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Inventing Canada: Early Victorian Science and the Idea of a Transcontinental Nation, Suzanne Zeller, Toronto, University of Toronto Press, 1987. Pp 356, ill., index. ISBN 0-8020-2644-3 (cloth), 0-8020-6606-2 (paper).

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As we reach the final decade of the twentieth century, the young historians of science increasingly concentrate upon the history of our own century. Although the fascination with the nineteenth century has wained, it can hardly be said that we have plumbed the depths of its history. Frankly, we still have a great deal to learn about the origins of modern Canadian science, and those roots lie firmly in the Victorian era. While we have some broad-brush strokes from Carl Berger, and several monographs dealing with specific sciences and institutions, no one has tackled the larger picture in any detail. Suzanne Zeller's *Inventing Canada* is a notable, solidly-researched and fluently-written addition to our meagre historical resources. Her study encompasses the formative period of our scientific enterprise up to Confederation and concentrates upon three large themes, the 'inventory sciences' of geology, of terrestrial magnetism

and meteorology and of botany (which includes agriculture). Although Canadian scientists of that era did not altogether neglect 'pure science,' their natural inclination – and that of the governments and institutions that bankrolled them – was to find out about this vast, largely unexplored land, to find its resources and put them to work. An examination of these three areas could be tedious, but the scientific detail has been nicely balanced with discussions of the emerging scientific community, its leaders, their thoughts and their interactions with politicians and ordinary citizens.

It is in the political realm that Zeller makes a particularly interesting contribution to our view of the formative period of Canadian science. Accustomed as we are by the long liberal-nationalist tradition of historiography that painted the Tories and the 'Family Compact' in black, we find here that the author argues that conservative opinion in Canada was in fact strongly supportive of science as a means of development.

The thread linking the scientific areas is Zeller's contention that 'Four main inventory sciences. . . contributed to the idea of a transcontinental nation in Victorian Canada.' (p 270). The argument has much merit and at the very least suggests to us that nation-forging might not have been merely an outcome of commercial and political forces. This reviewer would have to bring in the Scottish law verdict of 'not proven' on Zeller's contention, but even if the argument is perhaps exaggerated, that it is persuasively made is a sign of the maturity of the history of Canadian science. The 'nation' must be largely restricted to the Anglo-Canadian nation (the reader would be advised to also read Chartrand, Duchesne and Gingras' *Histoire des sciences au Québec*).

In any event, Zeller's book is a gold mine of information, well organized and beautifully written. Unfortunately, the University of Toronto Press, as usual, jams all the photographs into the front and all the notes into the back, making for awkward reading if you like to consult the sources as you go (I do). But this is to quibble: *Inventing Canada* is a must read and will be a model for other historians for a long time to come.

One of the more energetic foreign centres of Canadian studies is Italy. Italian academics are evidently quite fascinated by our literature and although Canada has received hundreds of thousands of immigrants from Italy, the vast majority hail from the south, whilst the interest in us seems to centre largely in the north. Even more astonishing is the fact that two important and ground-breaking works dealing with nineteenth century Canadian science were written by Italians: Vittorio De Vecchi's important Toronto dissertation on science and government and Clelia Pighetti's *Scienze e colonialismo nel Canada ottocentesco*. That two Italians did the job before we did speaks volumes about the Canadian neglect of our own her-

itage. Although De Vecchi's work has been partly serialized in these pages, it remains unpublished. Unfortunately, Pighetti's (quite different) study will remain unread by most Canadian historians as it has not been translated, and Italian is not a common language of Canadian scholars. This is shame. Pighetti's work is a wide-ranging study of nineteenth-century themes (with some glances forward and backward), including institutions, science in French Canada, the relationship between science and philosophy, between science and medicine and, above all, between science and religion. These themes differ significantly from those in Zeller's book; indeed, much of Pighetti's study is reminiscent of Brian McKillop's work and falls more into the intellectual history tradition. Needless to say, Sir William Dawson is a central figure in the monograph. It is difficult to imagine that such a book would have much of a market in Italy; it *ought* to have a wide market here and one hopes that a translation will come in due course.

Carl Schedvin's *Shaping Science and Industry* is an entirely different sort of book; where Zeller explores clear-cut themes, Schedvin's work – although not devoid of important themes – concentrates upon a single institution, the forerunner of the contemporary CSIRO, Australia's NRC. This work will have three potential Canadian audiences: those interested in scientific and technical institutions *per se*; those who would like a glimpse of how another frontier society, faced with a huge, often intractable physical space, solved its practical problems with applied science; and those who are interested in comparative themes. While it is true that many of the practical scientific issues faced by government scientists in Australia differed specifically from those in Canada, the themes are strikingly similar: agricultural research, entomology, botany, food science and related issues were of paramount importance to societies based largely on resources and raw materials. The relationship between state laboratories and industrial research, which the state wanted to encourage, was never an easy one there as here.

The parallels between the rise and development of the Council for Scientific and Industrial Research with the Canadian National Research Council are many and worth investigating. Anyone who has read Eggleston's *National Research in Canada* along with the NRC-sponsored histories by Middleton and Gridgeman, will find Schedvin's study familiar territory. Australia, like Canada, took its lead from Britain's 1916 advisory council. The CSIR's ill-fated predecessors, the Advisory Council and Institute of Science and Industry (1916 and 1921) made way for the compact CSIR in 1926 (the CSIRO is the post-war variant). The story, although distinctly Australian, is a familiar one: the struggle for funds, for laboratories, for projects, for legitimacy. Throw in for good measure federal-state rivalries,

problems with forging links with universities and obtaining qualified researchers. That CSIR succeeded, just as the NRC succeeded, was in no small measure due to strong men at the top of the institutions in both countries.

Shaping Science and Industry has a lot of detail but Schedvin writes well and the story holds your attention. Well-chosen illustrations help picture some of Australia's unique scientific difficulties. The author promises a sequel examining the growth of the CSIRO; it would be well worth waiting for.

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