

PRINCE WILLIAM SOUND, ALASKA, EARTHQUAKE OF 1964 AND AFTER-SHOCKS; VOLUME I (OF THREE VOLUMES). FERGUS J. WOOD, EDITOR-IN-CHIEF. *Washington: Coast and Geodetic Survey, Commerce Dept., 1966. xxxiii + 263 + [10] p. il. 8 pl. in pocket. Cloth, \$6.50.*

This volume is an account of the operational phases of the Coast and Geodetic Survey Program in Alaska from 27 March to 31 December 1964, and includes an account of seismicity and a brief history of the Coast and Geodetic Survey activity in the Alaskan area.

Nowadays, an interdisciplinary approach to geophysical studies is, frequently, not only essential for progress but quite fashionable as well. The editor in this case claims that the number of comprehensive monographs devoted to interpretative and analytical studies of a single major earthquake and its aftershocks based upon a co-ordinated multidisciplinary approach is extremely limited, and that for this reason the U.S.C.G.S. program following the large Alaskan earthquake of 1964 is to be documented in three volumes, of which this is the first. The second and third volumes, now under preparation, are to describe the research studies in seismology and marine geology and in geodesy and photogrammetry respectively. Volume I, therefore, must be reviewed in this limited operational and background context.

On 27 March 1964, the strongest earthquake ever recorded on the North American continent rocked the Prince William Sound area in south-central Alaska. The Richter magnitude was about 8.5. The shock was felt over half a million square miles, and within a 50,000-square-mile area surrounding the epicentre, i.e., the economic heart of the state, major damage to the fabric of civilization in Alaska occurred. The economic devastation resulted from ground vibrations, from soil instabilities induced by the strong vibrations, from an accompanying seismic sea-wave (tsunami), and from tidal inundations following land subsidence. The tsunami caused considerable damage to the west coast of Vancouver Island and to locations as distant as California.

Public and private property damage exceeded \$300 million, but there were

only 114 casualties. The latter figure is miraculously low when it is realized that more than 14,000 people were killed annually by devastating earthquakes during the second quarter of the present century. This comparison illustrates that sound earthquake engineering and good luck (the schools were closed for the day, Good Friday, the business districts were not crowded, and the tide was not at high level) can make an enormous difference.

The reaction of the Coast and Geodetic Survey was commendable. The earthquake occurred at 5:36 P.M., Alaskan Standard Time, and a definite tsunami warning was issued by the Seismic Sea-Wave Warning System within 2 hours. It should be noted that the earthquake epicentre was on land. By 30 March the first aftershock seismographs were operating in the area together with strong-motion seismographs. Thereafter, the seismological program rapidly built up so that seven seismographs of various kinds were soon in operation in the region for aftershock studies (thus supplementing the Sitka and College permanent seismic stations) and five strong-motion seismographs as well. The thousands of aftershock events fall largely into a belt 300 km. in width and stretching 800 km. southwest from the main shock at an average depth of 20 km.

Five triangulation or levelling parties were transferred to Alaska to help restore a precise network of vertical and horizontal control stations following crustal movement of up to several feet. Gravity observations were also made. The operations are described in detail and are well illustrated. Two Air Photo Missions were diverted to Alaska to provide photographic coverage of earthquake and tsunami damage to major ports, their facilities, and navigational aids, for purposes of making an emergency revision of nautical charts. Within a month, five of the Coast and Geodetic's ships were working in Alaska, undertaking hydrographic surveys and tide gaging to rehabilitate the southern ports, supporting survey parties doing onshore geodetic work essential for the reconstruction of railways and highways, and determining uplift and subsidence and tracing faulting for geophysical research purposes. Emergency charting procedures were established.

The book outlines the seismicity of Alaska and its geologic and tectonic setting. The Good Friday earthquake occurred beneath a small, mountainous, glaciated peninsula between College Fiord and Unakwik Inlet, just north of Prince William Sound and within the Coast Range orogenic belt. Crustal adjustments in geologically recent time have occurred, but it is not clear whether these are caused principally by the postglacial rebound of the earth's crust as a result of deglaciation or by cumulative orogenic movement.

The book is valuable as an object lesson in how effectively a large and complex government organization can respond to a crisis. One wonders, though, how a less prosperous organization in another country would react when faced with a similar problem. The detail in the book may be useful to the specialist, but it detracts from the value of the book to the intelligent layman. This reviewer considers the book too verbose, the usual consequence of multi-authorship. It does illustrate vividly, however, the effects of a disastrous earthquake on the fabric of a modern economy, and does enhance the continuing claim of the U.S.C.G.S. to play a major role in the expanded program of research into earthquake prediction which may arise in the U.S.A., partly as a consequence of the Alaskan earthquake of 1964.

Kenneth Whitham

THE ESKIMO OF NORTH ALASKA.
BY NORMAN A. CHANCE. *New York: Holt, Rinehart, Winston, Inc., 1967. 6 x 9 inches, 107 pages, \$1.95.*

This little book is one of a series of "case studies." The series is edited by Professors George and Louise Spindler of Stanford University, and now comprises analyses of over twenty-five cultures from all parts of the world. Each analysis runs to about 100 printed pages and is designed mainly to present to students at the undergraduate level some awareness of the variety of human socio-cultural systems, both as they exist today and in an ethnographic context. The general series has proved most useful in classroom situations, successfully introducing a sense of human society and culture in

action. Chance's description is the only one in the series so far which treats of arctic peoples. Others cover native peoples in Africa, Australia, the South Seas, and parts of North America other than the Arctic. Nor have the editors in the series ignored the concept of folk or peasant society; they have included descriptions of "little communities" in areas such as Mexico, Greece, Turkey, and the U.S.S.R., among others.

With the exception of some of the more remote and relatively isolated ethnic groups in New Guinea, and perhaps in sections of South America and Southeast Asia, there remain few truly aboriginal native worlds. Virtually all living human groups have been touched in some measure by Western culture. But it would be quite erroneous to suggest that because a people begins to share in the technology of the West or even to become ideologically changed, its ties with its own past and traditions are severed. The Eskimo of north Alaska offers a case in point. The machine age (with its material involvements), the school, the Christian churches, the enterprises of modern social welfare, not to mention the development of a money economy, might suggest that the past has gone. But this is not the case. Dr. Chance makes it eminently clear, by describing the bridge between past and present, that older modes do persist, even if informally, and that they still influence the behaviour of the Eskimos of the Point Barrow area. It is this feature which makes his study so worth reading.

The question which emerges is: How have the modern peoples of north Alaska managed to find a link between their own aboriginal institutions, structural as well as ideological, and patterns of Euro-American culture, thus discovering, in a sense, the best of both worlds? By a careful analysis of the modern scene, which discovers the roots of the Eskimo's present-day activities in his sense of the aboriginal past, Chance is able to define how native organization and character can accommodate ideas which come to it from the outside. What is remarkable, comparing the Eskimo with a great many other ethnic groups around the world, is the stability of his native institutions. Not that some signs of disorganization are not present, but constructive building and planning have enabled the Eskimo to bypass the