1958 in a course listed as "Humanities 304." In this course there was evidently lively give and take between the lecturer and the students, for the book has an appreciative dedication in which the author acknowledges his debt to his students.

The stage of the book is mostly the time interval between Copernicus and the end of the 19th century, or more exactly, through the time of Maxwell. There is an epilogue, however, mostly devoted to showing how the ideas of the late 19th century found their fruition in Einstein. The principal theme of the book is to show how science has become increasingly objective, thereby leading to conflict with less critical and more self-centered attitudes. The range of topics subject to detailed analysis is unusually wide for a book of this character. Not only is the requisite attention given to the expected subjects of mathematics, mechanics, and physics, but an unusual amount of attention is given to chemistry and biology. I found the discussion of Lavoisier and Darwin particularly illuminating.

If one were seeking for a single phrase to characterize the book I think "sympathetic understanding" would serve. Not only does the author show an unusual degree of technical competence, which can be explained only by a critical thinking through of the issues for himself, but he also enters, in an unusual way, into the personal characteristics of the great scientific innovators, which sometimes even led them into blind alleys. Gillispie's assessment of Einstein — his greatness and his estrangement from the great current of scientific opinion in the field of quantum theory—could not have been made with greater understanding.

In short, the book presents science as a human enterprise, something which we all know it is, but which we seldom can see as clearly.

P. W. BRIDGMAN
Department of Physics,
Harvard University

Paul Ehrenfest, Collected Scientific Papers. Martin J. Klein, Ed. Introduction by H. B. G. Casimir. North-Holland, Amsterdam; Interscience, New York, 1959. 632 pp. $13.75.

I find it a great pleasure, tinged with nostalgia, to have in front of me the collected papers of my teacher Paul Ehrenfest, professor at Leiden from 1912 till his death in 1933. Together with the collected works of Lorentz, which appeared in a monumental 9-volume edition published before World War II, and the collected scientific papers of Kramers, published in 1956 by the same company and in the same format as the Ehrenfest papers, we now have available at least part of the record of what may be called the Leiden school of theoretical physics, which played such an important role in the development of physics in the first half of this century. Lorentz, Ehrenfest, Kramers—it would be tempting to try to describe and analyze the characteristic "style" of each of this great triad of physicists. They were very different, but they had in common a certain clarity and a deep concern about the fundamental questions of physics. Ehrenfest in particular had a real passion for clarity, which he instilled in all his students, and which is also evident in his papers. As Casimir remarks in his beautiful and sensitive introduction, many of Ehrenfest's papers were devoted to the clarification of a single point; however, this point always was of fundamental interest. As a result, many of Ehrenfest's contributions have been so well digested and, hence, forgotten by the physics community, that, although I thought I knew Ehrenfest's work very well, there still were several surprises.

This is not the place to review in detail the various papers. Let me only mention that the book contains Ehrenfest's dissertation (written in 1904 under Boltzmann) reproduced from the only existing handwritten copy (now in the Vienna University library), and the famous *Enzyclopädie* article on statistical mechanics (written in 1911 jointly with Mrs. Ehrenfest), which is still indispensable for any serious student of this discipline, and which has been recently translated and published by the Cornell University Press.

The editor, Martin Klein, and the publishers have done a remarkable job and have produced a book, which (again quoting Casimir) "we, Ehrenfest's pupils, shall value as a work of reference, as a historical document and as a worthy tribute to the memory of a great physicist; but reading in it we shall also wistfully remember a great and inspiring teacher who was for us the central figure in a happy era of physics that will not come again."

GEORGE E. UHLENBECK
Department of Physics,
University of Michigan

Surveyor of the Sea. The life and voyages of Captain George Vancouver. Bern Anderson. University of Washington Press, Seattle, 1960. xii + 274 pp. Illus. $6.75.

The northwest coast of North America was one of the last major strips of continental coastline to be explored by European seamen. Although reached by Francis Drake as early as 1579 and probed by Spanish navigators in the first decade of the 17th century, this remote part of the world was not placed upon the map with any degree of accuracy and detail until the last quarter of the 18th century. And the men who did more than any others to fill this gap were two English naval captains and explorers, James Cook and George Vancouver.

It seems appropriate, therefore, that the first adequate biography of Captain George Vancouver to be published in this country should have been written by an American naval officer with experience in navigating the waters which Vancouver was the first to chart, and with more than the usual historian's appreciation of the shipboard problems of navigation and coastal exploration. Yet it is the author's fascination for the man, rather than for his deeds, which is largely responsible for the weakness as well as the strength of this book.

Except for his achievements in exploring and charting the continental coastline and waterways of the northwest coast during three summer seasons —1792, 1793, and 1794—there would be little, if any, reason for a biography of George Vancouver. That in doing this Vancouver and his men carried out the greatest combined ship and boat coastal survey in the history of exploration, that his expedition pioneered in the discovery of Puget Sound and the Inside Passage to Alaska, and that Vancouver himself is responsible for more coastal place names on the map of North America than is any other single explorer would seem to justify major emphasis upon these achievements in any life of Vancouver. But only about one third of this biography is devoted to "The Great Survey."

For those who want to know what a midshipman's life was like in the English navy during the 1770's, or a lieutenant's in Caribbean service during the 1780's, or how Vancouver got along with the Spanish officials in California and the rulers of Hawaii during his side visits to these localities, the *Surveyor of the Sea* is well worth reading.