chogromia. The late J. D. Siddall was of the opinion that his remarkable genus, Shepheardella, shared this indifference to habitat, but did not publish his conclusions on the matter.

The twenty-five plates in colour and monotone are worthy of the best traditions of the Ray Society. Vol. iv., which will complete this admirable work, will consist of two parts: the first an addendum to vols. i. and ii., comprising species recorded as new to Britain since their publication; the second, dealing with the Heliozoa, will be the work of Messrs. Hopkinson and Wailes.   E. H.-A.

MATHEMATICAL TEXT-BOOKS.

(1) *The Essentials of Descriptive Geometry.* By Prof. F. G. Higbee. Pp. vi + 204. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) Price 7s. 9d. net.

(2) *Five-Figure Mathematical Tables.* Compiled by E. Chappell. Pp. xvi + 320. (London: W. and R. Chambers, Ltd., 1915.) Price 5s. net.

(3) *Mortality Laws and Statistics.* By R. Henderson. Pp. v + 111. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) 5s. 6d. net.

(4) *Arithmetic for Carpenters and Builders.* By Prof. R. B. Dale. Pp. ix + 231. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) Price 5s. 6d. net.

(5) *Handy Logarithmic Tables.* By Y. Uraguchi. Pp. 7. (Tokyo: Y. Uraguchi, 1915.) Price 3d.

(1) THE author assumes on the part of the reader no previous knowledge of descriptive geometry, and only quite a superficial acquaintance with ordinary plane geometry. The course follows mainly the customary lines, including points, lines, angles, planes, surfaces, and model-making. There are three reasons why its general character should commend itself to the ordinary student. First, the diagrams are numerous, clear, and unusually large; secondly, the style of exposition is admirably lucid; and thirdly, each chapter closes with a set of simple exercises; it would be a distinct improvement if answers were added, where possible.

(2) This book of five-figure tables includes logarithms of number and their reciprocals, anti-logarithms (called illogs), logarithms of logarithms (called lologs), anti-"logarithms of logarithms" (called illologs), the trigonometric functions and their logarithms, and a table of various constants. To lessen, in using the lolog tables, the chance of error which would occur from failure to notice whether the logarithms are positive or negative, numbers less than unity are shown in red, and those greater than unity in black. This is a wise precaution. The book is well printed and arranged in a convenient fashion.

(3) The author sets out in scientific form the results of investigations into the duration of human life and the mathematical theory required for it. The book is a treatise for actuaries or for mathematicians interested in the theory of proba-

bility. The author has excluded the combination of life contingencies with the theory of compound interest, annuities, etc., and has confined himself strictly to life contingencies.

After opening with an historical account of the way in which mortality tables came to be compiled and improved, he proceeds to discuss the construction and graduation of tables now in use, and gives various modern tables in an appendix.

(4) This small text-book is admirably suited to meet the needs of the practical workman. It deals with the elements of arithmetic, but includes also a great deal of general and technical information, such as the use of tools, cost of material, economy of arrangement, and simple designs. The student who reads and works thoroughly through its pages will acquire a considerable store of valuable information: a worthy addition to an excellent series.

(5) These four-figure tables are printed on a thickish sheet of paper, 7 in. high, 31 in. long, folded into seven parts, and contain proportional parts, logarithms of number and their reciprocals, and anti-logarithms. We doubt whether they possess any advantage over the ordinary forms in use.

OUR BOOKSHELF.

The Mathematical Theory of Probabilities and its Application to Frequency Curves and Statistical Methods. By A. Fisher. Translated by W. Bonynge. Volume i. *Mathematical Probabilities and Homograde Statistics.* Pp. xx + 171. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1915.) Price 8s. 6d. net.

IT is remarkable that, in spite of the number of older works in English on the theory of probabilities and the great attention that has recently been devoted to statistical method, no modern work on the subject in our own language existed. Mr. Fisher's work will do much to fill this gap.

After an introduction on the general principles and the philosophical aspect of the subject, and a somewhat slight historical sketch, he develops the fundamental theorems of probabilities, the laws of mathematical expectation, probability *a posteriori* and Bayes's theorem, the law of large numbers, and the theory of dispersion. This theory is then applied to games of chance and to statistical problems. A second volume is promised on the theory of frequency curves.

The treatment is very lucid—the chapter on Bayes's theorem may be selected as a marked example—and the work will be of considerable service to the statistical student. It is to be regretted, however, that the author has not taken up some of the more difficult problems of statistical work and has stopped short at the elementary comparison of the actual dispersion of a series with the combinatorial dispersion.

There is no index, and it is to be hoped the promised second volume will supply one. In a future edition the spelling of proper names should receive attention.