

Our Bookshelf.

How to Measure in Education. By Prof. W. A. McCall. Pp. xiii+416. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1922.) 15s. net.

IN the work under notice an attempt is made to show that everything in education must submit to statistical measurement or be condemned as worthless. Fourteen theses in praise of measurement are blazoned in large type at the outset. One of them states, "To the extent that any goal of education is intangible it is worthless"; as this is given not only the dignity of capitals but also the embellishment of inverted commas it presumably conveys some meaning to the author. Education in this book means a few of the elements of instruction, such as reading, writing, and the mechanical parts of arithmetic and composition. An elaborate analysis is given of how to diagnose defects in reading, and ignoring the analysis, we are told that "there are more failures due to failure of interest than the world dreams of." The schoolmaster who has important tasks in education other than those of teaching mechanical elements would greatly value some help in measuring the interest of his pupils, but will ask in vain. The importance of carefully framed instructions in giving tests is rightly stressed, but we are told that such "instructions should equalize interest." To accomplish this the pupil must, apparently, be told how important it is to do well in a test. If he is refractory, or keen on other things in school besides tests, the advice may not be effective. Masters, however, are in a worse plight, for the tests are used not only to measure the pupils, but also the teaching and the teachers; and that form of measurement is said to be of most service "which does not require a previous acquaintance with the pupils."

The most valuable part of the book is that concerned with "scaling the test," as it shows the large amount of statistical treatment necessary to prepare a suitable test of skill. A useful suggestion is made for fixing a single common unit of measurement for all mental scales for elementary schools, namely, some function of the variability of pupils of twelve years. The standard deviation of pupils of sixteen years is also suggested as a unit for measuring older scholars.

The final section of the book deals with tabular, graphic, and statistical devices. Each part has a useful students' bibliography, but it is strange to note the omission, in a work of this nature, of all reference to the writings of Udny Yule, from whom the student of statistical methods will derive more real help than from any of the authors quoted.

Fruit Farming: Practical and Scientific for Commercial Fruit Growers and Others. By C. H. Hooper. Second edition, Revised and Extended. Pp. xxiii+212. (London: The Lockwood Press, 1921.) 6s. net.

WITHIN the limits of two hundred pages Mr. Hooper has aimed at the production of a text-book of fruit farming under English conditions. After a brief introductory section on the training of the prospective grower, he deals in succession with the capital required, the selection of suitable land, the law in relation to fruit farms and market gardens, the laying-out of

plantations and orchards, and the cultural details and costings of the more important hardy fruits of this country. The later chapters are concerned largely with the more scientific aspects of the subject, such matters as soils, manuring, insect and fungoid pests, and spraying and other forms of disease-control in turn receiving attention. Also included are brief histories of many of the well-known varieties of apples, pears, plums, and cherries. The numerous interesting and economically important problems relating to pollination and fertilisation and the setting of fruit are briefly considered and the author is able here to provide data from his own investigations. The volume is completed by several sections dealing with special points of a purely commercial character, as, for example, the marketing of fruit and book-keeping.

Many chapters have been contributed by specialists and present in an abbreviated form the results of recent research. A large part of the volume has in fact been re-written since the first edition and brought up-to-date. With these alterations and some useful additions the second edition justifies its appearance.

In a work of so small a compass, which seeks to stand as a text-book of its subject, the selection of matter for inclusion calls for careful discrimination. It is open to some criticism in this respect and also for occasional repetition. Printers' errors are not infrequent in certain chapters. Much of the information given on economic points is not readily accessible elsewhere, and it is in this direction probably that the volume will prove to be of most service to its readers.

First Lessons in Practical Biology. By E. W. Shann. Pp. xv+256. (London: G. Bell and Sons, Ltd., 1922.) 5s.

MR. SHANN'S endeavour to provide a course of biology suitable for lower fifth forms, and within the means of the average school, is not entirely satisfying. Rightly he relies on plants for the experimental work, and on both plants and animals, employing them in alternate chapters, for the observational. But experiments on plant physiology are not reached until chapters 16 and 17; and by that time the preceding lessons have incidentally given the very information which the experiments should surely be intended to enable the pupils to discover for themselves. There are good chapters on variation and heredity, soils, insect pests, and other topics of general biological interest; but neither with plants nor with animals does the author make the best use of his material as a means of education and of training the powers of observation and reasoning. If he disapproves of the heuristic method, he should at any rate indicate the evidence on which conclusions as to homologies are based, and not be content with mere statements.

Apart from general considerations, sentences are in several instances faultily composed; and there is a large number of actual errors: e.g. "false" fruits are wrongly defined; rose-hips will germinate without passing through the digestive tract of an animal; rose stamens are peri-, and not epigynous; *Urtica urens* has not a creeping stem; the biramous appendage is not the primitive form of crustacean appendage; the telson is not a segment; the abdomen of Blowfly does not exhibit respiratory movements; the embryo in a