Our Bookshelf.

Jacquards and Harnesses: Card-cutting, Lacing and Repeating Mechanism. By Thomas Woodhouse. Pp. xxii+429. (London: Macmillan and Co., Ltd., 1923.) 25*s*. net.

THE book under notice is an admirable illustration of the great advance textile technology has made chiefly through the influence of the great technical schools established in the textile districts of Great Britain. Students and the mill men have been allowed only a mere smattering of the detailed work associated with any given process so far as text-books are concerned, and even the long and patient acquisition of knowledge in the mill has been confined to the limited branch of the work on which they were and are engaged. A specialised book such as this is now throws open to all information hitherto confined to a few. Both mental development and manipulative ability must result from a study of its contents.

The author has had a long experience in teaching, and his books have established his reputation as a writer. This new work bears evidence of careful thought and of clear descriptive ability in dealing with a subject that presents so many manipulative intricacies and complicated mechanical movements. An unusually large number of excellent drawings, diagrams, and half-tone blocks illustrate the text and add considerably to the value of the book.

The arrangement of the matter follows a rational course. Quite wisely, the Jacquard and its operative mechanism is ignored; its existence is taken for granted. After an introductory chapter which lays down the relative positions of the Jacquard, comber board, etc., the author devotes the next two chapters to the methods of tie-up of the harness, both straight and mixed, this being very thoroughly treated numerically and by illustrated examples. The remaining chapters deal with the controlling elements of the harness, namely, the cards, and here we see the specialist at work guiding one through the various methods of cutting the cards, from the simplest form to the most modern and complicated mechanical card-cutting and repeating apparatus. Descriptions and illustrations are given that cover the whole range of the industry, and not the least valuable feature lies in the excellent advice and comments on the advantages of the various methods for their respective uses.

The student will find in the book a stimulus to a more complete knowledge of weaving, whilst those in responsible positions in the mill will welcome it as a valuable aid in their attempts to attain a high degree of efficiency.

An Introduction to the Mathematical Theory of the Conduction of Heat in Solids. By Prof. H. S. Carslaw. Second edition, completely revised. Pp. xii+268. (London: Macmillan and Co., Ltd., 1921.) 30*s*. net.

IN 1906, Prof. Carslaw published a work on "Fourier Series and Integrals and the Mathematical Theory of the Conduction of Heat." An appreciative notice of this book appeared in NATURE of March 14, 1907, over the initials "G. H. H." Prof. Carslaw's book has since then reached a second edition, in the form of a very much rewritten work in two volumes. The first volume of the second edition contains the pure mathematical theory, and has been already reviewed in NATURE of April 8, 1922, by Prof. G. H. Hardy. The second volume of the second edition is the subject of this present notice.

The book is an enlarged form of that portion of the original work which dealt with the boundary problems arising in the application of Fourier series and integrals to problems in the conduction of heat. The usual problems are passed in review in a thoroughly systematic manner, and discussed with mathematical completeness and rigour. After establishing the fundamental differential equation of the problem of heat conduction, the author proceeds to examine the one-dimensional problems, such as Fourier's ring, linear flow in an infinite and a semi-infinite rod, and the flow of heat in a solid bounded by two parallel planes. Two-dimensional problems are treated next, as well as the case of the rectangular parallelepiped. Problems depending on polar co-ordinates, such as that of the circular cylinder, the sphere, and the cone, are followed by more general types of discussions on the method of sources and sinks in cases of variable temperature and the use of Green's function.

The new feature of the present second edition is represented by the chapters on the method of contour integrals and of integral equations.

Although the book is essentially mathematical in outlook, and quite uncompromising in the complexity of the mathematical discussions, there is, nevertheless, a thread of physical interest which adds considerably to its usefulness and readableness. References are to be found to practical experimental evidence, and to such applications as the theory of conduction of heat through the earth. It is an important book, that has established itself as an authoritative exposition of an important branch of mathematical physics, and no applied mathematician can afford to ignore it. S. B.

The Physical Basis of Life. By Edmund B. Wilson. Pp. iv+51. (New Haven: Yale University Press; London: Oxford University Press, 1923.) 7*s*. net.

PROF. E. B. WILSON, in this, the first William Thompson Sedgwick Memorial Lecture, has given biologists an extremely interesting glimpse of the line which his thoughts, stimulated by the recent advances in cytology, genetics, and developmental physiology, are pursuing. Prof. Wilson is not only the doyen of cytologists and an all-round zoologist of the first rank, but also one of the select few among scientific workers capable of writing clearly and with style. His cytological reflections on chromosomes as the physical basis of heredity, and on the Golgi bodies and mitochondria, illuminate the subject, while his all-too-brief discussion of certain facts of experimental embryology runs along a somewhat unfamiliar track.

Most cytologists will find Prof. Wilson's suggestions concerning the ultimate, ultra-microscopic structures of protoplasm the most original matter in the book. He imagines, in brief, that there is probably a continuously graded series between the visible "granule" and other inclusions of the cell, and the smallest molecules which merit the style of *living*; and further, that many of the ultra-microscopic particles are probably self-reproducing units. This return to the biophor type of corpuscular theory on the part of so experienced a