
BACKGROUND BOOKS

THE OCEANS

"Each region of the sea has its own characteristics of temperature, salinity, biology, currents and tides, and above all of sea state or character: the 'grey and stormy Bay of Biscay,' the 'blue and placid Mediterranean,' are typical popular perceptions. But any sea can change in a remarkably short time from calm to violent storm. Only in the tropical South Pacific outside the hurricane zones and in the tropical South Atlantic is the sea free from storms for any length of time."

So begins one chapter—"The Weather"—of **The Times Atlas of the Oceans** (Times Books, 1983), an engrossing and brilliantly illustrated guide to the oceans and marine environment.

Into 272 tabloid-size pages, Alastair Dougal Couper, head of the Department of Maritime Studies at the University of Wales Institute of Science and Technology, has packed 400 color maps and a tightly written text brimming with information on every conceivable aspect of the sea.

This is the prime source book for the reader who wants to know the volume of sludge and sewage dumped into the North Sea every day (7.3 million cubic meters), how many simultaneous telephone conversations modern transatlantic submarine cables carry (5,000), the number of vessels lost at sea in 1980 (387), or how many people fish in the Chesapeake Bay on a typical summer weekend (100,000).

Other good general works include F. S. Russell and C. M. Yonge's **The Seas** (Warne, rev. ed., 1975), a revision of their respected 1928 volume; Robert Barton's **The Oceans** (Facts on File, 1980), an example of the better sort of "coffee-table" book; David

A. Ross's **Introduction to Oceanography** (Prentice-Hall, 1982); and C. P. Idyll's **Abyss** (Crowell, 1976, cloth & paper), an exploration of "by far the most extensive environment in our planet," the deep sea.

No one knows for certain how the oceans were created, but many geologists today believe that they came slowly into existence beginning roughly 4.5 billion years ago. At that time, the still-molten Earth is thought to have flung out plumes of carbon dioxide, nitrogen, and water vapor. Together these gases formed a thick atmosphere around the globe, which condensed as the Earth's crust began to harden and cool. The ensuing rains lasted for millions of years until, as C. P. Idyll describes it, "the clouds thinned slowly and then broke, and the sun glinted on the fresh new sea."

While the science of oceanography is barely a century old, ocean exploration is ancient. Its origins are shrouded in the unrecorded past. "Man hoisted sail before he saddled a horse," argues Thor Heyerdahl, the Norwegian anthropologist and voyager, in his speculative **Early Man and the Ocean** (Doubleday, 1979, cloth; Random, 1980, paper).

In 1947, Heyerdahl sailed a balsa raft from the coast of Peru to Tahiti in order to demonstrate that an Inca tribe could have migrated to Polynesia around A.D. 1100. In 1969, Heyerdahl sailed from Morocco to Barbados aboard the *Ra*, a 49-foot facsimile of an ancient Egyptian reed ship. Heyerdahl chronicled his adventures in **Kon-Tiki** (Rand McNally, 1966, cloth; Washington Square, 1983, paper) and **The Ra Expeditions** (Doubleday, 1971, cloth;

New American Library, 1972, paper).

Whatever the feats of the Egyptians and the Incas, the true Age of Discovery came much later, at the height of the European Renaissance, when "almost the whole world was brought into enduring association." So comments Cambridge University historian G. V. Scammell in his smartly written **The World Encompassed** (Univ. of Calif., 1982), a survey of European exploration and expansion.

Between 1492 and 1500, Christopher Columbus made three trips to the New World; in 1497, Vasco da Gama rounded the Cape of Good Hope and reached India. And a quarter century later, Spain's Ferdinand Magellan attempted the first circumnavigation of the Earth. The voyage was not without incident. The crew, Scammell recounts, survived on rats and sawdust during the 98-day Pacific crossing. And Magellan himself was killed in 1521 in a skirmish with the natives in the Philippines. But his ship, the *Victoria*, eventually made it back to Spain.

By 1800, man was adept at traversing the high seas. But he knew little, as yet, about the marine environment. Three important 19th-century expeditions helped to change that state of affairs, and each has been described in a highly readable volume.

In **Darwin and the Beagle** (Harper, 1969, cloth; 1972, paper), Alan Moorehead recounts Charles Darwin's five-year, round-the-world adventure aboard HMS *Beagle* in 1831-36; William Stanton's **The Great United States Exploring Expedition of 1838-1842** (Univ. of Calif., 1975) describes the first U.S. scientific survey of Antarctic waters; and Eric Linklater's **The Voyage of the Challenger** (Doubleday, 1972) chronicles what was, at the time

(1872-76), the most extensive oceanographic expedition ever mounted. Other landmarks in the evolution of marine science are described by the 78 contributors to **Oceanography: The Past** (Springer, 1980), edited by Mary Sears and Daniel Merriman. The work contains 69 relatively technical essays on such topics as "The Physical Oceanography of the Chilean Sea" and "The Victorian Aquarium in Ecological Perspective."

While submarines are a relatively recent invention, the idea of underwater travel has beguiled seafarers for centuries. As *New York Times* military correspondent Drew Middleton observes in **Submarine** (Playboy, 1976), "Man has always displayed a stubborn ambition to do what nature never intended him to do."

The first submarine, according to Middleton, was built in 1620 by the Dutch inventor Cornelis Drebbel. Twelve oarsmen propelled the vessel, made of greased leather stretched over a wooden frame. James I was fascinated by Drebbel's contraption, but neither he nor the inventor foresaw any military application.

Connecticut's Richard Bushnell showed true Yankee ingenuity in this regard. In 1776, as the American War of Independence got under way, Bushnell, a Yale graduate, developed the *Turtle*, an egg-shaped, self-propelled, one-man military submarine. With it, he intended to sneak up on and, if possible, sink Royal Navy warships.

The plan of attack, writes Richard Humble in his history of **Undersea Warfare** (New English Library, 1981), called for the *Turtle's* pilot to affix a keg of gunpowder to the hull of HMS *Eagle*, which was anchored off Manhattan, in the Hudson River. Unfortunately, the pilot's air supply dwindled before the job was done,

and the *Turtle* swiftly withdrew, never to be used again. The attempted assault went down in the history books as "an insignificant, if supremely gallant, gesture."

Not all underwater vessels have been used to wreak havoc. In **Half Mile Down** (Harcourt, 1934; Duell, Sloan, and Pearce, rev. ed., 1951), zoologist William Beebe describes how he and his colleague, Otis Barton, developed the first diving chamber capable of withstanding the sea's enormous pressures at great depths.

Their so-called bathysphere was four feet nine inches in diameter and weighed 5,400 pounds. On June 6, 1930, off Bermuda, Beebe and Barton climbed into the chamber, which was then lowered by cable 800 feet below the waves—275 feet farther than any living man had descended before.

"These descents of mine beneath the sea seemed to partake of a real cosmic character," Beebe later wrote. "First of all there was the complete and utter loneliness and isolation . . . a loneliness more akin to a first venture upon the moon or Venus than that from a plane in mid-ocean or a stance on Mount Everest."

The armchair naturalist can find a variety of introductions to the intricacies of marine life. Sir Alister Hardy's **The Open Sea: Its Natural History** (Houghton, 1971) is both comprehensive and informal. Under headings such as "The Story of the Plaice," "Whales, Walrus and Wild Men," and "Hake, Haddock, Cod and Co.,"

Hardy summons up the denizens of the deep as if they were old friends.

Other useful works include Gunnar Thorson's concise, if dry, **Life in the Sea** (World, 1971, cloth; McGraw-Hill, 1971, paper); **The Living Sea** (Putnam's, 1976), a marine encyclopedia compiled by Robert Burton, Carole Devaney, and Tony Long, and graced with striking color photographs; and C. M. Yonge's **The Sea Shore** (Collins, rev. ed., 1966). Yonge describes the shore, "the meeting place of sea and land," as "the most fascinating and complex of all the environments of life."

However close man ever comes to understanding the hidden processes of the deep and how they shape and influence his destiny on land, the oceans will always retain the primeval grandeur evoked by Rachel Carson in her eloquent **The Sea Around Us** (Oxford, 1961, rev. ed.).

"For the sea lies all about us," Carson writes. "The commerce of all lands must cross it. The very winds that move over the lands have been cradled on its broad expanse and seek ever to return to it. . . ."

"In its mysterious past it encompasses all the dim origins of life and receives in the end, after, it may be, many transmutations, the dead husks of that same life."

"For all at last return to the sea—to Oceanus, the ocean river, like the ever-flowing stream of time, the beginning and the end."

—Neil Spitzer

EDITOR'S NOTE: Neil Spitzer is an assistant editor of *The Wilson Quarterly*. Many of these titles were suggested by Frederick Bayer, an invertebrate zoologist at the Museum of Natural History in Washington, D.C., and C. P. Idyll, former fisheries biologist at the University of Miami's Rosentiel School of Marine and Atmospheric Science.