

BERING STRAIT: THE REGIONAL PHYSICAL OCEANOGRAPHY. By L. K. COACHMAN, K. A. AAGAARD, R. B. TRIPP. *Seattle, Washington: University of Washington Press, 1976. 9¼ x 6¼ inches, 172 pages with illustrations. Hard cover, \$20.00.*

This is an important book, not only for the physical oceanographer but for anyone interested in the key areas of the world. Bering Strait is the narrowest point of contact and exchange between any two of the world oceans—specifically, between the Pacific Ocean and the Arctic Ocean. It has been opened and closed several times in world history, and the Bering Strait Bridge, or “Beringia”, has been the land link between the old world and the new, so-called, and *vice versa*. Since the late nineteenth century there have been several proposals made, always by Russian engineers, to dam the Bering Strait as a means of warming up the northern regions of the world. These have been unequivocally rejected by Russian oceanographers each time they have appeared, and rightly so.

Coachman, Aagaard and Tripp have brought together all the work on the physical characteristics and dynamics of the water that flows through this narrow and shallow passage (85 km wide, 50 m deep), and also much of what is known and relevant concerning the waters of the Bering Sea to the south of the Strait, and the Chukchi Sea to the north. The senior author, especially, had a considerable share in the collection of that information. The unit of water transport proposed by your reviewer some years ago, and which appears to have caught on, namely the Sverdrup (Sv) or one million cubic metres per second has, happily, been used by the authors. At the same time, for good measure, the Bering, or one cubic kilometre per year, was proposed but that one has not been as successful.

The flow of water through the Strait, averaging about 1.5 Sv, is normally northward, but occasionally, as in 1967 and 1968, this dominant flow is reversed for a period of a few days. To give the general reader some appreciation of this measure, 1.5 Sv represents some 500 times the normal flow of water over Niagara Falls, but still only about one quarter of the Atlantic inflow into the Arctic Ocean on the other side of the North American continent. Oceanic flow is on a large scale.

The treatment of the material is technical, naturally; the authors are addressing their

physical oceanographic colleagues. But the mathematics (“chicken tracks”) employed are not insurmountable to the reasonably numerate reader, and there are enough general maps and diagrams to make the whole matter highly absorbing. It is in the main descriptive, and the numerical considerations are tucked neatly into Chapter 5 where the so-minded can bask at leisure without disturbing other readers. The water masses involved, which perform their vast and ponderous choreography in their own time, are well defined, and their behaviour and properties are well related to other phenomena, such as the ice distribution and the biological production. The latter is very high in the Bering Sea, and by no means insignificant in the Chukchi Sea.

The book can thus be recommended not only to the physical oceanographers, who will find it restful and illuminating, but to any generally enquiring minds, who will find it challenging, interesting or absorbing, according to their qualities. It is well written and concise, something rather rare in these days. For instance, to quote from the last chapter:

“Modern oceanographic exploration in the region began with Sverdrup’s observations from the *Maud* in 1922. The major Soviet expeditions under Ratmanov in 1932-1933 and U.S. expeditions under Barnes and Thompson in 1933-1934 were the first systematic studies. Altogether some 25 cruises to the region, half of them conducted during the last decade, have produced significant data. In this book we have attempted to synthesize this material into a coherent description of the water masses and their origins, modifications, and movements, along with the flow field and its variability.”

That is what they have done. What we hope for now is a second monograph entitled “Bering Strait: the Regional Biological Oceanography.”

Coachman, Aagaard and Tripp’s book has the additional virtue of brevity, also rare in post-Renaissance times, or at least in post-Sverdrup, Johnson and Fleming times. All professors who teach at this level know that there is a need for specialized monographs, not for enormous compendia, and the University of Washington Press is to be congratulated on this recognition. This review is also mercifully brief, as a compliment to the book.

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