

tions is in many respects a modern treatment of what is already to be found in Blatt and Weisskopf.

The two final chapters are review papers on pion physics and weak interactions. These are preceded by a very complete discussion of the Dirac theory which serves as a preparation.

This is indeed a very impressive book. Every student of nuclear physics will want to have access to it, because it presents a logical development from basic principles to the point from which much of the current journal literature begins.

Studies in Statistical Mechanics, Volume 2. By J. de Boer and G. E. Uhlenbeck. 272 pp. (North-Holland, Amsterdam) Interscience, New York, 1964. \$11.50.
Reviewed by Kurt E. Shuler, National Bureau of Standards.

In late 1962, when this reviewer last made a count, there were being published (at least) 137 annual series headed variously *Advances*, *Progress*, *Studies*, *Developments*, *Survey*, *Review*, *Vistas*, etc., in the fields of physical, biological, and engineering science. Unquestionably, there are more today. Arguing scientifically via the law of supply and demand, it appears evident that these volumes fill a need. I am sure that all of us, at one time or another, have made good use of these valuable compendia of knowledge and wisdom.

These *Advances in*, etc., must be judged, in the long run, by the competence of the editors and the competence of the authors whose arms have been successfully twisted by the editors. In the cases of the present volume and the preceding one in this series, the credentials of both editors and authors are beyond question. The results, i.e., the contents, are of the high quality that one would associate with the names of J. de Boer and G. E. Uhlenbeck (who play the dual role of editors and authors in this volume), K. Huang, J. M. H. Levelt and E. G. D. Cohen, and C. S. Wang Chang.

A particularly valuable feature of these *Studies in Statistical Mechanics*, as promised in the General Foreword, is the reprinting of "important older monographs, reports, or dissertations where these are not easily accessible".

This program, which was started in Vol. I with the translation and publication of Bogoliubov's "Problems of a Dynamical Theory in Statistical Physics", is continued in this volume with the publication of the expanded and updated Amsterdam dissertation of Levelt and Cohen, "A Critical Study of Some Theories of the Liquid State including a Comparison with Experiment", and the classic, often quoted but previously rather inaccessible 1954 report of Wang Chang, Uhlenbeck, and de Boer on "The Heat Conductivity and Viscosity of Polyatomic Gases". To the latter has been added a historical foreword and some references to the recent literature. The third paper in this volume and the only one which is "new" is K. Huang's review of the quantum theory of the nonideal Bose gas, "Imperfect Bose Gas". We hope the editors will continue their policy of reprinting some of the difficult-of-access classics in addition to new and original reviews.

The book reviewers' version of the Hippocratic oath seems to require that some critical comments be offered to remain a member in good standing of the fraternity. I do not have any. I like the concept, the format, the contents, and the reasonable price of this series. I even like the innovation of the publishers in changing the color of the dust jacket from volume to volume. This not only adds color to my office but also adds suspense to the expected appearance of the next volume.

Progress in Solid Mechanics, Volume 4. I. N. Sneddon and R. Hill, eds. 198 pp. (North-Holland, Amsterdam) Interscience, New York, 1963.
Reviewed by E. H. Dill, University of Washington.

Two articles form Volume 4: "Foundations of Elastic Shell Theory" by P. M. Naghdi and "Some Extremum Principles in Irreversible Thermodynamics with Application to Continuum Mechanics" by H. Ziegler. Like the other volumes, this one is primarily of interest to the research specialist.

There are at least 3000 published articles dealing with thin elastic shells. Professor Naghdi, of the University

of California, has cited fewer than 100 of these; but he has chosen well, and his derivation of the equations of the linear theory is the clearest treatment available. The explanation of the relation between the more prominent shell theories should help remove the confusion existing in some minds.

One half of the article consists of a clear and concise statement of the mathematical background, and the kinematics and statics of shells. The remainder is devoted to a derivation of the relations between stress resultants and kinematic quantities and a critique of existing theories. No attempt is made to mention methods of solution of the equations.

The second article by Professor Ziegler, of the Federal Institute of Technology, Zürich, Switzerland, has successive sections dealing with statistical foundations, classical thermodynamics, irreversible thermodynamics, and applications to continua.

The jacket summary reads as follows: "H. Ziegler presents, in elegant and definitive form, his recent fundamental work on thermodynamics of deformation in continua. Among many stimulating ideas is an extension of Gibbs' statistical mechanics to irreversible processes. Much new light is thrown on the constitutive laws of various materials, both solid and fluid."

His treatment continues in the tradition of the "Onsagerist" and may find favor among those who practice the religion of classical thermodynamics. This reviewer has never discovered any logical content to this subject since it always seems to deal with undefined quantities whose definition can be adjusted to fit the experiment.

The present work contains other statements with which the reviewer must take exception. For example, the author states (p. 147) that the principle of material indifference (see "The Classical Field Theories" by C. Truesdell and R. A. Toupin, *Encyclopedia of Physics*, III/1, Springer-Verlag, Berlin, 1960) is not valid in a continuum moving with respect to a rotating coordinate system. Furthermore, he claims (p. 94) that the entropy inequality is "less promising"