Thus, the non-specialist can obtain an excellent idea of how the subject has grown as well as what papers have been central in this growth. Indeed, the bibliography comprises forty pages! This alone gives an idea of how extensively the author has sought to present the subject.

It is a very readable book. However, the book describes but does not assess relative importance. Furthermore, the author does not suggest new problems to be looked at, or where the subject is going. Perhaps this is asking too much. On the negative side, better explanations of a few conceptual ideas, such as a clearer discussion of the weak convergence property of the KSP theorem, would have been helpful. Also, there are a number of typographical errors, which the astute reader will certainly pick up.

Finally, having been associated with this topic over the years, this reviewer feels that this book is an excellent description of the subject and is most certainly a valuable addition to the literature on random vibrations. It is a useful reference for those who are familiar with the subject, and a good source of ideas and results for those who wish to learn about the subject.

F. Kozin
Polytechnic University

Incompressible Flow, by Ronald L. Panton, John Wiley & Sons, Inc., New York, 1984, 780 pp., $47.95.

The text by Ronald Panton of the University of Texas at Austin is an excellent addition to the literature on fluid mechanics and one which will be appreciated by first-year graduate students interested in the subject. Although the main audience is expected to be first-year graduate students in mechanical and/or aerospace engineering departments, the book is fundamental enough to serve as an introduction to students of all disciplines. The selection of material is broad, with many applications which strongly reflect the author's expertise and research experience in the area. However, many professors and researchers in traditional mechanical and/or aerospace departments may be disappointed by the lack of material on turbulent flows and convective heat transfer. The text is strong in its presentation of the fundamentals of fluid mechanics and I feel that it will be widely considered in the future as one of the better introductory texts in the field.

In general, the basic material is arranged in logical order, starting with careful definitions from continuum mechanics and thermodynamics, proceeding to mathematical preliminaries, and then to a thorough and well thought out derivation of the Navier-Stokes equations. All of the presentations are well described and there are ample geometric and physical arguments utilized. The clarity of the arguments are among the best that the present reviewer has seen, but they do suffer from a certain dryness due to a lack of physical examples. If the author had woven some experimental data and flow visualization results into his introductory chapters, the material would be outstanding.

The choice of the individual sections illustrating the various Reynolds number regimes and approximations is exemplary and each section is essentially self-contained. This is indeed fortunate since it is easy to choose the material in a different order than that given in the text. Many traditional subjects such as low Reynolds number flow and laminar boundary layers (usually given early) are presented near the end of the textbook, but this should not deter some of the more traditional academics from the selection of this text. The sections on boundary layers, inviscid flows, and vorticity dynamics are very well done and represent a new height in clarity and completeness for textbooks at this level.

The presentations of the mathematical preliminaries are very good and carefully done, and help give the textbook a quality of completeness. The author also does an important service by presenting a small but high-quality collection of examples from numerical fluid mechanics. Although these examples do not represent a comprehensive presentation of this growing and important field, it does fill in many of the nonlinear solutions that cannot be found by strictly analytical methods. At the level of the fundamental principles and material presented in this book, computational fluid mechanics can best be used to illustrate flowfield patterns, and to clarify complex behavior beyond the scope of simple descriptions.

The most outstanding characteristic of this textbook is the precise, clear and self-contained regimes into which the author has divided the subject of incompressible viscous flow. From these divisions students will clearly see why researchers and institutes are built around high and low Reynolds numbers flow characteristics and why fluid mechanics can be such a rich and diverse field of study. This richness is at the same time the reason why most textbooks will necessarily be incomplete, and why it is easy for me to mention that this book is deficient on the subjects of turbulent flow and convective heat transfer. The omission of a more complete section on turbulent shear flows is probably the most serious lack, because of the dominant role that turbulence has in most practial applications. However, even with this substantial omission I would strongly recommend that the book be considered as a teaching text and as a book for self study.

Harry A. Dwyer
University of California, Davis