researcher. Unfortunately the section is restricted to the Russian literature, and little reference is made to other research in the field.

The specialist in fluid mechanics will already be familiar with the integral methods reviewed by Goodman, but Goodman's analysis of the developments and application of this mathematical technique to heat transfer problems may stimulate further improvements and refinements in the method.

There is some doubt that our knowledge with respect to boiling and two-phase flow has reached the definitive state that justifies the continual rehashing of these fields in books of this type, but any attempt to unify and organize their literature must be applauded. Although a large amount of the literature referred to in the section on boiling has been considered in previous reviews, much updating has been done here. The article, however, reflects the chaotic condition of the literature in the field.

Similar difficulties arise in organizing the literature on two-phase flow, but here the book tends to supplement previous reviews by emphasizing the extensive work performed in various European laboratories, especially those of the atomic energy authorities. The list of references included is particularly thorough.

The book should be useful to anyone engaged in heat transfer research. It is hoped that an equally excellent choice of contributors will be made for any future volumes.

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Geophysics

Paleomagnetism and Its Application to Geological and Geophysical Problems. E. Irving. Wiley, New York, 1964. xviii + 399 pp. Illus. $19.50.

This volume, as the first textbook in English devoted to paleomagnetism, represents an important milestone in the development of a new and rapidly growing field of geophysics. Despite the diversity of its origins, modern paleomagnetism bears the unmistakable imprint of a handful of men who worked in England during the early 1950's, in particular Blackett, Clegg, Hospers, Fisher, Runcorn, Creer, and Irving. The statistical and graphical methods for presenting paleomagnetic results developed by this group are now used universally, and the present reawakening of interest in the perennial geophysical problems of polar wandering and continental drift derives largely from their work. Irving may speak not only as one who has been a leader in framing these larger problems, but also with the authority of an experimentalist who, with his work in Australia, has produced a virtually unequalled body of paleomagnetic data.

One question has often been posed: Is the paleomagnetic evidence for polar wandering and continental drift really conclusive? Many geophysicists remain unconvinced, partly because of the increasing complexity and growing numbers of degrees of freedom of the geophysical models needed to explain all of the paleomagnetic observations in terms of polar wandering and continental drift. The present volume avoids the rhetoric of advocacy but, nonetheless, is a book with the central viewpoint that continental drift and polar wandering are supported paleomagnetically. Discrepant data are attributed to inadequate technique or to intracontinental deformation.

The subjects discussed include magnetic properties of rocks, secular variation, analysis of directions of magnetization, reliability, ancient directions of the field, reversals, intensity determinations, paleolatitudes, and special applications to geology. There is no discussion of apparatus or of methods of calculating magnetic directions. Many subjects are covered by reference to some particular study from the literature which is summarized in clear, concise language with abundant illustrations. The chapter on statistical analysis is outstanding. However, the list of articles covered is large and not especially selective, and the general result, while preserving a good feeling for the original experimental evidence, resembles an extended review article without the fresh, integrated approach that one might expect in a new text.

The author has rendered a great service by compiling paleomagnetic results current to October 1963. He has taken a courageous and an admirable step by indicating results that fail to satisfy reasonable "minimum reliability criteria." There are the inevitable misprints—the description of the study of the Hawaiian lavas, for example, states that directions of remanent magnetization changed significantly on partial demagnetization, whereas the original reference states they did not. But such lapses are rare and perhaps may serve as a reminder that the list is intended as a guide and not as a substitute for consulting original sources.

The most original part of the volume is an extended comparison of ancient paleomagnetic latitudes with various independent indicators of climatic conditions. Sets of observations are found to be consistent only when both the paleomagnetic and the independent paleoclimatic results are based on deposits of the same age from the same area. The occurrence of both polar wandering and continental drift are inferred from this. Compelling evidence for polar wandering is given by the demonstration that in Australia, as the paleomagnetically determined latitude abruptly increased by more than 50° between the Devonian and the Carboniferous Periods, coral reefs disappeared from Australia and glaciations began. No one seriously interested in the problem of polar wandering and continental drift can afford to be unfamiliar with this work.

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Particle Physics

Nucleon Structure. Proceedings of the international conference held in June 1963. Robert Hofstadter and Leonard I. Schiff, Eds. Stanford University Press, Stanford, Calif., 1964. x + 421 pp. Illus. $12.50.

The word nucleon in the book title refers collectively to the particles proton and neutron. Thirty years ago these entities, together with the electron, constituted the full list of the ultimate building blocks of matter. That list has since grown, prodigiously! According to some ways of counting, the known varieties of "elementary" particles now number more than 100. They transform into each other in endless ways—in collision processes and in spontaneous disintegrations of one particle into others. Indeed, the word particle has come to