

under-cooling and the metastable state; diffusion in the solid state; physical properties of alloys; and electromotive force and corrosion. In chapter xiv. the construction of the equilibrium diagram is clearly explained, and the remainder of the book deals with the condition of metals in alloys, plastic deformation, the metallography of iron and steel, and the metallography of industrial alloys.

The present writer has made many notes on points in these chapters, as p. 222, "white cast-iron, martensite and cementite," instead of pearlite and cementite. The author is good on the difficult subject of hardness. P. 276, aluminium alloys have "a lower hysteresis than the purest specimens of iron . . . probably due to . . . removing oxygen." This is more likely to be due to the larger crystals formed, and the author, in such a theoretical work, might use the term "crystal" occasionally instead of "crystal grain."

In the chapter on the metallography of iron and steel there is so much that is erroneous that it is impossible to deal with it properly, but as an example the statement on p. 374 that "A tool steel containing 16 per cent. carbon, quenched from 800° C. in ice-water, consists of pure martensite," is meaningless.

The work is, however, one that every student of metallography should possess, for although there are so many points in it with which one does not agree, the author has given on the whole a fair account of theoretical matters connected with metallography, has scoured the literature of the subject, even extending to Russian, and has given copious references which must prove useful to those investigating the problems of metallography, who desire with a minimum expenditure of time to find out what has been done on their particular branch.

A. McWILLIAM.

PHYSIOLOGICAL CHEMISTRY.

Practical Physiological Chemistry. By Dr. R. H. Aders Plimmer. Pp. viii+270. (London: Longmans, Green and Co., 1910.) Price 6s. net.

THIS is really the second edition of Dr. Aders Plimmer's excellent manual. The first appearance of the book was privately printed for use in the practical classes of physiological chemistry at University College, London, but a good many copies were distributed to other teachers, and to the Press. A favourable notice of this preliminary edition appeared in the pages of NATURE at the time. The publication of the book for general sale is an indication of the way in which the teachers of the subject welcomed the new departure in the presentation of the subject. For it is a new departure; hitherto works on the subject have been written by physiologists; the present book is written by a chemist; it is physiological chemistry as opposed to chemical physiology.

The increasing exactitude of knowledge in the chemistry of those carbon compounds which are the constituents or products of living matter warrants the appearance of a book written to show that physiological chemistry is only a branch of organic chemistry, and Dr. Aders Plimmer has been successful in showing the connection of the two by the insertion of the appropriate and logical links which unite the intro-

ductory chapters on organic chemistry proper with its daughter science.

The main aim of the work is to make it a trustworthy practical guide, and no laboratory worker can afford to be without it. Its ideal is that every student shall work through all the exercises; these are set out with detail and in a clear manner, so that there is no reason why the student should fail to do so under his teachers, except that of time, and time is a very important factor for students of medicine, to whom the work is primarily addressed. In the medical curriculum, the number of subjects is growing every year, and each one of these is expanding and seeking to encroach more and more on the unfortunate student's already too-full day. Teachers are already seeking means to limit in particular certain preliminary subjects, and to exclude those portions which have but little direct bearing on his future practical life. There is no subject, however, which has such a direct bearing on medical practice as physiological chemistry; its relationships to pathology become clearer with every advance in knowledge; if there is one subject more than any other which should not be curtailed, that subject is physiological chemistry.

W. D. H.

SYSTEMATIC BOTANY.

Das Pflanzenreich. Regni vegetabilis conspectus.

Edited by A. Engler. Vol. iv., pt. 104. *Papaveraceae-Hypnoidae et Papaveraceae-Papaveroidae.* By Friedrich Fedde. Pp. 430. (Leipzig: W. Engelmann, 1909.) Price 21.60 marks.

THIS volume forms the fortieth part of the great series of monographs in course of publication under Dr. Engler's editorship. It comprises the family Papaveraceae as understood in the restricted sense, that is, without the Fumariaceae; the account of these will be issued subsequently as Papaveraceae-Fumarioideae. The special portion of the work, the systematic treatment of genera and species, is preceded by a general account of the family occupying eighty-three pages, in which Dr. Fedde discusses the morphology and anatomy of the vegetative organs, with special reference to the value for systematic purposes of the anatomical characters; the position of the laticiferous vessels and the character of the latex is found most helpful in this respect. The floral structure and its modifications are discussed at considerable length, and also the fruit, especially the various mechanisms of dehiscence. There is also a useful section on geographical distribution, a discussion of the affinities of the family, and an account of its economic uses.

The great value of these monographs lies, however, in the systematic portion, which should represent the results of the work of an expert student of the family on all the available material. Dr. Fedde is known as an authority on the Papaveraceae, and we look to his monograph for a careful and considered systematic presentation of the family. It is somewhat surprising therefore to note the treatment of the earlier genera of Papaveroidae which, as *Platystemon* and *Eschscholtzia*, are confined to Pacific North America. In