product. One of the major additions, the chapter on the masses of atoms and mesons, does not have the same "flavor" as the rest of the book, but this is probably because it had not been worked over as much by the authors as the other topics. The authors seem to be very much up to date on the literature—the results of the nonconservation of parity in weak interactions are mentioned.

This reviewer feels that the book is a very worthwhile addition to any scientific library.

Observation and Interpretation: A Symp. of Philosophers & Physicists (U. of Bristol, Apr. 1957). Vol. 9 of the Colston Papers. Edited by S. Körner with M. H. L. Pryce. 218 pp. (Butterworths, England) Academic Press Inc., New York, 1957. $8.00. *Reviewed by George Weiss, University of Maryland.*

Quantum mechanics and the theory of probability have this in common: formalism that has had astounding success in describing much of the empirically known world about us and the ability to provoke endless discussions about the philosophic implications of their success. This volume contains a complete record of the papers and subsequent discussion presented at the Ninth Symposium of the Colston Research Society at the University of Bristol on various topics which roughly overlap in quantum mechanics, probability, and their interpretation. As one might expect the result is a patch-quilt account of some current thinking in these fields.

From the physicist's point of view the potentially most interesting papers in this volume are on the recent proposals by Bohm for a "hidden-variable" interpretation of quantum mechanics. There are two papers on this subject included, one by Bohm and a second by J. P. Vigier, a collaborator in the development of the theory. Both Bohm and Vigier allude to calculations now in progress which would derive quantum mechanical laws from more fundamental considerations. Had these authors presented some concrete calculations their case might be more impressive; at present the arguments fall more into the category of shadowboxing. Many undiscovered phenomena in modern physics are conceivable but few are likely to be believed solely on philosophic grounds, even less so since the demise of the principle of sufficient reason at the hands of Yang and Lee. The paper following Bohm's by L. Rosenfeld is entitled "Misunderstandings About the Foundations of Quantum Mechanics". Rosenfeld is dogmatic in his rejection of Bohm's theory, on questionable grounds it seems to me, since he has not seen a definitive version of this theory.

The physical foundations of probability theory are just as controversial as those of quantum mechanics. It is generally conceded that the formalism of probability theory can be regarded as a subset of measure theory but there is little or no agreement of how we are to interpret the predictive power of probability theory in the case of a single flip of a coin or a bet on a horse race.

A paper by K. R. Popper, The Propensity Interpretation of the Calculus of Probability and the Quantum Theory, contains a good statement of a fairly recent interpretation which has attained some popularity among philosophers. According to Popper the probability of an event is the propensity of an experimental technique to give rise to certain characteristic frequencies when the experiment is often repeated. With this definition Popper goes on to show that the problems which occur in the foundations of quantum mechanics are closely related to those which occur in the nonformal foundations of probability theory. In the opinion of the reviewer Popper may have proposed a somewhat neater formulation of the problems of the foundations of probability theory but has not in any way given a solution.

In a very interesting and well-written paper, On Philosophical Arguments in Physics, S. Körner points out the distinction between a physical formalism and the underlying regulative nonexperimental principles which impel physicists to be more or less receptive to a given theory. Körner presents a brief argument against the positivist motion that all metaphysics is irrelevant to the natural sciences on a priori grounds.

Many other aspects of foundational problems are covered in this volume. There are papers on the quantum theory of measurement, on the role of statistics in quantum theory, on the dissection of linguistic usage à la logical positivism, and on the general relation between philosophy and the natural sciences. Although the level of the papers is very uneven, the volume as a whole is of some interest if only as an antidote against the current deluge of formalism in modern physics. Providing that one does not get entirely bogged down in the philosophic problems of physics, it is well occasionally to reflect on the wider implications of physical theories and view them in a wider perspective.

High-Speed Aerodynamics (Translated from Roumanian). By Elie Carafoli. 702 pp. Pergamon Press, London & New York, 1957. $15.00. *Reviewed by Robert E. Street, University of Washington.*

This book is a translation into English of the original Roumanian edition without any identification of the translator. It is printed in Roumania and apparently Pergamon Press imports the sheets which they bind and distribute in the Western countries. The quality of paper and print is not as high as would be expected from Western printers. The quality of the English used is very good, indicating a competent translator although his task was considerably lessened due to the extremely high density of mathematics. Every step in the calculations and derivations is so carefully worked out that the reader should have little trouble in following the argument. This is a good treatment for a second graduate course in compressible aerodynamics of a perfect

fluid and this reviewer is seriously considering using the book for a such a course.

Although Carafoli assumes no prior knowledge of compressible fluid flow, the mathematical nature of the book and its lack of emphasis upon the physical development and meaning would make a first reading based upon texts such as Shapiro or Liepmann and Roshko seem desirable before reading this book. However, the mature reader who enjoys detailed mathematical development and can furnish his own physical interpretation will find this book a very thorough introduction.

Due to the richness of material on certain topics, others are inadequately treated. The material on transonic flow and unsteady flow is too brief and incomplete while hypersonic flow is left out entirely. On the other hand, as one would expect, since Carafoli has for many years been one of the world's authorities on wing theory, the chapters on wing theory in both subsonic and supersonic flow are more complete and contain material which has apparently been the product of his own school and published in the Roumanian or Russian literature. As a sourcebook of information on these publications which have been made behind the Iron Curtain, this book is invaluable. Neither does any other book in English give so complete a treatment of the finite wing in supersonic flow, in particular, conical flow as applied to wings. This takes up about 200 pages of the book.

After an introductory chapter on vector analysis and thermodynamics the author derives the fundamental equations of flow in all their variations in the next chapter. Chapter 3 considers the usual material on steady one-dimensional flow, Chapter 4 is devoted to the subsonic two- and three-dimensional flows, Chapter 5 is a brief introduction to linearized supersonic flow, Chapter 6 considers the more exact type of solution (Prandtl-Meyer expansion, Busemann's second-order approximation, theory of characteristics), seven is the exact treatment of supersonic flow around bodies of revolution while eight and nine are devoted to that thorough treatment of wings of finite span referred to above.

This book can be warmly recommended as an excellent single volume treatise on those aspects of compressible inviscid flow which have become classical by now, in particular for its complete treatment of wing theory.

Books Received

AN INTRODUCTION TO COMBINATORIAL ANALYSIS. By John Riordan. 244 pp. John Wiley & Sons, Inc., New York, 1958. $8.50.

MATHEMATICS FOR THE LAYMAN. By T. H. Ward Hill. 343 pp. Philosophical Library, Inc., New York, 1958. $4.75.

PHYSICS AND MATHEMATICS, Vol. 2. Series I of Progress in Nuclear Energy. Edited by D. J. Hughes, J. E. Sanders, J. Horowitz. 375 pp. Pergamon Press, London & New York, 1958. $14.00.