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the author does not show a deep understanding of the relative importance of various topics; there are a number of errors arising from his unfamiliarity with the field; there is no feeling conveyed of the experimental method in nuclear physics, although techniques are mentioned; no problems are listed; throughout there are surprising, and unpedagogical, variations in level of approach. This book may be of some use to exclusively French-reading physics students, although Halliday's excellent text has been translated into French. However, the book cannot be recommended to anyone who can read English.

Wave Propagation and Group Velocity. By Léon Brillouin. 154 pp. Academic Press Inc., New York, 1960. $6.00. *Reviewed by Nicholas Chako, Queens College.*

NOTWITHSTANDING the great interest in the field of wave propagation in material media and its many industrial and other applications, there exists, as far as the reviewer is aware, no treatise which covers in a comprehensive and unified form the theoretical aspects of this field, especially those dealing with propagation of waves in dispersive and absorbing media. This gap has partially been filled with the timely appearance of Professor Brillouin's excellent monograph, which contains, in the English version, the fundamental papers by Sommerfeld and the author [originally printed in Ann. Physik, **44**(1914)] and some of the author's later publications. The purpose of collecting these papers in a book could not be stated better than the author already has: All these modern developments (radiopropagation and signaling; ultra-acoustic, water, and seismic waves; waveguided waves, etc.) made it advisable to assemble here a systematic presentation of the original papers which are rather difficult to find nowadays . . . for these problems have come again into the foreground in connection with the propagation of radio signals and radar . . . and seem to have been ignored by many young physicists and radio engineers, who frequently spend too much time rediscovering some of the classical results. The above remarks apply as well to many fundamental papers by other famous scientists, especially, to Hamilton's epoch-making contributions to geometrical optics.

The papers gathered in this book, although limited in their scope by the special cases which they treat, are still of sufficiently general character to provide a broad basis not only for a clear comprehension of the phenomena of wave propagation in dispersive and absorbing media, but also they open the door to the student and research worker for understanding the recent developments and for dealing with more complex problems in this branch of science.

In the first chapter the author presents in a succinct, but clear, manner the distinction between phase, group, and signal velocity in a dispersive medium. This distinction, especially between the group and signal velocity, arose in connection with Einstein's statement

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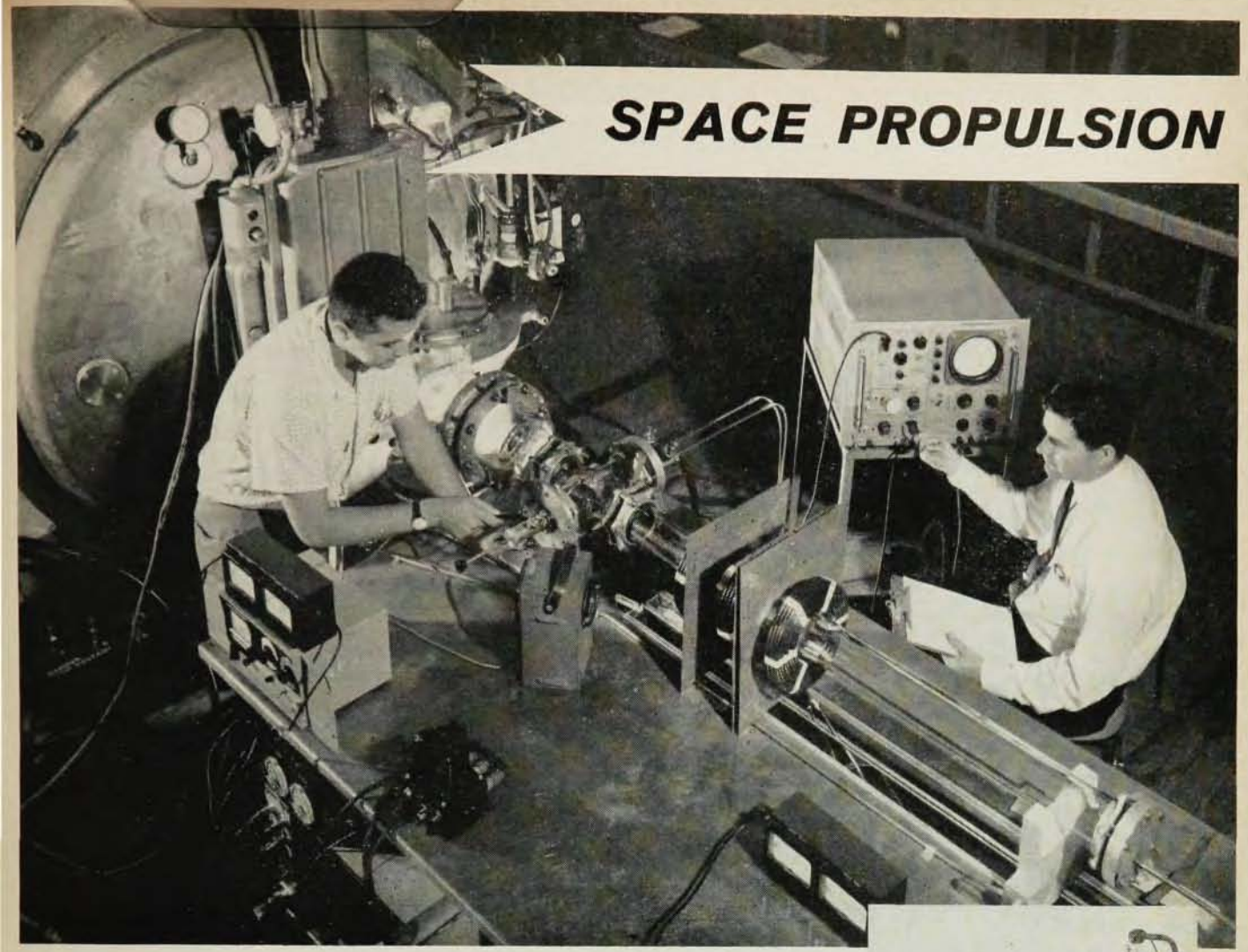

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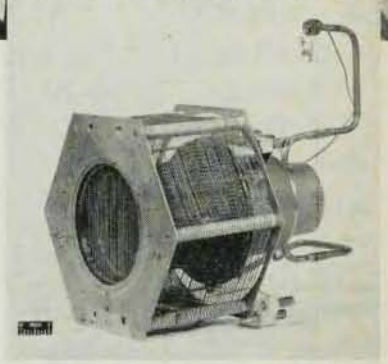

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that no signal or energy of any form could propagate through a medium with a velocity greater than that of light. It led Sommerfeld to study the problem of propagation of signals (waves) in a dispersive and absorbing medium. His results were further extended by the author. These fundamental papers are presented in Chapters 2 and 3, respectively. The conclusions drawn from their analysis is that the signal and not the group velocity (contrary to previously held notions) plays the basic role, when a wave or signal propagates in a dispersive medium, and Einstein's statement is not violated even within the absorption band of the medium in question.

The following chapter contains a general discussion of propagation of electromagnetic waves in a dispersive medium without regard to its specific properties. Expressions for the group, signal, and energy transport are derived, including a treatment of the so-called "forerunners" by the application of the method of stationary phase for a medium with no absorption. The author then examines the problem for the case of a medium of low density (gas) possessing several absorption bands. The final chapter gives a short account of waves in waveguides.

The author is to be congratulated for bringing forth in book form these interesting and important contributions on wave propagation in dispersive media. They should be of interest not only to the research scientists and engineers, students and teachers, but also to applied mathematicians who make substantial contributions toward the solutions of more complex problems of both theoretical and practical importance.

The Theory of Thin Elastic Shells. IUTAM Symp. Proc. (Delft, Aug. 1959). Edited by W. T. Koiter. 496 pp. (North-Holland, Amsterdam) Interscience Publishers, Inc., New York, 1960. $9.00. *Reviewed by Ellis H. Dill, University of Washington.*

A GROUP of individuals interested in the mathematical theory of shells gathered in the Netherlands for a few days in August, 1959. The meeting was open only to the invited speakers and invited spectators. This book presents the text of the invited lectures. There are three papers on the general theory, ten on the stability of spheres, cylinders, and cones, six on bending stresses in shells of various shapes, two on membrane theory, and two on the geometrically nonlinear problem for shallow shells and cylindrical shells. Most of the papers are in English, but five are written in German and one in French.

Most of the lecturers have previously made substantial original contributions in the theory of shells; these papers represent their latest contributions to the subject and are therefore of immense interest to the research worker. Some numerical results, useful to the designer, are given for buckling of cylinders under lateral pressure and axial load, radially stiffened spherical caps, ring stiffened cylinders under lateral pressure, and conical shells under lateral pressure.