

OUR BOOK SHELF.

Handbook of Grasses; treating of their Structure, Classification, Geographical Distribution, and Uses, also describing the British Species and their Habitats. By William Hutchinson. 8vo. Pp. 92, 40 woodcuts. (London: Swan Sonnenschein and Co. New York: Macmillan and Co., 1895.)

THIS is a cheap popular work, adapted for the use of elementary students. There is nothing that covers the same field in existence already, and it fulfils its purpose excellently well. It would have been better to have called it "An Introduction to the Study of the British Grasses," as it only deals in detail with the British species, which are not more than one-thirtieth of the total number of grasses that are known in the whole world. The short introduction explains how easily a collection of dried grasses can be made. The first chapter, called "Structure," gives all the different organs in detail, showing what is the general plan on which grasses are organised, and explaining the general and special terms which are used in describing the genera and species. In the second chapter, which is the longest in the book, the hundred and odd British species are classified according to their localities, and described in detail, most of the common kinds being illustrated by small woodcuts, with dissections. The third chapter is devoted to classification, in which Bentham and Hooker's "Genera Plantarum" is followed. The British genera are described in detail, and the characters of the thirteen tribes there adopted, several of which are not represented in Britain, are given. The rest of the book is occupied by a readable account of the geographical distribution of the grasses, especially of the cereals, and an account of their various uses for food, and in other ways. *Gramineæ* is one of the most universally distributed of all the natural orders of plants, and, in point of the number of species, is only exceeded by five other natural orders: *Compositæ*, *Leguminosæ*, *Orchideæ*, *Melastomaceæ*, and *Rubiaceæ*. Between three and four thousand species of grasses are known, and they are classified under three hundred genera. The little book is well written and trustworthy, and no doubt will secure a good circulation.

Rural Water Supply. By Allan Greenwell, A.M.I.C.E., and W. T. Curry, A.M.I.C.E. Pp. 210. (London: Crosby Lockwood and Son, 1895.)

IN this volume we have an elementary work on water engineering, containing a sufficient account of the principles and construction of waterworks to be of real use to engineers, and forming at the same time a good introduction to more elaborate treatises. The volume is based upon a series of articles which appeared in the *Builder* last year, and it contains valuable information upon all matters connected with water supply. It is, indeed, what its secondary title represents it to be, namely, "a practical handbook on the supply of water and construction of waterworks for small country districts." The book is full of details on points which are continually before waterworks engineers; and though these details are mostly rules and formulæ which have to be accepted without being understood, they will be of great assistance in planning schemes of water supply and in carrying out the works.

Climbing in the British Isles. II. Wales and Ireland. Wales. By W. P. Haskett Smith. *Ireland.* By H. C. Hart. Pp. 197. (London: Longmans, Green, and Co., 1895.)

CLIMBERS will find this little pocket-book an invaluable guide to instructive scrambles in Wales and Ireland; but the large number of fatal accidents recorded in its pages is hardly calculated to give other readers the mountaineering fever. On the first two pages of the

book, three fatal falls and one severe accident are noted, and the tale of deaths is sustained throughout the book. To those who are filled with the desire to climb, this spice of danger only gives zest to the recreation; and the fact that several lives have been lost in attempts to scale a certain rock, is a sufficient reason for many Englishmen to tackle that rock and endeavour to scale it. In the book under notice, all the essential information about climbs in Wales and Ireland is given, with thirty-one illustrations (by Mr. Ellis Carr) and nine plans. By means of it, the would-be climber will be able to select his hills and peaks without difficulty, and with its assistance he may do in these islands hill-climbing which will form no mean part of a real mountaineering education. The book is primarily intended for those who climb for climbing's sake, hence little attention is paid to the geological interest of the rocks and hills described.

LETTERS TO THE EDITOR.

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The Feeding-Ground of the Herring.

IN his presidential address to Section D of the British Association at Ipswich, Prof. Herdman says:—

"Probably no group of animals in the sea is of so much importance from the point of view of food as the Copepoda. They form a great part of the food of whales, and of herrings and many other useful fish, both in the adult and in the larval state, as well as of innumerable other animals, large and small. Consequently, I have inquired somewhat carefully into their distribution in the sea, with the assistance of Prof. Brady, Mr. Scott, and Mr. Thompson. These experienced collectors all agree that Copepoda are most abundant, both as to species and individuals, close round the shore, amongst seaweeds, or in shallow water in the Laminarian zone over a weedy bottom. Individuals are sometimes extremely abundant on the surface of the sea amongst the plankton, or in shore pools near high water, where, amongst *Enteromorpha*, the Harpacticidæ swarm in immense profusion; but, for a gathering rich in individuals, species, and genera, the experienced collector goes to the shallow waters of the Laminarian zone. . . . In order to come to as correct a conclusion as possible on the matter, I have consulted several other naturalists in regard to the smaller groups of more or less free-swimming Crustacea, such as Copepoda and Ostracoda, which I thought might possibly be in considerable numbers over the mud. I have asked three well-known specialists on such Crustaceans—viz., Prof. G. S. Brady, F.R.S., Mr. Thomas Scott, F.L.S., and Mr. I. C. Thompson, F.L.S.—and they all agree in stating that, although interesting and peculiar, the Copepoda and Ostracoda from the deep mud are not abundant either in species or in individuals. In answer to the question: which of the three regions, (1) the littoral zone, (2) from low water to 20 fathoms, and (3) from 20 fathoms onwards, is richest in small free-swimming, but bottom-haunting, Crustacea, they all replied the middle region from 0 to 20 fathoms, which is the Laminarian zone and the upper edge of the Coralline. . . . [Mr. T. Scott] tells me that as the result of his experience in Loch Fyne, where a great part of the loch is deep, the richest fauna is always where banks occur, coming up to about 20 fathoms, and having the bottom formed of sand, gravel, and shells. The fauna on and over such banks, which are in the Coralline zone, is much richer than on the deeper mud around them. On an ordinary shelving shore on the west coast of Scotland, Mr. Scott, who has had great experience in collecting, considers that the richest fauna is usually at about 20 fathoms."

It seems to me that these three specialists, or experienced collectors, have not given Prof. Herdman any information as to whether free-swimming Crustacea, such as Copepoda, are found in considerable numbers over the mud or not, as maintained by Dr. Murray in his concluding remarks in the Summary volumes of the *Challenger* Report, and I propose to answer the