add, when a new edition is called for, a few particulars of the mining law of Newfoundland, the oldest British colony, where copper and iron-ore mining are actively carried on; of the West Indies, where, in Trinidad and Barbados, asphalt mining is of some importance; of British New Guinea, where gold mines are worked; and of Nigeria, where some tin ore is raised. BENNETT H. BROUGH.

ORGANIC CHEMISTRY APPLIED TO PHYSIOLOGY.

Outlines of Physiological Chemistry. By Dr. S. P. Beebe and Prof. B. H. Buxton. Pp. vii+195. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1904.) Price 6*s.* 6*d.* net.

THE book deals chiefly with the theoretical side of organic chemistry as applied to physiology. The first chapter, of twenty-one pages, contains an account of the following matters:—dissociation in solution, nomenclature of acids, chemical equilibrium, catalysis, colloids and crystalloids, colloidal solutions of metals, aggregation, suspension and precipitation, oxidation and reduction, osmotic pressure, calculations of a formula, reasons why reactions take place, graphic formulæ, and ultimate analysis.

It need scarcely be added that the space is entirely inadequate to treat of such a heterogeneous collection of chemical problems, even were it profitable to put them in such juxtaposition. The student who has made any study of general chemistry does not need the chapter, and one who has not will scarcely be able to grasp it in the condensed and jumbled form in which it is here presented to him for the first time.

It would hence have been no loss if the book had commenced with the elementary organic chemistry of chapter ii., so as to leave all the space for this, which is the proper introduction to the subject of the book.

A description of the groups of organic compounds most interesting to the physiological chemist is given in chapters ii. to v., of the proteid molecule, its component parts and disintegration products in chapter vi., of enzymes in chapter vii., and an outline of the antitoxin theory, &c., under the title of "Disease and Immunity," forms chapter viii. and concludes the volume.

This latter part of the book is on the whole well and clearly written, but it might be made much more interesting by the authors breaking, even more frequently than they do, their intention of saying nothing about practical work. A description of organic compounds and their relationships, without any statement of what experiments the knowledge of these relationships is based upon, forms only dry and unprofitable reading. For example, it would be much better if the reader were told how the purin bases, or hexone bases, are separated, and would not have taken up a vast amount of space. Without some such instruction, these bodies are only uninteresting names which weary the reader.

The style of the authors is also such as may encourage a too-realistic belief in the mind of the junior chemist in the graphic formulæ which form the organic chemist's rosary. Thus at the opening of chapter v. there occurs the statement, "The chains of C atoms have a tendency to curl over and join at the two ends, forming in this way a closed chain." At another passage in the volume one reads of "the excretion of benzene rings." The account of the chemistry of the proteid molecule is very clear and well arranged, and this portion of the book may be recommended to the physiological chemist interested in the organic chemistry of proteids.

BENJAMIN MOORE.

OUR BOOK SHELF.

Lectures on the Theory of Functions of Real Variables. Vol. i. By J. Pierpont. Pp. xii+560. (London and Boston: Ginn and Co., n.d.) Price 20*s.* net.

THIS is emphatically a text-book, deductive in method and Euclidean in arrangement; as such, it has the defects of its qualities, but its merits are undeniable. In this volume the author deals with the elementary notions of rational and irrational number, point aggregates, function, continuity, differentiation and integration. The subject last mentioned occupies pp. 333–560, so that conditions of integrability, change of order of integration, upper and lower integrals, &c., receive a proper amount of attention. It should be noted, too, that although it is confessedly incomplete, the discussion of maxima and minima of functions of two or more variables is satisfactory as far as it goes, a most unusual circumstance as things are at present. Perhaps the most valuable feature of novelty is that the author occasionally criticises arguments once thought sufficient, but now known to be fallacious, illustrating by examples the way in which the defective proofs break down. This is an excellent way of making a student feel the necessity of mastering the more refined methods of recent analysis. There is one point in which the author has not quite done justice to his authorities. After explaining Cantor's theory of irrational numbers, he gives a brief sketch of Dedekind's method of partitions, but he does not give this in its genuine form. The essence of a partition is that it divides all *rational* numbers (with the possible exception of one) into two classes, each element of one class being less than each of the other. After this definition it is proved that the aggregate of partitions is continuous. Prof. Pierpont (p. 82) defines a partition as dividing *all* real numbers into two classes; this enables him to use Dedekind's notation, when convenient, but it does not give a just idea of Dedekind's theory, and this is a pity. For bibliographical details the reader is referred to the "Encyclopädie der mathematischen Wissenschaften"; this is all very well for those who have access to that work, but in the interests of the student it would be well to give a list of the most important original sources. It ought to be said that in his preface the author acknowledges his special obligation to Jordan, Stolz, and Vallée-Poussin; at the same time it is evident that he has made use of this and other material in an independent way.

Sound and Rhythm. By W. Edmunds. Pp. xii+96; and Box of Models of the Human Ear. (London: Baillière, Tindall and Cox, 1906.) Price 2*s.* 6*d.* net.

THIS is an admirable little book. The elements of physiological acoustics are described with remarkable lucidity and accuracy, and there is a wealth of illustra-