

light of later work. Students who wish to learn something of the nature of metallography without studying one of the larger works will find a simple account of the subject in the second and third chapters, illustrated by excellent photomicrographs from standard works, but references to original sources are throughout irregular and imperfect.

(2) The well-known treatise on electric steel furnaces by Rodenhauser and Schoenawa has now reached a third edition and has been completely revised by the authors and the translator. During the stress of the war period there was a remarkable increase in the number of electric furnaces employed in the steel industry, but the results obtained have been varied. Opinions strongly in favour of—and others as strongly unfavourable towards—the electric furnace are held by different technical experts. The reason for this diversity appears to be that in many cases the furnace has been improperly handled. A steel smelter who is ignorant of electrical engineering, or an electrical engineer who has little or no acquaintance with the metallurgy of steel, is unlikely to obtain success with this method of manufacture. Where the right combination of engineering with metallurgical knowledge and experience is found, the electric furnace gives most favourable results. The perfect control over the melting conditions which it allows is greatly in its favour, especially when steels containing costly alloy metals are concerned, and its position in the steel industry is assured. This is true even of countries where fuel is abundant, but the advantages are still greater in those countries where water power is available and fuel scarce. This gives importance to the electric blast-furnace, an appliance which can scarcely compete with the highly efficient blast-furnace on its own ground, but which may prove the salvation of iron-ore producing countries which have no coal.

The present work is written mainly from the electrical point of view, and is very full in its treatment of the electrical conditions of construction and working. The metallurgical working is comparatively lightly touched on; in fact, the chemistry of electric steel making still awaits textbook treatment. As might be expected from the associations of the authors, the induction furnace is given greater prominence than is usual in other works on the subject, and the discussion of this type is very full. The Röchling-Rodenhauser furnace is now in use in 20-ton sizes, a remarkably large capacity for this class, while it is maintained that induction furnaces may be used successfully for the refining of steel, although the

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question of the relatively cold slag is not fully dealt with. The work refers mainly to German and American practice, and the types of furnace most largely employed in this country are rather briefly discussed. The consideration of the electrical conditions and of the thermal balance is very thorough, and many records of actual runs are included. English readers will also be glad to have the detailed account of iron-ore smelting in Sweden and elsewhere, illustrated by clear diagrams and numerical records. An interesting account of experiments on the reduction of ore (a fine magnetite high in sulphur) by means of sulphurous coke breeze in the Röchling-Rodenhauser furnace is given, liquid metal from a basic Bessemer converter being used to start the charge. A good efficiency was obtained and about half the sulphur was eliminated without the use of lime. Minor criticisms are, of course, possible, but metallurgists who are considering the advantages of this method of manufacture will find the book indispensable.

C. H. DESCH.

Our Bookshelf.

The Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. Compiled from official sources. Thirty-eighth annual issue. Pp. viii + 366. (London: C. Griffin and Co., Ltd., 1921.) 15s. net.

WE are glad to extend a welcome to the new issue of this invaluable year-book. The system adopted in previous issues of classifying the societies according to the subjects with which they are concerned is adhered to, and a few pages are devoted to miscellaneous societies particulars of which were received too late for classification.

We notice that, of the twenty-six Research Associations referred to in *NATURE* of December 15, p. 489, which have been approved by the Department of Scientific and Industrial Research, one only—and that, one of those more recently constituted—namely, the British Cast Iron Research Association, appears to have been included. We have also been unable to find any mention of the Association of Economic Biologists. In spite of these omissions the year-book is an indispensable adjunct to every library, society, and similar institution the members of which require accurate official particulars of the learned societies of the British Isles. The publishers perform a national service by providing this annual conspectus of scientific organisations and their work.

Le Mouvement Biologique en Europe. By Georges Bohn. Pp. 144. (Paris: Armand Colin, 1921.) 4 francs.

DURING the summer and autumn of 1913 the author of this pamphlet visited the most active