgary, Alberta T2V 0V3
 1994, 385 p., \$20.00

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Now that western Canada's petroleum industry has amply passed the half-century mark, it is highly desirable for historians that data on the industry should be gathered and published before it is lost. In two previous works (*Atlantic 1948 n. 23*, 1986 and *Corridors of Time*, 1988), Aubrey Kerr has made a massive personal contribution to this endeavour, to which earth science and industrial historians are already indebted. This third work extends our indebtedness.

The Redwater oilfield has been one of the richest in Alberta, exceeding in profitability even Leduc; yet it was found almost 47 years ago. Consequently, few of the pioneers in its discovery and exploitation yet survive. Mr. Kerr had the particular advantage of knowing many of them; his accounts of the personalities involved enrich this work, especially in the extensive section of "Profiles" (easily found, because printed on blue paper). Although there are good geological maps and sections, it is the photographs — most often portraits — that catch the eye in the rest of the text also.

This is a work, then, that deserves to be on the shelves of all western Canadian historical collections. We must trust that Mr. Kerr will continue these highly useful historical studies for many years to come.

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J.B. Tyrrell: Explorer and Adventurer. The Geological Survey Years 1881-1898

By Katharine Martyn
 Thomas Fisher Rare Book Library
 University of Toronto
 1993, 72 p.

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From the time of the foundation of the Geological Survey of Canada in 1842 and even before, geologists have played a prominent part in the exploration and development of our country; indeed, it is arguable that there is no other land in whose history geologists have figured so prominently.

In his long life of almost a century, Joseph Tyrrell came close to epitomizing such contributions. His geographical and geological discoveries, in the course of explorations of Arctic Canada so heroic and demanding that they came close to killing him through sheer physical exhaustion, have earned him a secure place in the history of polar exploration. His rather incidental discovery of dinosaur bones in western Canada has caused what is perhaps the world's finest dinosaur museum to be named after him. After he ended his career with the Geological Survey of Canada, his part in the development of the Kirkland Lake gold deposits enabled him to attain the standard North American goal by becoming extremely wealthy. Moreover, he was long-lived, almost attaining a century and, even though his physical mobility was reduced, remained clear in mind (or so Pierre Berton told me) to the very end. Well did Pierre, in the Centennial Library volume *Great Canadians* (1965), style him "The Survivor"!

So distinguished a Canadian merits a first-rate biographer: yet Tyrrell has not found one. Loudon's *A Canadian Geologist* (1930) is superficial; his wife's reminiscence *I Was There* (1938) gives only a brief and oblique picture; the biography in Margaret Shaw's *Canadian Portraits* (1958) is lucid, but too brief; and Alex Inglis's *Northern Vagabond* (1978) is frankly disappointing. A good biography must still be awaited.

The work presently reviewed does not attempt to fill the gap. It comprises a succinct summary of his career — primarily, as the title indicates, of his Geological Survey years — which is presented as preface to the catalogue of exhibition of photographs, books and documents in the University of Toronto's Thomas Fisher Rare Book Library. The brief biography is both lucid and readable; moreover, it is attractively printed (photographs in darker blue, text in black) on pale blue paper. Although there is no bibliography as such, the sources used for the biography are clearly set forth.

All in all, this little book deserves to be on the shelves of all persons interested in the history of Canadian earth sciences and exploration. Perhaps it may serve as stimulus to someone for the writing of that fuller biography of Tyrrell; I hope so.

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