

comparative figures are: 37 species for Britain as a whole, 33 for North Yorkshire, 21 for the Lakes, 21 for Northumberland and Durham, and 16 for Derbyshire. The total number of Derbyshire plants is 782 species out of 1425 recorded for the whole of Britain.

Mr. Painter's note (pp. 5-10) on the bibliography of the botany of Derbyshire is full and satisfactory. Unfortunately, many of the early records contained in Pilkington's "Derbyshire," and copied into the old "Botanist's Guide," are evidently inaccurate. But a great many trustworthy records, which stand on the personal authority of Mr. H. C. Watson and Mr. J. E. Bowman, are contained in the "New Botanist's Guide," of which Mr. Painter seldom takes notice. The curious *Achillea serrata*, a plant not known anywhere in a wild state, which Sir J. E. Smith describes and figures, in "English Botany," from the neighbourhood of Matlock, he does not mention at all.

As Mr. Painter explains in his preface and indicates in his title, his work is not put forward as a complete record of the flora of the county. It is not likely that much that is new will be found in the limestone tract and on the gritstone moors, but the exploration of the coal tract and level new red sandstone country is still very incomplete. A full and adequate flora of a county so interesting would be a very acceptable contribution to the literature of botanical geography. J. G. B.

OUR BOOK SHELF.

Science of Every-day Life. By J. A. Bower, F.C.S. (London: Cassell and Co., 1889.)

WE have here another attempt to simplify the acquirement of a knowledge of some of the elementary facts of science, but though there is much to be commended, some points certainly require revision. With reference to the well-known experiment in which bits of straw, wood, or cork come together when thrown into a basin of water (p. 22), the author has fallen into the common error of ascribing the effect to gravitation instead of to surface-tension. If a few wax-lights or other things not wetted by water be added, it will be found that a substance which is not wetted is *repelled* by a substance which is, and that only "birds of a feather flock together." Again, with young students, loose or incomplete statements cannot be too carefully guarded against; the statement on p. 59 that 15 pounds or 30 inches of mercury is "equal to a square inch column of air to *whatever height* it may extend" is of this class.

The book is apparently intended more especially for the young people's section of the National Home-Reading Union, but it is hardly likely that many of the branches will be furnished with the necessary apparatus for the experiments. The ground covered includes the properties of matter, and the physics and chemistry of air and water.

Elementary Physics. By M. R. Wright. (London: Longmans, Green, and Co., 1889.)

IN this book Mr. Wright has added to the more elementary part of his work on sound, light, and heat, the leading facts of other branches of physics, so as to form a general introduction to physical science. The subject is an essentially experimental one, and the author having learned by experience that a study of facts is the

first duty of beginners, very little space is given to theoretical considerations. There is very little that is new, and indeed it is hardly to be expected. Most of the experiments are clearly described and are capable of easy performance, but one or two improvements may be suggested. On p. 4 the student is told to "cut a hole in an iron plate so that a flask filled with cold water just passes," an operation beyond most students, and we see no reason why a piece of card should not do equally well. Again, on p. 6, the making of a thermometer is hardly sufficiently detailed; having made a bulb at one end of the tube, the student is simply told to make one at the other end, but he will certainly not see his way to do this without further assistance. There are no less than 242 diagrams, but, needless to say, most of them have done good service before.

The book is excellently adapted for such a course of instruction as that laid down in the syllabus of alternative physics by the Science and Art Department.

Teacher's Manual of Geography. By J. W. Redway. (Boston, U.S.: D. C. Heath and Co., 1889.)

WE have of late heard a good deal on the subject of how geography should be taught, but now we find an author who believes "that less energy devoted to improvement of methods, and a little more to the quality of the material taught, would not be amiss." The author's view of the scope of geography is much broader than that generally accepted, and, in this country at least, the title "physical geography" would be regarded as more appropriate.

The first part of the book consists of "hints to teachers," and very valuable hints they are. Oral instruction and out-of-door lessons are strongly recommended, and the author attempts to make the subject a practical one by suggestions as to the use of the moulding board for representing the various features of a country. The free use of pictures and instructive stories from authentic books of travel, especially with primary pupils, is also recommended.

In the second part, common errors, such as the assertion that "lakes which have no outlet are salt," are corrected. There is also an interesting chapter on the history of geographical names. The book is quite unique, and teachers will find much to interest as well as instruct them.

Notes on the Pinks of Western Europe. By F. N. Williams, F.L.S. Pp. 47. (London: West, Newman, and Co., 1889.)

LAST week we noticed Mr. Williams's classified enumeration of all the known species of *Dianthus*. In the present pamphlet he gives Latin descriptions of, and English notes upon, the species of Western Europe. Out of a total of upwards of 200 species, there are altogether 55 in Western Europe, which are distributed through the different countries as follows, viz. 43 in Spain, 33 in France, 13 in Portugal, 7 in Germany, 5 each in Belgium and Holland, and 4 in England. His descriptions seem to be clear and explicit, and he has worked out carefully the geographical range of each species, but he does not give references either to published figures, or, with few exceptions, to the books and papers in which the plants have been originally described. As a rule, he admits species freely, but he unites the common European *Dianthus Seguieri* with the Chinese and Japanese *D. sinensis*, which is the parent of many cultivated forms. This gives the species a range from Portugal to Japan. Many of the West European forms are so puzzling, and the descriptions are so widely scattered, that it will be a boon both to botanists and gardeners to have them all brought together and worked out on one uniform plan.