the treatment usually found in elementary textbooks on physical chemistry. In a chapter on the design of multiple reactions, he considers certain typical situations and introduces the student to general approaches for handling such systems. His treatment of solid-catalyzed fluid reactions is relatively concise. A wealth of problem material is provided, but very few of the problems relate to experimental data on true-to-life systems. The majority of the problems deal with the old friends A + B; inkahol and googliox are also represented.

In order to provide adequately rounded instruction for chemical engineering students, supplementary material on chemistry must be used with Levenspiel's text. For example, catalysis is presented as an insoluble mystery, and he gives no indication that a catalyst must provide a new reaction path in which it enters molecularly.

Despite certain shortcomings, this text appears to accomplish its objectives more successfully than any other available for chemical engineers. One major virtue is that it does not use the case method of instruction. The numerous illustrative examples are just that, and the principles that they embody are explained carefully in the preceding text.

THEODORE VERMEULEN
Department of Chemical Engineering, University of California, Berkeley

Multidisciplinary Forum

Physical Sciences: Some Recent Advances in France and the United States. Hartmut P. Kallmann, Serge A. Korff, and Sidney G. Roth, Eds. New York University Press, New York, 1962. ix + 243 pp. Illus. $7.50.

Much is said these days about the economic miracle that has occurred in Western Europe since World War II. Coupled with this is the new level of international cooperation among the European countries, symbolized by the Common Market and the North Atlantic Treaty Organization. While it is true that the structure is threatened by what may be called de Gaulleism and related *isms*, such as that which caused the United Kingdom to resist the formation of the Common Market in the first place, one feels that this story will have a happy ending once those who grew to maturity in the atmosphere of nationalism which prevailed before 1914 leave the scene and a younger generation takes its place on the stage.

Parallel to the emergence of a new spirit in Europe has been a renaissance of science in France on a scale that is truly remarkable. Historically speaking, no one need apologize for French science, as one well might for science in the United States prior to 1900. Names such as Descarte, Fermat, Lagrange, Laplace, Fresnel, Pasteur, and de Broglie speak for its vitality since the time the Western world first turned to science. Nevertheless, a sequence of events did make French science more stagnant than the opportunities of recent decades merited. This book is a modest tribute to the new spirit that promises to provide France, and the rest of the world, with all of the scientific productivity of which the French people are capable. The volume is based on a conference, held in New York City 2 years ago and sponsored by New York University with the financial backing of the Sloan Foundation, at which a dozen French and American scientists addressed themselves to a number of subjects of mutual interest. Some of the topics were general, such as those concerning the organization of support for science, including government financing and education; others were specialized, such as those devoted to radio astronomy, solid state physics, magnetic resonance, geology, and hydraulics. The treatment is by no means encyclopedic. Rather it seems to have generated an atmosphere in which the traditional amity between France and the United States shines alongside some accounts of the successful struggle going on in France to enhance the support of science.

The opening chapter, by Pierre Piganiol, to whom de Gaulle in 1958 gave the task of leading a study of science and technology in France (Piganiol served as delegate general of scientific and technical research and reported directly to the prime minister), gives a vivid and detailed account of the governmental apparatus designed to support and stimulate all aspects of science. It should be added that Piganiol has since left this arduous post after bringing about very great and productive reforms. I had the good fortune to live in Paris at the height of Piganiol's tenure in office and to witness first-hand both the operation of his group and the widespread, intelligent discussion of his work which was held throughout the country in all channels of public communication. Those who are interested in such matters will find the book worth reading for this chapter alone.

Both Richard T. Arnold and George D. Stoddard contributed essays on general aspects of research and education; Arnold's essay is entitled "Trends in academic and industrial research," and Stoddard's, "Education for science."

The remaining chapters deal with special fields of science; individuals from the two countries described progress in research in the special areas mentioned earlier. As is often the case with a symposium volume, the different contributions are uneven, since the angle of vision of the different authors is different. Each reader must determine the extent to which he is interested in any particular contribution. The American contributors are Serge A. Korff, Fred Haddock, N. Bloembergen, J. H. Van Vleck, J. Joseph Lynch, and Hunter Rouse; the French are Jean Denisse, J. C. Pebay-Peyroula, Louis Néel, Georges Millot, and L. Escande.

FREDERICK SEITZ
National Academy of Sciences, Washington, D.C.

Bibliographed Syllabus

Biological Transport. Halvor N. Christensen. Benjamin, New York, 1962. viii + 133 pp. Illus. $6.50.

This modest volume is a welcome addition to the growing literature on biological transport processes. Halvor Christensen, who has made valuable contributions to this field over a period of many years, is well qualified to write on the subject. He has succeeded admirably in his intention to write a book which "should be interpreted more as a bibliographed syllabus" for the instruction of graduate students in the biological sciences "than as a review." The monograph contains chapters on the scope of the problem, concepts and terms, the kinetic approach to transport, the specificity of transport, site isolation-membrane separation, clues from associated events, nutritional and genetic approaches, and the endocrinology of transport; there is a general summary which includes some cogent specula-