## OUR BOOK SHELF.

Ergebnisse der Physiologie. Edited by L. Asher

Brgeonisse der Physiologie. Edited by L. Asher (Bern) and K. Spiro (Strassburg). Erster Jahrgang.
I Abtheilung. Biochemie. Pp. xix + 929. (Wice-baden : J. F. Bergmann, 1902.) Price 17 marks.
THE German physiological school is engaged just now in producing a monumental work. Under the able distribution of the mont the able editorship of Drs. Asher and Spiro, two of the most energetic of the younger physiologists of the Fatherland, the most eminent workers in different branches of the science have been persuaded to contribute of their best. We notice also that among the collaborators are several from other countries in addition. The editors do not aim at producing a text-book even for the advanced student, but a series of essays, each written by a master of his craft on some subject to which he has paid particular attention, and has himself made a subject of investigation. Giving, as each article does, not only the history of the subject with full biographical references, but also an account of the latest discoveries, and discussions of conflicting views on the many vexed questions treated, it will prove a veritable mine of facts to the investigator, and will, indeed, be indispensable to all who are attempting real and serious work in the future.

The volume before us treats of what it is now the fashion to call biochemistry, and we notice with pleasure that some of the articles deal with the comparative and also with the botanical aspects of this rapidly growing branch of physiology. We shall not attempt to give a résumé of the book, or even a list of the articles and their authors. This is a sort of book which must be read, and not merely talked about. Suffice it to say that among the authors are those of the standing of I. Munk, Hammarsten, F. Voit, Pawlow, Hugo Wiener, and Hofmeister.

In any work in which many participate, there is always a certain amount of inequality. In the present volume this is not so noticeable as in most books of a similar nature, for each author seems to have made a special effort to produce an article or articles of the highest possible standard.

We do not pretend that the book is light or attractive reading, and we imagine that the authors themselves would be the first to repudiate any suggestion that they intended it to be so. The German language, for one thing, does not lend itself to such a frivolous purpose. It is solid, hard reading, written with the German ideal of thoroughness for the student and the worker by those who are themselves workers and students.

Thermodynamik. By Prof. Dr. W. Voigt. Band i. (Sammlung Schubert, vol. xxxix.) Pp. xvi + 360; with +3 figures. (Leipzig: G. J. Göschen, 1903.) Price to marks.

THE subject of thermodynamics can be treated either as a deductive or as an experimental science. According to the former method, the second law affords a definition of absolute temperature, and a perfect gas is a hypothetical substance, defined by certain conditions, which is proved to possess the property of acting as a thermometer for the measurement of absolute temperature. In the present case the opposite treatment is followed. The book opens with an introduction dealing with thermometry and calorimetry, followed up by a section on the equivalence of work and heat in which the specific heat of water finds its old traditional title of mechanical equivalent of heat, and the methods of determining it are severally and separately discussed. The next chapter deals with the thermodynamics of perfect gases, and includes sections on Carnot's cycle as applied to such gases. It is not until the third chapter that the second law is applied | Walton.

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generally to bodies defined by two variables, while in the fourth or last chapter the principles of thermodynamics are extended to systems defined by any number of variables. The book thus has its parallel, to a certain extent, in those treatises on applied mechanics which deal with the equilibrium of levers or motion of pulleys before introducing the parallelogram of forces or the laws of motion. At the present time many students working in physical laboratories acquire an experimental knowledge of principles which their lack of mathematical ability prevents them from approaching from the deductive side. No doubt this is a pity, but while such students continue to exist and to require teaching, it is difficult to see how a subject like thermodynamics could better be presented to them than is done in Prof. Voigt's treatise.

Arithmetic for Schools and Colleges. By John Alison, M.A., F.R.S.E., and John B. Clark, M.A., F.R.S.E. Pp. xliii + 304. (Edinburgh : Oliver and Boyd, 1903.) Price 2s. 6d.

No better exposition of the nature of arithmetical operations and of proofs of the various rules of arithmetic than that which these two Scottish authors here pre-sent to us can be found. The first twelve chapters treat of the more theoretical branch of the subject, and explain with great exactness the laws of arithmetical processes and the manipulation of vulgar and decimal fractions. The authors never miss an opportunity of puinting out the means of shortening a calculation and, at the same time, of explaining and justifying the process. In these first twelve chapters we would specially signalise those on "laws of operations" and decimal approximations" as interesting to the philosophically minded student; but, indeed, the whole of the work is marked by great thoroughness. In the chapter on evolution, Horner's method is explained and amply illustrated. There is a very good chapter on the metric system, including its employment in dynamics, heat, and electricity, illustrated by a large collection of examples. The nature of ratio and proportion is also very well explained and exemplified in three special chapters. The practical subjects (per-centages, profit and loss, interest, &c.) are treated as mere examples of the theory of proportion.

Once only in the book do we meet with a vicious Saxon expression : " If the first term of a proportion be greater than the second, the third shall be [instead of is] greater than the fourth " (p. 202); but this is not repeated in subsequent similar propositions. Except by the introduction of the diagrammatical

relations between variable quantities, as exhibited by curves on squared paper, it is difficult to see how this very excellent treatise could be improved.

G. M. M.

Les Materiaux artificiels. ' By Marie-Auguste Morel. (Paris: Gauthier-Villars and Masson Pp. 178. et Cie.)

This volume belongs to the "Encyclopédie Scientifique des Aide-Mémoire," published under the general editorship of M. Léauté. It contains information of an interesting kind about numerous materials used in building and other constructive arts. The first chapter, on semi-artificial substances, includes a treatment of lime, cements, bricks, tiles, and other materials. This is followed by successive chapters giving accounts of those artificial materials dependent for their manufacture on technical chemistry; those used in association with metal armatures; those-such as mortar, artificial stone-formed when artificial materials are mixed with other non-metallic sub-stances. The concluding sections include a miscellany of subjects, such as the preservation of wood, the use of soluble glass, and a description of Lincrusta-