Advances in Magnethoydrodynamics: I. A. McGRATH, R. G. SIDDALL and M. W. THRING, Pergamon Press, 1963, 150 pp. 50*s*.

THIS book contains the proceedings of a one-day colloquium, held at Sheffield University in October 1961, on the subject of magnetohydrodynamic (MHD) generation, not actually on magnetohydrodynamics itself, a very much broader field. There is in fact very little MHD in the book. The usefulness of the book is very much limited by the lapse of time since the colloquium was held, particularly in view of the present rate of development of MHD generation research. There have been two more meetings dealing with MHD generation in America (at Rochester and Berkeley) and one more in England (at Newcastle) since this 1961 Sheffield one.

The fourteen papers in the book are arbitrarily divided into three sections, nominally dealing with basic processes, design problems and pilot plant respectively.

The first section opens with two papers by Bailey and Harris and by Davies, reviewing the 3-fluid model of plasmas under magnetic forces. McNab and Lindley contribute an interesting paper on the possibility that electron and ion temperatures may differ in accelerating flows. This effect needs experimental confirmation to be credible. Work from G.E. (Schenectady) on seeded combustion plasmas is next included, though long published elsewhere. An interesting report by Williams *et al.* on equilibrium and non-equilibrium ionization in combustion plasmas (including the work of Sugden) commences the second section. There follow two design calculations for MHD generators based on one-dimensional gasdynamics, one by Ralph in which power density is optimized, the other by Swift-Hook, who takes the temperature as a constant. One is alarmed to see Carnot efficiency referred to in a wholly irrelevant context. The next paper, Lindley's report on the C. A. Parsons helium–caesium experimental project, has been overtaken by the actual construction of the equipment. Mack and Medhurst then discuss the use of condensing mercury in closed-cycle rigs. In the final section Bugden *et al.* report some discouraging experiments on A.C. generation with a pulse-jet and Maycock *et al.* describe promising results with D.C. generation from a kerosene/oxygen rocket with potassium seeding. Dryburgh reviews American work in the field, which has been published fully elsewhere. Finally Thring surveys the manner in which MHD-generator technology might develop.

This is obviously a specialist's book. It does contain a fraction of material, not readily available elsewhere and useful to those working on MHD generation.

J. A. SHERCLIFF

Diffusion in Solids: P. G. SHEWMON. McGraw-Hill, New York, 1963, pp. 203.

IN HIS preface to this book the author states his purpose to be "to present a clear, concise and relatively complete treatment of diffusion in solids". In this aim he is very successful, provided by solids one means metallic and ionic solids only. Diffusion in glasses and polymers is not considered. In the book itself the main emphasis is on diffusion in metals, but much of the general theory is applicable to diffusion in various media. Thus Chapter 1 and Chapter 2 respectively deal with solutions of the formal diffusion equation for various boundary conditions, and the atomic theory of diffusion, while Chapters 6 and 7 deal with high diffusivity paths and with thermal diffusion and electrolysis in solids. An interesting feature is the set of calculations at the end of each chapter based on the subject matter of that chapter.

Several printing errors were noted, as follows: on p. 53 the reference at the top should be to Fig. 2-1 not to Fig. 2-11; p. 72, line 3, 0^{-4} should be 10^{-4} and in eq. 2-46 the exponential should read "exp $-0{\cdot}76/kT$" not "exp $-0{\cdot}76\,kT$". Finally on p. 83, Table 2.4, columns 3 and 4 for "V_a" one should read "ΔV_a". However, such errors are very few in number, and for its clarity, current interest, and critical approach this book can be strongly recommended.

R. M. BARRER

Heat Bibliography 1961: Dep. Sci. Industr. Res. Nat. Engng. Lab., Glasgow. Her Majesty's Stationery Office, 1962, 325 pp. 5*s*.

TEILT man die Dokumentation über ein Fachgebiet nach ihrer Aktualität ein, so erhält man etwa folgende Stufen (Verzugszeit in Klammern). (a) laufender Titeldienst, wie z.B. in dieser Zeitschrift (2–3 Monate). (b) Referateorgan, wie Physikalische Berichte oder Chemical Abstracts (6–12 Monate). (c) Titel in jährlicher Zusammenfassung (1–2 Jahre). (d) Jährlicher Fortschrittsbericht, wie in dieser Zeitschrift (1–2 Jahre). (e) Lehrbuch (über 2 Jahre). (f) Handbuch (über 5 Jahre). Diese einzelnen Stufen unterscheiden sich nicht nur in der Verzugszeit, sondern stark in der Art der Darbietung und erfüllen daher ganz verschiedene Aufgaben. Alle sind notwendig und unentbehrlich. Die vorliegende Bibliographie gehört zur Stufe c. Sie ist der 8. Band einer 1948 begonnenen Serie, die von der Fluids Group des National Engineering Laboratory in East Kilbride unter Leitung von A. J. Ede herausgegeben wird. Die Bände ab 1958 sind noch erhältlich. Das Fachgebiet, Wärme- und Stoffübertragung, ist in etwa 50 Teilgebiete unterteilt, die alphabetisch nach ihrem Schlagwort angeordnet sind. Innerhalb eines Teilgebietes sind die zitierten Titel alphabetisch nach Autoren aufgezählt. Man muss also mindestens 1 Teilgebiet (in Zweifelsfällen oft mehrere) ganz durchsuchen, was aber durch sehr übersichtliche Anordnung und Typographie erleichtert wird. Das Buch enthält etwa 8000 Zitate, jedes mit vollem Titel und Quelle, Angabe der Sprache und zutreffendenfalls dem Referateorgan, aus dem es stammt. Der Referent hat sich mit seinen Mitarbeitern schon häufig davon überzeugt, dass man mit dieser Bibliographie gut arbeiten kann. Sie sei daher allen empfohlen, die sich mit Wärmeübergang und verwandten Problemen befassen. Ein Autorenregister wäre erwünscht.

U. GRIGULL