

not forget that Bernal was among the few who, while admitting that World War II needed to be won, denounced the inhumane character of modern warfare. His critique of the military face of modern science and his advocacy of science for the people reach beyond the divisions of the Cold War.

#### References

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## HISTORY OF SCIENCE

# Overshadowed Ports of Call

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Now that historians have demonstrated that Charles Darwin was not converted to the principle of species transmutation until a year and a half after he visited the Galapagos, does his work there deserve its disproportionate fame? It did, after all, consume only five weeks of a five-year voyage. In *Darwin's Other Islands*, Patrick Armstrong, a geographer at the University of Western Australia and longtime scholar of Darwin's fieldwork, argues that "the Galapagos Islands were important, but they were not all-important." The book draws on a variety of manuscript sources, including the captain's log kept by Robert FitzRoy, the diary of Darwin's servant Syms Covington, and the naturalist's own notes, letters, and publications. What distinguishes Armstrong from the armada of other scholars who have worked with these documents are his own voyages. Visiting half of the roughly 40 islands that the *Beagle* did between 1831 and 1836, he has retraced Darwin's footsteps in such places as the Falklands, Tierra del Fuego, Tahiti, and Cocos Atoll. In Armstrong's view, Darwin's habit of continually comparing one location to all others he had seen meant that no single destination was decisive in his work.

During the voyage, Darwin was at least as concerned to determine the origin of each island as he was intrigued by the origin of the species that inhabited them. Armstrong gives

painstaking and impressively detailed accounts of Darwin using a "leaping pole" to reach the seaward-most extent of a coral reef in search of evidence for his theory of atoll formation, making geological transects in the Falklands, and chipping rocks with his hammer at virtually every port of call. Equally vivid are the reconstructions of Darwin netting fish, calculating tree heights using a pocket sextant and a piece of string, and leaving no stool unturned in his search for dung beetles. Darwin was known as a skilled shooter, but he was also deadly with his geological hammer. As well as killing innumerable birds with it, he once used the hammer to kill a fox that he had approached while it was absorbed in watching the *Beagle's* crew at work surveying the coastline of Chiloé, Chile. (Darwin was later to write that "this fox, more curious or more scientific, but less wise, than the generality of his brethren, is now mounted in the museum of the Zoological Society.")

The book focuses intensely on Darwin, and Armstrong interjects his own experiences only occasionally and modestly. One footnote, in the chapter on Cocos Atoll, hints that the author's ambitious itinerary might deserve its own travelogue: "[Darwin] noted that it was possible to wade from island to island across the reefs.... I was advised, when planning to do this, that if small sharks approached, I should 'kick them in the head.' The advice was sound." More characteristically, Armstrong writes, "It is humbling and instructive to ... see the mineralogy of the granite just as he described it, the rounded domes with their exfoliating layers, the abundance of intruded dykes." A major payoff of Armstrong's travels appears in nearly two dozen photographs of particular species, landscapes, and geological features (such as the dykes mentioned above, at King George's Sound, Australia) that Darwin described in his field notes. Several of the book's 13 maps show the routes that Darwin may have taken on his overland rambles.

Many readers will surely be interested in learning how Darwin's impressions of the novel landscapes and species he encountered compare with the views of present-day scientists. Armstrong supplements his field observations with insights derived from recent work in geology, biology, and ethology. Unfortunately, he lets this perspective contaminate his explanations of what Darwin was thinking in the 1830s, reading more or less confidence

into Darwin's notes depending on whether the ideas sound correct by modern standards. Armstrong at one point dismisses Darwin's anthropomorphic understanding of animal behavior as something "he toyed with [that] did not stand the test of time," even though Darwin would not have viewed himself as toying with an approach to which he remained committed for more than 40 years. Of Darwin's suppositions about the crystallization of molten rock, we learn that "although his views are something of a simplification, Darwin



**Striking scenery.** From the heights of Tahiti, Darwin viewed Moorea, "standing within smooth water and encircled by a ring of snow-white breakers."

shows himself far ahead of his time." Armstrong gives ample evidence of the detail of Darwin's observations, the inventiveness of Darwin's ideas, and their intense relevance to 19th-century science. So it seems a shame to view Darwin's complex thoughts as nothing more than "simplifications" of later theories formed in other historical circumstances.

In deftly portraying the breadth and vigor of Darwin's study during the voyage, Armstrong makes it easy to see how the observations and collections made during those years could fuel Darwin's thoughts for the rest of his career. No doubt aided by visits to so many of Darwin's field sites, but especially as a result of the author's immersion in the manuscript sources, *Darwin's Other Islands* contains a fine-grained account of Darwin's day-to-day activities that will earn it an audience among historians. Indeed many will wish that Armstrong had extended his analysis—and arguments about the value of Darwin's comparative thinking—to the spectacularly productive time Darwin spent on the continent of South America. It is a pity that the book's price is likely to keep it out of the hands of nonspecialist readers, who would otherwise surely enjoy such a concise and energetic account of the most exciting time in Darwin's life.

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### Darwin's Other Islands

by Patrick Armstrong

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