cerned with the understanding of physics on such a basic level.

Since 1938, when this book first appeared, physical knowledge has been extended greatly, and the author himself remarks, in a preface to this edition, that "a different job should be done today". Granted that there are newer topics whose implications would merit discussion—for instance, the nonconservation of parity in weak interactions—those topics covered are still of interest. Throughout, the author is insistent upon clarity in definitions of terms and their subsequent use within these confines, as a necessary step in avoiding apparent inconsistencies. With this in mind at all times, the author embarks on his discussions, which are sprinkled with much good sound common sense, impatient with those whose reasoning is not so well disciplined.

A slim volume, of less than 150 pages, its contents has a high density of penetrating argument. The going is not easy in places, but the effort is well worthwhile. How often is one accosted by philosopher friends (both professional and amateur) and held to account for various alleged implications of physical theories? And how often does one then realize the lack of clarity of one's own understanding? This book can be recommended to all who would extend their comprehension of physics.

Plasma Physics and the Problem of Controlled Thermonuclear Reactions, Volume 3. Edited by M. A. Leontovich. Translated from Russian by J. B. Sykes. Translation editor, J. Turkevich. 422 pp. Pergamon Press, London & New York, 1959. $24.00 (4-vol. set $80.00). *Reviewed by Sanborn C. Brown, Massachusetts Institute of Technology.*

THE lack of background on Soviet work in controlled thermonuclear fusion has been a serious handicap to evaluating the contribution of this large and active group in the field. The outline given in their papers presented at the Second International Conference on the Peaceful Uses of Atomic Energy, held in Geneva, September 1958, was very interesting but was difficult to follow up on because their contributions were so brief and sketchily documented. A great step in the direction of correcting that lack is the appearance of Volume 3 of Pergamon Press' four-volume sequence under the single title given above.

All those working in the field will find this collection to be a most useful filling-in of details which have been wanting in the Russian work reported in periodicals available in the United States. We find that many of the problems on which we have been working have been previously worked out in considerable detail by the group at the Academy of Sciences in Moscow, and the reason for the conclusions of many of the Russian papers which have appeared recently and for which we have had no background to evaluate the details now becomes clear. There are three different types of papers given in this volume, all of which are extremely

useful to workers in the field. They can be categorized as follows: (1) the theoretical work on radiations from plasmas in magnetic fields, of which we have previously had the conclusions but not the details; (2) a fairly large number of papers by different workers on ring discharges and the details of their operation; and (3) the collection of papers having to do with magnetic containment methods and calculations of the interaction between charged particles and magnetic fields of various shapes.

There has been no attempt in the volume either to classify the papers in particular fields or to group together papers about particular subjects. The papers are written in a completely independent fashion by the experts in the various fields. For this reason the volume is more like a periodical than a book, but the material which is presented is given in sufficient detail so that each paper stands on its own as a valuable contribution to the field.

The translation has been carried out by one conversant with the particular field of plasma physics so that the terminology is accurate and the English is idiomatic.

Everyone concerned with plasma and thermonuclear physics will welcome this contribution to the literature.

The Conceptual Foundations of the Statistical Approach in Mechanics. By Paul and Tatiana Ehrenfest. Translated from 1912 German Ed. by Michael J. Moravcsik. 114 pp. Cornell U. Press, Ithaca, N. Y., 1959. $3.00. *Reviewed by R. Bruce Lindsay, Brown University.*

IN the year 1912 there appeared in Volume 4 of the *Encyklopädie der mathematischen Wissenschaften* (published by B. G. Teubner in Leipzig) an article on the conceptual foundations of statistical mechanics by Paul Ehrenfest in collaboration with his wife, Tatiana Ehrenfest-Afanassjewa. This rapidly became a classic in the literature of the subject. Its importance has not diminished with the years and this translation into English is particularly welcome. Professors M. Kac and George Uhlenbeck provide a foreword and Mrs. Ehrenfest contributes a helpful explanatory preface.

Probably few users of modern statistical mechanics are aware of the vigorous controversy that followed the announcement by Boltzmann in 1872 of his famous H-Theorem, which governs the approach in time of every non-Maxwellian distribution of an aggregate to the Maxwellian distribution. The critics of Boltzmann's method raised embarrassing objections showing that the possibility of reversibility was always present and one could never be sure that H always decreases monotonically in the way Boltzmann demanded. This served at the time to cast suspicion on the whole statistical method of handling physical problems in the realm of thermodynamics and doubtless made Boltzmann an unhappy man.

Paul and Tatiana Ehrenfest took it as their task in the encyclopedia article to overcome the difficulties