

Reviews

ARCTIC ENVIRONMENTAL ASSESSMENT

THE ALASKAN BEAUFORT SEA: ECOSYSTEMS AND ENVIRONMENTS. Barnes, P. W., Schell, D. M. and Reimnitz, E. (editors). 1984. Orlando, Fla., Academic Press. 466p, illustrated, hard cover. ISBN 0-12-079030-0. £30.50. US\$39.00.

In 1974, six years after the discovery of oil at Prudhoe Bay was announced, the State of Alaska began to plan offshore lease sales in the Beaufort Sea. To provide an environmental data base suitable for adequate management decisions to be made, a project known as OCSEAP (Outer Continental Shelf Environmental Assessment Program) was born. It was managed by NOAA (National Oceanic and Atmospheric Administration) under an interagency agreement with the Bureau of Land Management. This excellent book reviews the chief results of a decade of work by a large community of scientists in this programme. As David Norton and Gunter Weller state in their historical survey, 'OCSEAP inherited rather than created a community of capable arctic scientists'. Nevertheless, the programme provided an overall framework and purpose for the scientific study of the region, and a particular benefit was the steady support given for long-term studies, essential in such fields as biology and sedimentary geology.

The book's breadth of treatment varies. In some areas it gives us only a taste; for instance, mesoscale surface winds (Kozo) and the anomalous eastward subsurface flow known as the Beaufort undercurrent (Aagaard) are the only topics covered in meteorology and physical oceanography. In other areas the reviews are comprehensive. One such is the interaction between sea ice keels and the seabed, the phenomenon known as gouging or scouring. Barnes and Reimnitz, two of the book's editors, have spent years in careful study of the gouging process, and summarise their results in two masterly reviews, with Weeks contributing a further statistical treatment. Other ways in which ice interacts with land are the incorporation of suspended sediment into the ice sheet, and the physical ride-up of ice onto the gently sloping shoreline, both of which are reviewed. It is refreshing that OCSEAP has lasted long enough for serious biological studies to be completed, and a particularly important project was a long-term interdisciplinary study of processes in Simpson Lagoon, chosen as typical of the lagoon-barrier island systems which comprise most of the coastline. Results are surveyed in an excellent chapter on trophic dynamics, with separate chapters on bacteria, phytoplankton, kelp and birds. Man's most damaging interaction with this environment would occur through a major oil spill or blowout; Thomas describes our present knowledge of oil-ice interaction, while Pritchard shows that it is possible to model the nearshore ice motions that will carry the oil downstream and spread it around the Arctic.

The book as a whole reflects a dedication and integrity in the researchers, and a lasting commitment from the funding agencies, which are unique in Arctic studies. OCSEAP should be taken as a model for the conduct of coastal studies throughout the Arctic. (Peter Wadhams, Scott Polar Research Institute, Lensfield Road, Cambridge CB2 1ER.)