

## COLLOID CHEMISTRY.

*An Introduction to the Chemistry of the Colloids. A Compendium of Colloidal Chemistry for Students, Teachers, and Works Managers.* By Dr. V. Pöschl. Translated from the second, enlarged, German edition by Dr. H. H. Hodgson. Pp. iv+114. (London: C. Griffin and Co., Ltd., 1910.) Price 3s. 6d. net.

THIS short work is well described in its title as a compendium of colloidal chemistry. Struck by the growing importance of this branch of chemical science, the author has endeavoured to provide a brief summary of the chief characteristic properties and modes of preparation of colloids, as well as to indicate some of the more important phenomena in the production of which colloidal substances are concerned.

The chemical methods for the preparation of colloidal solutions of the hydroxides, sulphides, and metals are described in some detail, together with the properties of the resulting hydrosols, special attention being paid to gold and silver, the study of which has done so much to advance our knowledge of the colloids. The electrical methods, due to Bredig, for the production of metallic hydrosols are also well described, whereas the precipitation methods by which colloidal solutions of sodium and barium salts have been obtained are not mentioned.

The character of the work is incompatible with much discussion of the numerous knotty points which must inevitably arise in any account of the various theories of the colloidal state, but a clear description of these theories is given, great stress being laid on the positive evidence afforded by the ultramicroscope that colloidal solutions are not homogeneous. Attention is also directed to the important fact that many substances, a list of which is given, are known both in the crystalline and colloidal forms, and that the colloidal state is not necessarily a property only of substances possessed of a large molecule and complex chemical constitution, but may also be associated with quite simple substances, the nature of solvent, or, as it is better termed, the dispersion medium, being frequently the deciding factor.

Perhaps too little stress is laid on the electrochemical relations of colloids, and the important subject of the mutual precipitation of colloids of opposite electrical sign is dismissed in a single line.

The concluding sections on the importance of colloidal chemistry in various branches of chemistry and in other sciences indicate very clearly how much assistance these are deriving from the realisation of the fact that many familiar phenomena can only be adequately understood in the light of our knowledge of the colloids.

On the whole, it may be said that the purpose of the author in compiling this account of the colloids has been fully realised, and that the reader will gain a good idea of many of the points of interest connected with this difficult and important subject.

A. HARDEN.

## OUR BOOK SHELF.

*An Introduction to the Study of Metallurgy.* By Sir W. C. Roberts-Austen, K.C.B., F.R.S. Sixth edition, revised and enlarged by F. W. Harbord. Pp. xv+478. (London: Charles Griffin and Co., Ltd., 1910.) Price 18s. net.

THE appearance of a new edition of Sir William Roberts-Austen's "Introduction to the Study of Metallurgy," which has been out of print for some time, is to be heartily welcomed, as no other book adequately fills its place in metallurgical literature. Since its first publication there have been vast advances in pyrometry, metallography, and in metallurgical processes, advances which were only partially dealt with in succeeding editions. In this the sixth edition special attention has been given to the results of recent research and metallurgical progress; the chapter on pyrometry has been rewritten, a new chapter on metallography has been prepared, and in the chapter on furnaces, descriptions and illustrations of typical modern furnaces and appliances have been introduced to replace those which are no longer in general use. This chapter also contains an extremely useful account of the construction, modes of working, and uses of the three chief types of electric smelting furnaces.

A valuable addition, the thermal treatment of certain industrial alloys, has been made to chapter iv., which in previous editions was confined almost entirely to the thermal treatment of steel.

The book is intended to give a systematic course of study in the fundamental principles on which metallurgical processes are based, and the success of their various operations depend; and for this it is admirably adapted. It will be conceded by all that without this knowledge the difficulties and irregularities which arise in metallurgical practice can be, if at all, but imperfectly contended with.

The information which is given on the subjects dealt with, although necessarily brief in some cases, is set forth with remarkable clearness, and is thoroughly trustworthy and up to date.

The new edition is an excellent piece of work, and Mr. Harbord deserves the congratulations of metallurgists for having brought this valuable text-book into touch with the times. It is indispensable not only to students, but to all who are engaged in practical metallurgical work.

W. G.

*Untersuchungen über die Zoogeographie der Karpathen.*

(Unter besonderer Berücksichtigung der Coleopteren.) By Karl Holdhaus and F. Deubel. Pp. vi+202, and map. (Jena: Gustav Fischer, 1910.) Price 8 marks.

IN this important and carefully written work Prof. Holdhaus analyses chiefly the Coleoptera of the Carpathians, with special reference to the influence of the Glacial period on the Alpine fauna of Europe. We may perhaps quote a few words from his introduction to make his starting point clear, though possibly the case is a little overstated, in view of the circumpolar fauna and flora:—"During the Glacial period all life was annihilated in northern Europe. The animals at present inhabiting north Europe are post-Glacial immigrants. The remarkable impoverishment and monotony of the northern fauna—especially the absence of a typical mountain fauna in Fennoscandia—seems inexplicable except from this point of view. In central and southern Europe the influence of the Glacial period is chiefly visible in the mountain fauna."

Prof. Holdhaus commences by discussing the geological history of the Carpathians, and their climate and vegetation. Then he proceeds to discuss the distribution of the Coleoptera of the Carpathians, and the districts which they inhabit, the age and origin of this fauna, and how far it has been influenced by