has been proposed. There should be vigorous discussion. Many arguments that are merely sketched should be made rigorous. Whatever the fate of individual points, I can only agree with Waddington, who writes in his introduction to the book: "Whether he is justified or not [in certain specific applications of his method] makes little difference to the basic importance of this book, which is the introduction, in a massive and thorough way, of topological thinking as a framework for theoretical biology [and other subjects]. As this branch of science gathers momentum, it will never in the future be able to neglect the topological approach, of which Thom has been the first significant advocate."

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Condensed Matter

Introduction to the Theory of Liquid Metals. T. E. FABER. Cambridge University Press, New York, 1972. xiv, 588 pp., illus. $37.50. Cambridge Monographs on Physics.

Liquid Metals. Chemistry and Physics. SYLVAN Z. BEER, Ed. Dekker, New York, 1972. x, 732 pp., illus. $35. Monographs and Textbooks in Material Sciences, vol. 4.

It cannot be a simple enterprise to write a text on liquid metals. Dense liquids fall within the confines of the condensed state of matter, and the foundations of the theory of these complex systems cannot, as yet, be regarded as part of the entrenched dogma of condensed-matter physics. Metals (or at any rate free-electron-like metals) are, in their regular solid forms, perhaps one of the better understood classes of matter, but this is certainly to a large extent a direct consequence of crystallinity.

Faber's text attempts to come to grips with the problem of expounding the nature of dense conducting fluids and their propinquity to both liquids and metals. Given the imposition of some rather stringent boundary conditions his effort is, on the whole, successful. The structure of the book is close to what one might expect: a lengthy introductory section on the electron theory of simple metals, two chapters dealing with the structural and dynamical aspects of simple liquids, a chapter devoted to the nature and manifestation of electron levels in disordered systems followed by one on the transport properties of liquid metals, and finally a discussion of the properties of alloys including more bizarre systems of which the mercury amalgams and liquid semiconductors are endemic.

The subject matter is exhaustively researched and the style is lucid, occasionally sardonic, and with a tincture of skepticism that eases one gently through the more jejune but unavoidable aspects of the lore of liquids. It is therefore regrettable that from the standpoint of the student (and, one might observe, his teacher) the price is prohibitive.

Many of the topics touched on in Faber's text are dealt with in much greater detail in the review papers included in the volume edited by Beer. In addition to extensive articles on both electron and mass transport, structure and dynamics, and equilibrium and nonequilibrium properties, there is contained in the book a considerable body of information of a more chemical and thermodynamic nature. Occasionally one has the impression that approaches which are successful in classifying the experimental information from insulating fluids (and their mixtures) will, *mutatis mutandis*, automatically apply in metallic systems. In this respect the importance of the interacting-electron gas on the gross properties of conducting fluids is more clearly exposed in Faber's text, and indeed many of the claims made by the contributors to Beer's volume can be found with acerbic and illuminating critiques in Faber's concordance.

As a compendium of papers on the nebulous forefront of research in liquid metals and alloys, Beer's book will have a certain value as a reference text. Unevenness of style is difficult to avoid with some 20 or so authors, but there is also a more troublesome variation in quality with which to contend.

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Paleogeophysics

Palaeomagnetism and Plate Tectonics. M. W. MCELHINNY. Cambridge University Press, New York, 1973. x, 358 pp., illus. $27.50. Cambridge Earth Science Series.

The measurement of the permanent or "fossil" magnetism of rocks in order to study the earth's magnetic field in the past is one of the few examples, and certainly the most significant example, of paleogeophysics. Not surprisingly, therefore, it is this branch of geophysics which has contributed most to geology. In particular it formed the basis of the so-called "revolution in earth sciences" within the past decade—a revolution not only in our understanding of the earth but also in that it has brought together the formerly rather disparate disciplines of geology and geophysics. The field itself provides an interesting blend of both geology and physics (as reflected in this text) which attracts students and experts alike.

In view of how much this subject has contributed to the earth sciences, within a comparatively short life-span of little more than 20 years, there are remarkably few texts which cover it adequately. Only one other has attempted to be as comprehensive as McElhinny's, that by Irving (*Paleomagnetism and Its Application to Geological and Geophysical Problems*, Wiley) published in 1964. Both books are classic and definitive texts, but needless to say Irving's has dated considerably as a result of developments relating to reversals of the earth's magnetic field, sea-floor spreading, and plate tectonics and of the acquisition of a great number of, typically higher-quality, paleomagnetic data. In many ways the title of Irving's book would be equally or more appropriate for this one, which is primarily a text on paleomagnetism rather than plate tectonics.

After outlining the nature of the earth's magnetic field and the assumptions and potential of paleomagnetism the author provides further background material in chapters on the basic principles and theory of rock magnetism and the procedures and techniques for the collection and measurement of samples and the analysis of results. This section ends with a particularly useful and detailed consideration of field and laboratory tests for the stability of remanent magnetization and a listing of minimum criteria for the reliability and hence acceptability of paleomagnetic results. Subsequently a chapter is de-