

### The Journal of the Institute of Metals

Vol. 72, 1946. Edited by N. B. Vaughan. Pp. lvii+732+80 plates. (London: Institute of Metals, 1946.) £3.

VOLUME 72 of the *Journal of the Institute of Metals* contains 721 pages of text together with an index occupying another ten pages, and fully maintains the high standard expected from this publication. Practically every aspect of non-ferrous metallurgy coming within the scope of the Institute is represented in the twenty-six papers, together with the discussions and correspondence upon them. To the metallurgist, the engineer, and the physicist concerned with the fundamentals of the metallic state alike, there is a direct appeal. The presidential address of Col. P. G. J. Gueterbock is of more than normal interest to those concerned with the health of the metallurgical industry as a whole, and the thirty-sixth May Lecture by Prof. N. F. Mott illuminates the relationship between atomic physics and the strength of metals. Of the remaining papers, the effects of residual stresses are considered in relationship to the fatigue of aluminium alloys; and Lunt and MacLellan give a detailed mathematical treatment of the wire-drawing process. H. W. L. Phillips deals at length with the alloys of aluminium containing magnesium, silicon and iron, and has an interesting account of the application of some thermodynamic principles to the liquidus surfaces of these materials. Corrosion problems, which have always interested the Institute, are dealt with in four papers, of which one may perhaps particularly mention that of Dr. Cuthbertson on the resistance to sea-water corrosion of some  $\alpha$ -tin bronzes. The structure of ingots and castings is the theme of three papers; ageing effects of three more, and fatigue problems crop up repeatedly. There will, in fact, be few concerned with non-ferrous metallurgy to whom some of the contributions are not of direct appeal.

Considering present-day difficulties, the editor and his staff are to be congratulated on an admirably produced volume, and on the illustrations, which, as usual, attain a very high standard.

### Swelling and Shrinking

A General Discussion by the Faraday Society held at the Royal Institution on 24th, 25th and 26th September, 1946. (Transactions of the Faraday Society, Vol. 42B.) Pp. 304. (London and Edinburgh: Gurney and Jackson, 1946.) 20s.

THIS publication brings together the series of thirty-four papers read at the Royal Institution meeting in 1946, together with summaries of the discussion which took place and some subsequent communications. An account of the discussion appeared in *Nature* shortly after the meeting (158, 571; 1946), and need not be duplicated here. It is only necessary to commend this volume as a most useful reference book for all who are interested in any aspect of the physical interaction of polymers with liquids. The field covered is extremely wide, ranging from aqueous systems possessing a well-defined structure which can be studied by X-ray methods to non-polar systems in which the components show a close approximation to random mixing.

As usual in the Faraday Society discussions, the subject is covered in an extensive rather than an intensive manner. This volume will therefore be found extremely useful as a first source of information, and it serves this purpose the more admirably

in view of the fact that specialists from so many different fields have contributed, thus bringing together under a single cover papers which might otherwise have been scattered through a wide diversity of journals.

### Visages de la mathématique

Essai de semi-vulgarisation de quelques aspects fondamentaux de la pensée mathématique. Par Dr. Pierre Defrise. Pp. 126. (Bruxelles: J. Lebègue et Cie., n.d.) 60 francs.

MATHEMATICAL research has two aspects. The more obvious is the solution of problems which arise in the branches of the subject already known. But there is also the logical and philosophical study of the foundations of mathematics, and of the relation between its different branches. Strangely enough, it is the second aspect as well as the first which is indispensable for a full understanding of modern physical theories, such as relativity and quantum mechanics. Dr. Defrise believes that a real understanding of science is impossible without at least a general idea of this second aspect. He has therefore tried to give a treatment of non-Euclidean geometry, the 'axiomatic method', the theory of groups, invariance and transformations, in a form requiring no knowledge of mathematics beyond the ordinary school course and suitable for the non-specialist reader. But this reader must possess a logical mind and a capacity for abstract thought which are not characteristic of 'the man in the street' in Great Britain, whatever is the case in Belgium and France. However, the reading of this little book would be very profitable, if not always very easy, to teachers of elementary mathematics in Britain, as Dr. Defrise's emphasis is on that aspect of geometry which is entirely omitted from our ordinary school course. H. T. H. PIAGGIO

### A Picture Book of the Whole Coast of England and Wales

An Account of Variety in Scenery and its Causes. By J. A. Steers. Pp. vii+36+148 plates. (Cambridge: At the University Press, 1948.) 10s. 6d. net.

THE first Minister of Town and Country Planning commissioned Mr. J. A. Steers to carry out a personal survey of the whole coast-line of England and Wales and to present an assessment of its varied scenery which might serve as a guide should legislation to conserve the coast from further spoliation be regarded as necessary. The results of the survey were published as a large volume, "The Coastline of England and Wales", issued by the Cambridge University Press. In order to make the unique collection of 115 photographs available to a wider public, the publishers have reproduced them, together with thirty-one others and two colour-photographs, in this attractive picture book. A map shows the position of each picture, and there are brief notes on each; while in fifteen informative pages the author has dealt with the chief types of coast and the origin of each. The photographs are remarkable in that they avoid hackneyed subjects and often present well-known views from an unusual angle. The Royal Geographical Society has permitted the reproduction of the map assessing coastal scenery, and Dr. Fraser Darling contributes an introductory essay. The result is a book which can scarcely fail to whet the reader's appetite for a taste of the larger volume.

L. D. S.