

as the major contribution of the whole research program, in quantitative terms applicable to computer modelling and analysis.

As O.W. Heal and P.M. Vitousek point out in their introduction to the final section of the book:

The taiga ecosystems in this region are exceptional in that their relative simplicity allows a clear expression of the importance of biotic processes. However, an important conclusion of the taiga study is that these systems are not unique in their patterns of production, decomposition, or mineral cycling. Instead, they fall on a continuum from tropical through temperate to taiga forests. . . . Rather than describing the unique features of an unusual region, the taiga ecosystem study has used the clarity of the state factors to carry out an unparalleled test of ecosystem theory.

The book is, in organization, thrice divided, each part with an introduction: Part One, the nature of the taiga environment — climate, forest distribution, regeneration of trees and tall shrubs, fire ecology; Part Two, environmental control over ecosystem processes — nutrient availability and use, nitrogen fixation, role of bryophytes, microbial activity and mineral availability; Part Three, environmental controls over ecosystem processes — effects of temperature, moisture and soil chemistry on nutrient cycling, growth and yield modelled, phytophagous insects and browsing mammals and their effects upon plant succession.

The book is printed and produced to endure, in the style of the other *Ecological Studies* series by the publishers. Errors seem few, with notable exceptions — my name is misspelled in sentence two of the Introduction! A map of Alaska would be helpful, and the caption to Figure 1.1 states that one is present as an inset to a world map — but is nowhere to be seen. But no matter, such lapses are few and not of great concern.

Probably at some stage in the course of a lifetime, one wonders if any great works will appear in one's field that will, one day, be considered classics. If there are, I would expect this book to be among them. For individuals more interested in the past and present vegetation of the region, as well as adjacent regions, Ritchie's *Past and Present Vegetation of the Far Northwest of Canada* (1984) should satisfy their requirements. Together, these books say all that needs to be said for the present about the composition, structure and function of the past and present vegetation of the region.

But a word should be said for those scientists working in other regions of the boreal zone, across Canada and, moreover, in Eurasia. There are great repositories of knowledge about the boreal ecosystem, at least throughout Canada, in the universities and government programs, sufficient in many instances for other definitive regional synthesis such as those discussed above.

Without codification, condensation and summarization this knowledge will remain largely untapped, undisseminted, parochial, unavailable for comparison with that of other regions, and it should be considered incumbent upon policy makers in the regional centers to make arrangements for the publication of regional ecosystem analyses in a form suitable to wide distribution, such as the *Ecological Studies* of Springer-Verlag.

In many Canadian centers there is an accumulation of relevant knowledge of value biogeographically, as well as in terms of forest economics and wildlife conservation — plants, mammals, birds, fish, all resources that are, and will continue to be, invaluable to Canadians and, moreover, to the entire world as ecosystem.

Ecological knowledge and, better, wisdom has become an essential ingredient of the world scene and must now continue to be, if we as a species are not to become simply another of those who raced to extinction after a brief moment of dominance, huge biomass and inadequate intelligence. Some of the recent Canadian volumes are of value, and they are a step in the right direction, but they are compendia of essays, interesting and useful in themselves, and they lack an essential central focus. They are not deliberately coordinated aspects of a single ecosystem analysis. The material exists, it must now only be utilized (Wein *et al.*, 1983; National Research Board of Canada, 1975; Fuller and Kevan, 1970; Olson *et al.*, 1984).

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COLLECTED PAPERS ON THE HUMAN HISTORY OF THE NORTHWEST TERRITORIES. Occasional Paper No. 1. Edited by MARGARET JEAN PATTERSON, CHARLES D. ARNOLD and ROBERT R. JANES. Yellowknife: Prince of Wales Northern Heritage Centre, 1985. 167 p. No price indicated.

The Prince of Wales Northern Heritage Centre has a Canada-wide reputation for integrating the insights of northerners with those of trained researchers in the retrieval and dissemination of cultural information relevant to the North. For example, the Mountain Dene from Fort Norman built a moose-skin boat for the museum and documented on film its construction and use. Professional conservators and museologists then prepared the boat for display. Much of the prehistoric exploration sponsored by the centre uses ethnoarchaeological techniques allowing the archaeologist to incorporate the expertise and knowledge of the local persons. In these ways the complexity of human history in the N.W.T. is unfolding in a manner tying the present to the past. The *Collected Papers on the Human History of the Northwest Territories* was an appropriate publication with which to celebrate the centre's sixth anniversary. Like the centre, these papers provide an opportunity for lay and professional researchers to share their knowledge and insights and to emphasize the continuity between the present and the past.

The collection begins with a study of government recreational programs by Victoria Paraschak, who concludes that programs should incorporate mainstream and traditional activities. The same conclusion is reached by Sally Cole in her examination of the role of education in the lives of contemporary Inuit youth. William R. Morrison examines the early role of the RCMP in maintaining Canadian arctic sovereignty. Robert R. Janes and Joe D. Stewart describe the cooperative efforts of archaeologists and conservators to preserve and protect Captain Henry Kellett's store house built in 1853 on Dealy Island. This article is especially interesting as it incorporates the feelings and thoughts of the investigators while working at the site. This approach creates, for the reader, a sense of continuity with the past and gives an impression of what it is like to work at an historic site. Most articles describe events since the coming of Europeans. Donald W. Clark describes the historic period but emphasizes the prehistoric periods of Great Bear Lake region. In addition, Clark explains how archaeologists analyze their information. Barbara J. Winter also describes material culture but approaches the subject from a more contemporary view. Winter describes the quill bands that Dene women use to decorate traditional clothing.

As a researcher concerned with the appropriate use of oral tradition, I was most interested in the papers by Helena Laraqe and Norman Hallendy. Laraqe's contribution demonstrates the profound change that has occurred during one Chipewyan woman's lifetime. Her use of verbatim quotations allows the reader to fully appreciate the woman's knowledge and use of local resources. Hallendy collected some valuable information from the Inuit elders of Cape Dorset in a manner that was sensitive to the people who shared their stories. However, his data presentation contradicts his collection method. Although Hallendy states that he did not use a tape recorder, he presents his information in quotations. I agree that listening is a very important field technique; however, listening and understanding do not give a researcher the right to use quotations as if the information were presented verbatim. This is a technical error, but an important consideration. If knowledge that is transmitted orally is to be respected to the same degree as written knowledge, it must be treated with the same rules and regulations. In spite of this technical error, Hallendy successfully conveys the depth and complexity of the Inuit memory culture.

Perhaps the most important aspect of the Prince of Wales Northern Heritage Centre Occasional Papers series is its success in bringing together various methods of understanding human history. The papers in this volume are clearly written and well illustrated and will appeal to lay persons, students and professionals. Also important is its potential usefulness as a reader for high school and introductory university courses dealing with North American native peoples. In my opinion, it is a valuable contribution to anthropological and historical literature, as is the latest issue of this series: *Thule Pioneers*, Occasional Papers no. 2, edited by E. Beilawski, Carolyn Kobelka and Robert R. Janes.

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NUCLEAR WINTER AND ASSOCIATED EFFECTS — A CANADIAN APPRAISAL OF THE ENVIRONMENTAL IMPACT OF A NUCLEAR WAR. Edited by ANDREW FORESTER. Ottawa: The Royal Society of Canada, 1985. 382 p. + illus. Softbound. Cdn\$15.

This report of the Royal Society's Committee on the Environmental Consequences of Nuclear War was published in January 1985 and is a thought-provoking contribution to the growing mass of literature on this subject. The text of the main report is 52 pages long and is largely a review of a 250-page supplementary section, which includes 16 papers written by specialists in various areas related to the subject. The inclusion of these background papers adds greatly to the impact of the report. Unfortunately, however, not many people are likely to have the inclination, time and background needed to read all the material and study it. Nevertheless, it is an important document and deserves a lot of attention. The committee is to be commended for bringing these various contributions together and for providing a more integrated overview of the possible effects of a nuclear war, resulting in nuclear winter.

The purpose of this review is to provide the essence of the report in a brief, comprehensive form so that readers will understand what is likely to happen if a nuclear winter were to develop. It is hoped that this will lead to more determined steps to prevent a nuclear war from occurring.

The study, requested by the Minister of the Environment, the Honourable Charles Caccia, was to consider "the environmental and ecological consequences of nuclear war." In a covering letter to the president of the Royal Society, the chairman of the committee, F.K. Hare, noted that "nuclear winter is a very contentious issue defying analysis by the usual methods of scientific and scholarly research." He stated further that although the Society's usual norms may have been exceeded, the committee felt that the Government of Canada should be made aware of the "macabre predictions being made by responsible scientists."

The Effects on Canada of a U.S.A.-U.S.S.R. Nuclear War: Two general situations need to be considered in the event of a nuclear war between the United States and the Soviet Union. One situation would involve only targets in the United States and the Soviet Union, while the second would involve Canadian targets as well.

In the situation where Canadian targets would not be attacked, the possibility of Canadian cities suffering in the aftermath of a major nuclear confrontation with an expenditure of, for example, 5000 megatonnes of explosive power by the two superpowers is still great. Turco and Ackerman, who contributed to the report, pointed out that the major cities, Toronto, Montreal, Ottawa, Quebec City and Halifax, with one-third of the population of Canada, lie downwind from the strategic U.S. missile bases at Malmstrom, Montana; Minot and Grand Forks, North Dakota; and Ellsworth, South Dakota, in addition to the heavily industrialized Midwest, which also would be targeted. Additionally, the cities of western Canada — Victoria, Vancouver, Calgary, Edmonton, Saskatoon, Regina and Winnipeg — with approximately 15 percent of Canada's population, could be expected to receive intermediate and long-range fallout as a result of being downwind from strategic naval bases near Seattle, Washington. Those living in Vancouver and Victoria would be subjected to the more dangerous early fallout as well.

Turco and Ackerman, both members of the TAPPS group, which wrote one of the early articles on nuclear winter, pointed out that Canada, as an active member of the NATO alliance, would be committed to the defence of its allies if a nuclear war were to break out between the United States and the Soviet Union. Canada could expect "to receive prodigious demands for assistance from her allies and neighbors. Food and supplies would be in great demand. Millions might seek refuge in the cities of Canada, if they had been spared bombing. Governments would request immediate aid in transport, manufacturing and communication. As nuclear winter settled over the world, increasing chaos and civil disobedience could be expected. Canada would have the difficult choice of withdrawing such assistance to ensure, as best she could, the survival of those at home, or extending a helping hand to outsiders with the attendant danger of being overwhelmed." This scenario raises the question of whether the Canadian government and the people of Canada should be prepared to provide for literally millions of extra people should such a confrontation occur.

No Canadian could expect to be free of the effects of radiation and nuclear winter even if Canadian targets were not attacked and they did not live in the paths of the nuclear clouds that would be travelling downwind from targets in the United States. In a matter of several days after the attack, clouds containing radioactive dust, soot and smoke from the Soviet Union would be carried via the upper atmosphere around the northern latitudes covering much of Canada and plunging the country into the darkness of nuclear winter.

As hideous as this scenario might seem, it is likely that several million Canadians would survive the initial attack and, depending upon the temperature, food supplies, availability of medical aid, fuel, clothing and shelters, would be faced with the harsh realities of this greatly changed environment. Many would suffer from radiation sickness, their immune systems would be affected, so that diseases such as influenza, pneumonia, cholera, tuberculosis and dysentery could break out. Diseases would spread rapidly because those who survived the attack would probably have to live in crowded, cramped quarters while waiting for the atmosphere to clear so that it would be safe outside again. In addition, water supplies would likely be polluted, causing other forms of infection.

To most people such a situation is unthinkable, so nothing much is being done to prepare the population for such an eventuality.

Canadian Targets Likely to Be Attacked: Fairly convincing arguments can be advanced suggesting that Canada, as a member of NATO and NORAD, would also be attacked and several target areas devastated if a nuclear war were to occur. The objective would be to destroy Canada's ability to support its allies.

Military targets, such as major airfields where long-range bombers can land and refuel, major ports on the east and west coasts, centres that