

VanStone's study is, aside from the limitations of the archeological research program, a major contribution to the ethnoarcheology of Southwestern Alaska. He has clearly led the way in ethnohistorical investigations and has demonstrated the value of ethnographic data in historic site interpretation. He has additionally shown that the relatively small-scale archeological testing program can provide valuable descriptive materials, but for the greater demands of problem-oriented archeology it is rather unproductive. The author is to be commended for his diligence in turning out readable and useful reports. This monograph, as well as those previously cited, is recommended to scholars interested in the problems of ethnohistory and ethnoarcheology.

REFERENCES

- ¹VanStone, James W. 1967. *Eskimos of the Nushagak River: an ethnographic history*. University of Washington Press. 192 pp.
- ²———. 1968a. An annotated ethnohistorical bibliography of the Nushagak River region, Alaska. *Fieldiana: Anthropology*, Vol. 54, no. 2, pp. 149-189. Field Museum of Natural History, Chicago. 189 pp.
- ³———. 1971. Historic settlement patterns in the Nushagak River region, Alaska. *Fieldiana: Anthropology*, Vol. 61. Field Museum of Natural History, Chicago, 149 pp.
- ⁴———. 1968b. Tikchik village: a nineteenth century riverine community in southwestern Alaska. *Fieldiana: Anthropology*, Vol. 56, no. 3, pp. 215-368. Field Museum of Natural History, Chicago. 368 pp.
- ⁵———. 1970. Akulivikchuk: a nineteenth century village on the Nushagak River, Alaska. *Fieldiana: Anthropology*, Vol. 60. Field Museum of Natural History, Chicago. 123 pp.

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POLAR GEOMORPHOLOGY. Compiled by R. J. Price and D. E. Sugden for the British Geomorphological Research Group. Institute of British Geographers, Special Publication Number Four, 1972. 7½ x 10 inches, 215 pages, illustrated.

Members of the British Geomorphological Research Group, following a symposium on Polar Geomorphology at the University of Aberdeen, January 4-5, 1972, contributed the 14 papers constituting this volume. Drs. R. J. Price and D. E. Sugden shared the responsi-

bility of organizing the symposium and of compiling the publication. Limited pertinent discussion from the symposium is included. Abstracts and figure titles are printed in English, French, and German.

Individual papers range from 9 to 19 pages. Six papers relate to the Canadian Arctic: valley asymmetry and slope forms, erosional modification of levee morphology, process and form on debris slopes, ice-foot of beaches, and two on limestone solution. Four papers deal with Antarctica: radio echo sounding inland of the Transantarctic Mountains, volcanic record of the glacial history, South Shetland Islands' contribution to the glacial history, and tors and rock weathering. Papers on deglaciation of part of northeast Greenland and on turf-banked solifluction lobes in Norway complete the presentations resulting from field studies. A synthesis of a laboratory study of the wear of sandstone by cold sliding ice, and a deductive yet mathematical treatment of the role of thermal régime in glacial sedimentation complete the book.

It should be clear to the reader that the book is not intended to be a review of the geomorphology of the polar regions. The subject matter is specialized, and as such must be fitted into an established framework of knowledge. Such a diverse and disjunct collection of research papers is perhaps more appropriate for journal articles than a hard cover book. Cost of an individual paper, or even the 4 or 6 papers of Antarctica or Canada respectively, becomes excessive. Most students and researchers will depend on library copies rather than purchase it.

Aside from those drawbacks, all articles have considerable merit. American geologists need to be reminded that in Europe geographers in general carry the brunt of the study of geomorphology and glacial geology and that they do not eschew the geologists' methodologies. Moreover, most methods cited in the book attempt quantification. These papers are not mere descriptive discussions. Hence, many of the papers are qualified to appear in our own geological journals.

Only a few papers can be singled out here for further comment to illustrate their diversity, major new or different contributions, or defects. G. S. Boulton's paper on "The role of thermal régime in glacial sedimentation" is certain to arouse comment from various points of view. It is timely, succinct, overly simplified (by necessity?), incompletely documented, admittedly speculative, and not quite up to date. Boulton seems not to have been aware that publications on a bore hole through the Antarctic ice sheet had been available more than three years before the submission of his manuscript, and numerous

important papers related to glacial sliding and the bottom interface of glaciers are not considered. He has a "suggestion" (p. 7) ". . . that the steep lee-side faces of *roches moutonnées*, formed beneath ice which is melting at its base, are not the product of plucking by freezing of meltwater in joints as has been commonly supposed . . . but form because of the possibility of lateral expansion of the rock into lee-side cavities. They are thus likely to form beneath small thicknesses of ice." Another — (p. 8) ". . . suggests the possibility that a large part of the excavation of U-shaped valleys by certain temperate glaciers may result from subglacial fluvial erosion."

In Funder's paper on deglaciation in north-east Greenland, the conclusion is reached that fiord morphology, such as branches or their mouths, determined the positions of the termini during all major halt or advance stages. This he says accounts for some differences in chronology from place to place.

In Antarctica radio echo soundings indicate that the sub-glacial structural configuration and topography inland of the Transantarctic Mountains are considerably more complex than previously envisaged. Le-Masurier concludes from the volcanic record

that the ice sheet responded to sea-level changes not of its own making, but that it may not have caused any large sea-level changes since its inception roughly 40 million years ago. In contrast John suggests that climate changes in the South Shetland Islands induced changes in the glacial sequence comparable to those of Victoria Land. Derbyshire's study of tors and rock weathering includes the use of X-ray diffraction and draws attention to the importance of micro habitats and multiple geomorphic processes on individual slopes in the periglacial desert climate.

In the papers on the Canadian Arctic Kennedy and Melton conclude that permafrost adds to the complexity and variety of present-day processes and clearly produces no one suite of landforms nor one form of asymmetry. In areas without vegetation limestone solution is much slower than in temperate regions.

Few typographic errors were noted. Line drawings are plentiful and well done; photographs are soft focus and lacking in contrast. This book needs to be examined by all earth scientists interested in the polar regions.

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