

ions and atoms are considered. This amounts to treating them as points, and transitions associated with the changes in the internal structure of the ions and atoms are omitted entirely.

An intermediate course in electromagnetic theory and a course in advanced calculus are sufficient background for understanding this book. Familiarity with the material in Lyman Spitzer's little classic, *Physics of Fully Ionized Gases*, while not imperative, would be very helpful. No knowledge of quantum mechanics is necessary because only classical plasmas are studied. In fact, the principal model is that of an electron gas moving through a uniform, smeared-out positive background, assumed immobile.

Plasma physics has been derisively called the discipline rich in theoretical concepts of dubious applicability. The author has admirably attempted to overcome this stigma by frequent comparisons between experimental results and the theory. The ten chapters are devoted to transport of radiation, Kirchhoff's radiation law, emission and absorption from binary encounters, fluctuations, collective emission phenomena, cyclotron emission waves from density fluctuations, microinstabilities and experimental methods. A useful list of references and an author and subject index are provided.

Other reviewers have given very high grades to this book. (See for instance the rhapsodic review by T. Boyd that appeared in the 1 July 1967 issue of *Nature*, page 104.) The book is reasonably well written and will undoubtedly be widely used in the second semester of courses in plasma physics. In spite of its rather high price, it can be recommended as a good buy with the following caveats:

Readers who prefer a more advanced mathematical treatment using Green's functions will like *Electromagnetic Fluctuations in a Plasma* by A. Sitenko, Academic Press, New York, 1967. Sitenko also treats an electron-ion plasma, and his chapters on fluctuations are much more complete and detailed.

A more readable account of the transport of radiation and Kirchhoff's radiation law is given in *Physics of Shock Waves* by Ya. Zel'dovich and Yu. Raizer, Academic Press, New York, 1966, or in *Theoretical Astrophysics* by V. Ambartsumian, Pergamon Press, Oxford, 1958.

Formulas are frequently simply

written down, with the reader being referred to a book where the details are given. However, Bekefi does not give the exact page, and he sometimes propagates the errors of the authors he quotes.

Bekefi, who is at MIT, often attributes results to MIT physicists when, in fact, the results were obtained much earlier by others. This is sloppy scholarship and inexcusable parochialism.

There are no problems. With problems, the scope of the book could have been considerably widened and the value of the book greatly enhanced.

These grumbles are further proof of the truisms that life is short and that an author never finishes a book, he merely abandons it.

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On continental drifts

DEBATE ABOUT THE EARTH: APPROACH TO GEOPHYSICS THROUGH ANALYSIS OF CONTINENTAL DRIFT. By H. Takeuchi, S. Uyeda, H. Kanamori. Trans. from Japanese. 253 pp. Freeman, Cooper, San Francisco, 1967. \$4.50

by Owen W. Williams

An extremely well translated version of a Japanese book published in 1964, this book is a timely addition to the continuing debate on the subject of continental drift. Although the authors attempt to convey a neutral position and objective approach as to the existence of continental drift, they appear in reality to be firm proponents of such a position.

The book is written in an exciting, lively and most readable style. It is prepared with sufficient detail to satisfy the scientist and with balance in pertinent generalizations desirable to the layman. If supplemented in some places, it would make a desirable text for an introductory survey course in geophysics. The authors use an ideal set of attractive and meaningful figures and hand-lettered drawings to complement their book.

The first portion of the book offers a clear account of the continental-drift controversy historically from Wegener to the special 1928 American Association of Petroleum Geologists

Symposium on the subject, to Du Toits's movement theory, to the hibernation and almost the demise of the drift theorem during the 1940's and thence to its rekindling by paleomagnetic specialists. Every avenue of each theory and concept is covered; however, an occasional tie-in to the drift theory demands some unsubstantiated imagination from the reader. It is one of the few books in which one can find resumés of the evolution of both continental-drift theory and paleomagnetic theory. The second part of the book deals with contributions of the earth's magnetism and terrestrial heat flow while the final section deals with contributions of marine geophysics and geology.

Although the book is not perfectly balanced, and although it obviously reflects the personal interests of the authors, its validity is still sound. A drawback of any such book is that it becomes dated in a rapidly moving field. For example, no mention is made of evidence supporting the Vine-Matthews sea-floor-spreading hypothesis, advances in recognizing and dating geomagnetic field reversals, recent support of J. T. Wilson's theory and plans for space scientists (geodesists) to use artificial earth satellites to detect continental drift directly over a decade in time.

Internationalism of science is stressed with personalities such as P. M. S. Blackett, Sir Edward Bullard, Jeffries, Louis, Neel, Walter Elsasser and Stanley Runcorn. The need to communicate in science plus the appreciation of having to advance new ideas is recognized by the authors throughout this fine book. This well written book should attract considerable attention among earth scientists.

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A consensus of experts

PROGRESS IN LOW TEMPERATURE PHYSICS, Vol. 5. C. J. Gorter, ed. 332 pp. North-Holland, Amsterdam (Interscience, New York), 1967. \$15.50

by Garrison Sposito

The fifth volume of this celebrated series is in keeping with the trend of its more recent predecessors to-