

The Arctic is still in an early exploratory phase, with relatively few test bores for such a vast territory. It is considered to be a proven oil province, and most of the logistical problems have been solved. On this basis, probability figures for discoverable reserves are a standard tactic sufficiently realistic for planning purposes. Nassichuk's revised statement gives a current viewpoint:

In the regions that Stefansson travelled, the search for oil and gas has continued relentlessly. In the Arctic Islands alone, some 180 wells have been drilled and nineteen are classed as discoveries; ten are gas fields, four oil, and five oil-and-gas. Under anticipated economic conditions several of these are believed to be commercial, although the calculated recoverable reserve is less than a half-billion barrels of oil and 20 trillion cubic feet of gas in total. Undiscovered resources are expected to approximate five billion barrels and more than 100 trillion cubic feet. Greater potentialities are likely to lie in the Sverdrup Basin, to the north, where costs are higher. Within the last few years more than 160 wells have been drilled in the Beaufort Sea-Mackenzie Delta area with a discovery of about one billion barrels of oil and 10 trillion cubic feet of gas. This area is expected to contain nearly ten billion barrels and 100 trillion cubic feet yet undiscovered, on the basis of calculated estimates from comparable provinces and conditions known to exist here. That portion to the west of the international boundary with Alaska is virtually untested. The situation has been found to be relatively complex, structurally and stratigraphically. An average of resource estimates released by the National Petroleum Council of the United States gives about six billion onshore and 12 billion offshore for Alaskan Arctic recoverable oil. Comparable gas potential is 22 trillion onshore and 27 trillion offshore.

In the final article of the symposium, "Relation between Barometric Pressure and Geophysics," Terris Moore explores some mysteries of high-latitude surveying. Sea level has been found to be notoriously vague as a precise reference, and because of its oblate form the earth's only positive measure is from the center. It is important to know that altimeter measures in aircraft consistently read lower for mountain crests than the same observation on the ground. Other variables can be calibrated. Contraction of the earth's atmospheric envelope at the poles is accentuated during the winter season and represents another possible complication, when simple devices are used for record. In a practical sense, the 27 miles difference in polar diameter has little meaning; however, mountain peaks of Alaska and the Yukon extend well above the atmospheric median and are thus 10 percent physiologically higher than comparable elevations near the equator.

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AASIVISSUIT—THE GREAT SUMMER CAMP: ARCHAEOLOGICAL, ETHNOGRAPHICAL AND ZOO-ARCHAEOLOGICAL STUDIES OF A CARIBOU-HUNTING SITE IN WEST GREENLAND. By BJARNE GRØNNOW, MORTEN MELDGAARD and JØRN BERGLUND NIELSEN. Kommissionen for videnskabelige Undersøgelser i Grønland (The Commission for Scientific Research in Greenland). Meddelelser om Grønland, Man & Society 5, 1983. 96 p. Tables, figs., appendix. Softbound. Dkr. 177.20.

Possibly more so than any other single game species, caribou have predominated in the affairs of northern hunters. Evidence recovered from the Upper Paleolithic caves of ice-age Europe and from Paleoindian camp sites in the New World demonstrate the antiquity of adaptations based on the predation of caribou. Archaeological and ethnographic research in the circumpolar north, from Scandinavia to Siberia and from Alaska to Greenland, readily attest to the central role of caribou in many northern economies. The antiquity and the geo-

graphical diversity of caribou-hunting cultures is evident in the variety of hunting techniques and strategies documented.

This volume, an analysis of ethnohistorical and archaeological data pertaining to a caribou-hunting site, Aasivissuit, "The Great Summer Camp," in the interior of West Greenland, represents a major contribution to the literature on the cultural-ecological relationships between caribou hunters and their prey.

In a brief introduction the research at Aasivissuit is framed within a cultural resource preservation paradigm. The research goal was not to excavate the entire site; rather, a meticulous sampling design and small-scale excavations were conducted to determine the occupational history of the site and reveal the changing dynamics of the seasonal exploitation of caribou. Following the introduction there is an encapsulation of the geography, climate, and available resources of interior West Greenland, which serve to define the physical restraints operating on caribou and caribou hunters. The authors conclude their review of caribou biology with a discussion of the dramatic fluctuations that characterize caribou population size. Information is derived from historical sources that reveal periodic radical oscillations in caribou numbers. Climatic change, human predation, and overgrazing of foraging areas are all considered as factors that might contribute to the cyclical decline in caribou population size, but no clear causal relationships are derived. Resolution of this problem would go a long way toward facilitating models of interior hunting adaptations throughout the circumpolar north.

Anthropological research in Greenland, as well as in many parts of the Arctic, has a coastal bias, a reflection of the maritime focus of most native economies. Logistical constraints, and the defending insect hordes of the interior, have kept most researchers bound to navigable waterways and windy shore-side encampments. The authors of this work break from this tradition in presenting a surprisingly vivid view of the inland summertime caribou hunt of the West Greenland Inuit. As a specific case study it provides substantial data for reconstructing settlement-subsistence patterns in prehistoric and historic Inuit society in Greenland. As a model of interdisciplinary research, a tightly composed presentation that builds on data derived from ethnohistorical and ethnographic sources, archaeology, and archaeozoological and environmental analyses, it should serve to encourage similar research elsewhere in the Arctic wherever caribou are a significant prey species.

The study focuses on research at Aasivissuit, a major summer caribou-hunting camp situated approximately halfway between the coast and the inland ice. As prelude to the archaeology, the authors provide a detailed presentation of the interior caribou hunt as derived from historic and ethnographic sources. Inuit drawings (including several by Aron of Kangek, c. 1858) and numerous photographs (1898-1958) are a valuable complement to the text. The authors' review of the ethnohistorical material adopts a broad anthropological perspective: among the topics covered are a discussion of the composition of hunting bands, the roles of women (the interior hunt was a family affair), the factors influencing resource-scheduling decisions, and the social aspects of the caribou hunt (including leadership roles, the acquisition of prestige, and the maintenance of social relationships among members of an otherwise dispersed population). The authors also discuss the nature of the journey from the coast to the interior camp at Aasivissuit and the variety of dwelling types constructed during the caribou hunt. Hunting strategies are presented as dynamic and processual, with considerable variability as a result of both changing ecological factors (principally the size of the caribou population) and the advent of different hunting technologies (use of kayaks, bow and arrows, guns). For the Greenland Inuit, caribou represent an important food source (arctic epicureans will appreciate the references to *angornardluk*, *qajooq assigaaq*, and *nerukkaq*, the later a fermented liver salad made with the contents of caribou stomachs). Equally important were skins for clothing and sleeping robes and antlers for weapon parts.

The archaeological work at Aasivissuit neatly complements the preceding ethnohistorical accounts. The remains of a wide variety of structures, including house features, tent rings, storage cairns, hunting features, stone fox traps, graves and stone alignments (the hopping-

stone game) are described. Large caribou-bone middens representing the remains of literally thousands of animals are mapped and one is partially excavated. The research at Aasivissuit goes beyond an immediate site focus to place the activities at the base camp within the larger framework of the resource procurement activities that are supplying the camp.

An elaborate caribou-hunting drive system, an *inussuk*, was discovered on the hillsides adjacent to the base camp and is described in some detail. The *inussuk* consisted of a line of over 100 stone cairns that had been erected along a series of ridge tops for over four km. The drive system terminated at a stone fence (70 m long) from which Inuit hunters could ambush the caribou being driven toward them. The construction and operation of such a large-scale hunting feature represents a significant cooperative labor investment. The drive system must have been "expensive" to operate in terms of labor needed to make it efficient (leaders to coordinate the hunt, drivers to start the animals moving toward the ambush, beaters along the way to channel the animals and keep them moving, hunters at interception points) and was consequently only operative during times of large caribou populations.

A number of shooting coverts, or hunting blinds, are also reported. Some of these are associated with the drive system but others represent a switch to less communal hunting tactics and probably date from periods when caribou were less abundant. Dating of small stone structures in the North is frequently enigmatic, hunting and meat catching behaviors are less likely to produce material remains than habitation structures, and subsequent reuse further obscures their origins. However, careful excavation of several hunting blinds at Aasivissuit recovered spalls from gun flints as well as minute resharpening flakes from stone-tipped projectiles, valuable clues to the origin and use of the features.

Excavations at the base camp, in one of the large caribou-bone middens, revealed the stratified remains of several paleoeskimo and neoeskimo occupations, evidence of over 2000 years of intermittent recourse to the caribou resources of the interior. An innovative analysis of the faunal material recovered from the excavation is presented to support inferences about the relative abundance of prey species, as well as hunting and processing strategies.

Because many northern groups were able to maintain traditional cultural features well into the 20th century, northern archaeologists have frequently relied on the ethnographic record as a source of models to explain prehistoric cultural developments. Done indiscriminately, such a practice has the potential to obscure cultural variability by limiting behavioral responses to those observed historically. A more judicious use of ethnography and ethnohistory, as practiced by the authors of this volume, affords them a significant chronological perspective to observe changes in resource densities, technologies, and social and economic strategies. The data from interior Greenland indicates that caribou populations are characterized by dramatic fluctuations. As the basis of a long-term economic adaptation, a rigid commitment to caribou predation would have serious consequences. The Greenlanders never abandoned their primary dependence on maritime resources. On the other hand, as a seasonal opportunistic resource, caribou are highly desirable and both the archaeological and ethnohistorical records attest to a great deal of variability in the procurement strategies exercised by the hunters at Aasivissuit.

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BOOKS RECEIVED

THE FRANKLIN ERA IN CANADIAN ARCTIC HISTORY 1845-1859.
Edited by PATRICIA D. SUTHERLAND. Ottawa: National Museum of Man, 1985.
National Museum of Man Mercury Series. Archaeological Survey of Canada

Paper No. 131. ISSN 0316-1854 and 0317-2244. x + 220 p., figs., maps. Softbound. No price indicated.

WINDOW ON THE PAST — ARCHAEOLOGICAL ASSESSMENT OF THE PEACE POINT SITE, WOOD BUFFALO NATIONAL PARK, ALBERTA. By MARC G. STEVENSON. Ottawa: Parks Canada, 1986. (Canadian Government Publishing Centre, Supply and Services Canada, Hull PQ, K1A 0S9. Cat. No. R61-2/9-29E.) ISBN No. 0-660-12041-0. 146 p., maps, figs., tables, appendices, refs. Softbound. Canada: Cdn\$8.75; other countries Cdn\$10.50.

LAKE GÅRDSJÖN, AN ACID FOREST LAKE AND ITS CATCHMENT. Edited by FOLKE ANDERSSON and BENGT OLSSON. Stockholm: Publishing House of the Swedish Research Councils, 1985. Ecological Bulletin No. 37. (Publishing House of the Swedish Research Councils, P.O. Box 6710, S-113 85 Stockholm, Sweden.) ISBN 91-86344-25-0. 336 p., figs., tables. Hardbound. US\$44.00.

CULTURES IN CONTACT — THE EUROPEAN IMPACT ON NATIVE CULTURAL INSTITUTIONS IN EASTERN NORTH AMERICA, A.D. 1000-1800. Edited by WILLIAM W. FITZHUGH. Washington, D.C.: Smithsonian Institution, 1985. (Smithsonian Institution Press, 955 L'Enfant Plaza, Suite 2100, Washington, D.C. 20560.) ISBN 0-87474-438-5. vi + 320 p., figs., maps. Hardbound. US\$29.95.

DISCOVERY OF THE NORTH — THE EXPLORATION OF CANADA'S ARCTIC. By DANIEL FRANCIS. Edmonton: Hurtig Publishers, 1986. (Hurtig Publishers Ltd., 10560 - 105 Street, Edmonton, AB T5H 2W7.) ISBN 0-88830-280-0. 224 p., maps, photos, index. Hardbound. Cdn\$16.95.

SUBURBS OF THE ARCTIC CIRCLE. By MARY BURNS. Moonbeam: Penumbra Press, 1986. (Penumbra Press, P.O. Box 340, Moonbeam, Ontario POL 1V0.) ISBN 0-920806-79-1. Fiction. 158 p. Softbound. Cdn\$9.95.

ARCHAEOLOGY OF HECTA ISLAND: A SURVEY OF 16 TIMBER HARVEST UNITS IN THE TONGASS NATIONAL FOREST, SOUTHEASTERN ALASKA. By ROBERT E. ACKERMAN, KENNETH C. REID, JAMES D. GALLISON, MARK E. ROE. Pullman: Washington State University, 1985. Center for Northwest Anthropology, Project Report No. 3. (Center for Northwest Anthropology, Washington State University, Pullman, WA 99164-3112.) viii + 178 p., figs., tables, refs. Softbound. No price indicated.

ARCTIC AND ALPINE FUNGI — 1. By GRO GULDEN, KOLBJØRN MOHN JENSSEN, JENS STORDAL. Oslo: Soppkonsulentent, 1985. First volume in a planned series. (Soppkonsulentent, Wesselgate 3, N-0165 Oslo 1, Norway.) ISBN 82-991301-0-7. 60 p., photos, refs. Softbound. NOK 125.00.

AN ABC RESOURCE SURVEY METHOD FOR ENVIRONMENTAL SIGNIFICANT AREAS WITH SPECIAL REFERENCE TO BIOTIC SURVEYS IN CANADA'S NORTH. By JAMIED BASTEDO. Waterloo: University of Waterloo, 1986. Department of Geography Publication Series, No. 24. (Department of Geography, Faculty of Environmental Studies, University of Waterloo, Waterloo, Ontario N2L 3G1.) ISBN 0-921083-20-3. 137 p., figs., tables, refs., appendices. Softbound. Cdn\$18.75.

THE NORDIC SEAS. Edited by BURTON G. HURDLE. New York: Springer-Verlag, 1986. (Springer-Verlag New York, Inc., 175 Fifth Avenue, New York, N.Y. 10010.) ISBN 0-387-96241-7. xiii + 777 p., figs., tables, plates, indexes. Hardbound. US\$69.50.

STEF: A BIOGRAPHY OF VILHJALMUR STEFANSSON, CANADIAN ARCTIC EXPLORER. By WILLIAM R. HUNT. Vancouver: UBC Press, 1986. (University of British Columbia Press, 303-6344 Memorial Road, Vancouver, B.C. V6T 1W5.) ISBN 0-7748-0247-2. 344 p., photos, maps, bib., index. Hardbound. Cdn\$29.95, US\$25.00.

BIBLIOGRAFIA DI UMBERTO NOBILE. By GERTRUDE NOBILE STOLP. Firenze: L.S. Olschki, 1984. Biblioteconomia e Bibliografia; Saggi e Studi diretti da Francesco Barberi. ISBN 8822232968. 113 p., illus., index. Softbound. In Italian. No price indicated.

THE PERMAFROST ENVIRONMENT. By STUART A. HARRIS. Totowa, N.J.: Barnes & Noble, 1986. (Barnes & Noble Books, 81 Adams Drive, Box 327, Totowa, N.J. 07511.) ISBN 0-389-20604-0. 276 p., photos, figs., tables, maps, refs., index. Hardbound. US\$31.50.

KISKINAHAMAWAKAN-ACIMOWINISA/STUDENT STORIES. Written by Cree-Speaking Students. Edited, translated and with a glossary by FRED AHENAKEW. Memoir 2, Algonquian and Iroquoian Linguistics, 1986. (Native Languages Programme, 532 Fletcher Argue Building, University of Manitoba, Winnipeg, Manitoba R3T 2N2.) 76 p., incl. Cree-English glossary. Text in Cree and English. Softbound. Cdn\$7.50.

THULE PIONEERS. Edited by E. BIELAWSKI, CAROLYN KOBELKA, ROBERT R. JANES. Occasional papers of the Prince of Wales Northern Heritage Centre, No. 2, 1986. (Prince of Wales Northern Heritage Centre, Government of the Northwest Territories, Yellowknife, N.W.T. X1A 2L9.) ISBN 0-7708-3821-9. 110 p., figs. Softbound. No price indicated.

ARCHÉOLOGIE DE L'UNGAVA: LE SITE DE LA POINTE AUX BÉLOUGAS (QILALUGARSIUVIK) ET LES MAISONS LONGUES DORSÉTI-