strong interaction among quarks and the underlying symmetries. The review article provides an excellent summary of the rapid developments in our understanding of the problems of psionic matter.

W. U. Schröder and J. R. Huizenga's long review, "Damped Heavy-Ion Collisions" (82 pp.), synthesizes the recent experimental and theoretical investigation of those aspects of the heavy-ion reaction mechanism classified as "deep inelastic transfer, quasi-fission, strongly damped collisions and relaxed processes." The conceptual language of the discipline is developed early, and the measured heavy-ion reaction systematics (angular distributions, fragment mass and charge distributions, kinetic energy damping) are used to illustrate the characteristics of damped heavy-ion collisions. Although much has been accomplished in the five years since these processes began to attract attention, detailed work at higher incident energies will be required to clarify the physics of the microscopic processes of the reaction mechanism.

This thorough review will be of much value to scientists participating in this developing field.

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About the Reviewers: We welcome again Bennett Lewis and his team for this deep review of a multisubject writing. Dr. Lewis, now retired from the senior vice presidency of Atomic Energy of Canada Limited, was trained in physics at Cambridge and appropriately occupied a number of positions, including senior scientific officer of the U.K. Air Ministry during the World War II years, before coming to nuclear in Canada in 1946. He retains his University association, with continuing interests in the several nuclear fuel cycles and in radiation effects. Dr. Lewis was President of the American Nuclear Society in 1961-1962.

William R. Conkie is professor of physics at Queen's University and, for five years, was at the Chalk River Nuclear Laboratories. Dr. Conkie, a native of Scotland, was trained in Canada, taking his PhD at Saskatoon.

W. McLatchie, also of the physics staff at Queen's, was at Oxford following his scientific studies at McMaster University, lastly with a National Research Council, Canada, studentship.

B. C. Robertson completed his graduate studies at Oxford before joining Queen's. Dr. Robertson has made major contributions to the study of nuclear reactions.

J. C. Hardy, who did not participate in the entire review, has been in the Nuclear Research Branch at Chalk River since 1970, following assignments to Oxford and to the Lawrence Radiation Laboratory in Berkeley. Dr. Hardy received his academic training at McGill.

F. C. Khanna's early training was in India and was completed at Florida State University. Dr. Khanna was a National Research Council, Canada, fellow at Chalk River and has been a member of the staff there since 1967. His current interests are in few-nucleon problems.

Flow Induced Vibration. By R. D. Blevins. Van Nostrand Reinhold Company, New York (1977). 363 pp. $16.95.

The undertaking of this book constituted a daring and ambitious project. This is particularly so, since it appears to be the first such publication in this relatively new and rapidly emerging field of technology. A wide family of problems is treated, with most of the attention being devoted to those of the nuclear industry. These latter problems involve the cross-flow-induced vibration of tubular bundles used in heat exchangers and steam generators. Parallel-flow-induced vibration of these same bundles, as well as reactor fuel bundles, is treated to a lesser extent.

It now appears to be fairly well accepted that the main mechanisms of vibration excitation in cross flow are fluid elastic instability, vortex shedding, and excitation through fluid turbulence. Rather extensive and fundamental discussions of vortex shedding and fluid elastic instability are provided in Chaps. 3 and 5, respectively. One or two illustrative examples are worked out in each chapter.

The subject of vibration induced by turbulence, for both parallel and cross flow, is discussed in Chap. 7, again with illustrative examples. The rather difficult theory of random vibrations, which is required for an understanding of turbulent flow-induced vibration, is introduced in some detail. A fairly extensive treatment of the important subject of damping is to be found in Chap. 8, while the subject of sound induced by vortex shedding is discussed in Chap. 9. In this reviewer's opinion, it is these aforementioned chapters that will be of most interest to people in the nuclear industry. Other chapters deal with surface-wave-induced motion of ships, wind-induced vibration of electrical transmission cables and buildings, and internal-flow-induced vibration of pipes. The subject of pipe whip resulting from postulated ruptures is considered in connection with this latter topic.

It seems to this reviewer that the main function that this book is capable of fulfilling is that of providing the newcomer to the field of flow-induced vibration with a valuable and orderly introduction to the subject. For those already engaged in this field, it may provide an opportunity to study another outlook. Each chapter is followed by a fairly extensive list of references.

It would be incorrect to suppose that this book constitutes a design manual. Such is not the case. The subject of damping, for example, is still not fully understood. The book does not contain sufficient information on driving force spectra for design purposes. This is not surprising, since such information, for wide ranges of designs, does not so far exist. There is no discussion of two-phase cross flow or parallel flow, even though these subjects are of great importance in connection with steam generator designs. In fact, very little information has been published in this area.

In summary, the book is recommended as a highly

valuable reference and introduction to the subject of flow-induced vibration. Perhaps some time in the future a comprehensive design manual will be available.

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About the Reviewer: D. J. Gorman has been involved in experimental flow-induced vibration studies since 1967. The first three years were spent at the Chalk River Nuclear Laboratories of Atomic Energy of Canada Limited. During this period, he investigated the liquid and two-phase parallel flow-induced vibration of reactor fuel elements. Since joining the Department of Mechanical Engineering at the University of Ottawa in 1970, he has conducted extensive tests involving the liquid cross-flow-induced vibration of heat exchanger and steam generator tube bundles.