

changes in a somewhat fickle intellectual climate. As the title would indicate, much of what is said rests upon the basic researches in Britain of Moore, Russell and Wittgenstein. We are presented with a well-balanced account of what logical positivism is—and always has been—coupled with a just assessment of the differences of emphasis between the disciples of the Vienna Circle and the rest of the world.

The drift of the writer's thought, as he takes a very wide sweep around his subject, tends (perhaps unavoidably) to obscure the relations, often rather strained, between logical positivism and metaphysics which, after all, are what he is engaged in discussing. Logical analysis is assuredly held to be a reasonable concept of philosophy, and its study involves a close scrutiny of language as we normally use it as a rough-and-ready means of receiving and imparting information. In a limited sense, and apparently only with respect to traditional forms, metaphysics is rejected. This, if I understand the thesis aright, is a rather more liberal position than usual. In the chapter on reconstruction, we find the remark that an "unexamined metaphysics" is the worst of all. This seems to suggest that there may be systems in themselves capable at least of investigation which would not come under the lash. This is very near the plea advanced a few years ago in quite another context that metaphysics must be adaptable and sympathetic to development if it is to be taken seriously as a true *scientia*. Most people would readily agree.

Meanwhile, mankind has become aware—and during recent years maybe increasingly aware—that there are 'events' (as Whitehead might have said) which can be both apprehended and measured, and those which can be apprehended but not measured. This distinction, made explicit many years ago, is perhaps the operative link between the exact sciences and those like aesthetics and sociology which receive attention towards the end of this volume. There can be little doubt that metaphysics, as a distinct subject of study, is called upon to do much more than "to save appearances" if it is to save itself and the great service which it has been able to render to scholarship through the ages.

Philosophy's task is above all to recognize problems as problems, and to evolve a language suitable for their precise formulation. F. I. G. RAWLINS

## NON-FERROUS FOUNDRY METALLURGY

### Non-Ferrous Foundry Metallurgy

The Science of Melting and Casting Non-Ferrous Metals and Alloys. Edited by Prof. A. J. Murphy. Pp. x + 498. (London: Pergamon Press, Ltd., 1954.) 70s. net.

AS with many other branches of production metallurgy, foundry work developed during the centuries as a craft and then only quite recently as a technology based on an understanding of the underlying scientific principles. Indeed, the scientific study of foundry problems has been made mainly during the past twenty or thirty years, and foundries still exist which depend for their existence upon the experience and skill of their foundrymen, rather than upon the application of scientific knowledge. The industry as a whole, however, is now alive to the value of the scientific approach to technical problems

and will welcome this book, to which a number of well-known foundry metallurgists have contributed.

The book is logically arranged. Approximately the first third is devoted to a scientific treatment of liquid metals, gases in metals and solidification. These chapters are well written and form a sound basis on which the rest of the book is built and on which the reader may reasonably expect to attempt a solution of his own foundry problems.

By contrast, in the long chapter on non-ferrous foundry technology the emphasis is upon practical details rather than on principles. The authors seem to regard their treatment as sufficient in itself; but some readers are likely to feel the need for amplification of certain points and will regret that references to other sources have not been included. It can scarcely be claimed that the section on ingot casting is comprehensive, and yet there is not a single reference to another work on the subject. Nor, in a chapter avowedly on technology, would one expect to find the shell-moulding process dismissed in a short paragraph; there is considerable interest in this essentially post-war development, and a much fuller account would have been justified.

The factors that influence the properties of castings are discussed in some detail in the next section, which also includes an authoritative account of the various methods of measuring the gas content of cast metals and a review of non-destructive testing. Most of the latter is concerned with radiographic examination, and there is only brief reference to ultrasonic and other methods.

In the final and longest section, seven well-known metallurgists discuss the foundry characteristics of the principal casting alloys classified according to their respective basis metals. The information provided is based on practical experience as well as on an appreciation of the scientific aspects. It should prove particularly useful to those who have occasion to make castings in alloys hitherto outside their experience.

Taken as a whole, the book is a useful addition to the literature on foundry metallurgy and deals with all aspects of non-ferrous practice. The foundry industry will benefit if the book is widely read by its metallurgists. There will certainly be other editions, and it may not be out of place to suggest that in future the names of the contributors should appear on the table of contents so that readers can more easily find out who has written what they are reading.

A. G. QUARRELL

## CHEMICAL ASPECTS OF ATOMIC ENERGY

### The Actinide Elements

Edited by Glenn T. Seaborg and Joseph J. Katz. (National Nuclear Energy Series: Manhattan Project Technical Section. Division 4—Plutonium Project Record: Vol. 14A.) Pp. xxx + 870. (London: McGraw-Hill Publishing Company, Ltd., 1954.) 94s.

THIS volume of the National Nuclear Energy Series is a companion to the earlier "Transuranium Elements"; but whereas that was a collection of research papers, the present book is a series of reviews by experts and maintains a high standard of writing throughout, giving a much more balanced and useful account of the chemistry of the