

the space that can be devoted to each is very limited, and, as the author himself points out in his preface, many details which may assume considerable local importance, but are relatively insignificant from a more general point of view, have perforce been omitted. The salient features of each field have, however, been carefully studied, and are stated in such a way as to give a sufficiently clear view of their various characteristics; perhaps it might have been preferable to have subdivided the coalfields of Scotland, and to have devoted at least two chapters to these, instead of dealing with all of them in one, although no doubt that chapter is relatively a long one. Whilst there are necessarily omissions here and there, partly for lack of space, as has already been pointed out, and partly because no two geologists are at all likely to agree as to the relative importance of certain features, actual mistakes are decidedly rare.

It might have been desirable to devote more care to the sketch-maps of the coalfields, for they are by no means so clear as they might have been made; for example, in the map of the Northumberland and Durham coalfield it is doubtful whether a certain line lettered as a dyke of igneous rock is intended to represent the author's idea of the course of a possible dyke of such rock, or whether it is meant for the approximate line of the great fault known as the Ninety Fathom Dyke. At the same time, it is only right to admit that the representation of geological maps in black-and-white upon a very small scale is by no means an easy matter. The author may fairly be congratulated on having compressed so much useful information within the limits of a small but well-balanced volume, and it is fortunate that it appears at a moment when the importance of an accurate knowledge of the coalfields of the country is becoming generally recognised.

H. L.

Practical Aeroplane Photography.

Airplane Photography. By Major H. E. Ives, U.S. Army. Pp. 422. (Philadelphia and London: J. B. Lippincott Co., 1920.) 18s. net.

MAJOR IVES was formerly officer in charge of the experimental department of the photographic branch in the American Air Service, and as such he and his collaborators have had access to the information, photographs, and drawings supplied by the Allies to the United States. He has therefore had a unique opportunity of compiling a book describing the practice of air photo-

graphy in the war and the apparatus employed, an opportunity which has probably not been afforded to any other individual. The work undertaken has been, on the whole, well done, and an interesting book results. The numerous well-printed illustrations form one of the most noteworthy features; they include not only photographs of apparatus, diagrams, and interesting air views, but also many reproductions from the secret official publications of the Intelligence Branch of the British War Office, which have not hitherto been available in England. When looking through the 208 figures, one notices that in a few cases their source is acknowledged, but in the majority of cases figures are copied from English, French, or Italian sources without acknowledgment. Whatever may be said of this free use of English official photographs, the direct reproduction of five well-known diagrams drawn, we believe, by Capt. Durward, R.A.F., and of two tables copied from M. Clerc, without reference to their authors, can scarcely be passed without comment.

The sections of the book dealing with apparatus and materials are distinctly good. The author has selected his material well, and the only inaccuracy noted is in the description of the Williamson film camera. In describing tilt-recorders, the Goerz type only is figured and mentioned, though the Zeiss type was more commonly employed by the Germans. In his account of aerial photographic methods and the utilisation of photographs, the author is less fortunate, probably having little first-hand knowledge. His treatment of stereoscopy seems somewhat superficial, while his chapter on map-making is quite unsound. He has adopted the untenable view that a series of overlapping prints taken by a plane flying level at a constant altitude constitutes a complete pictorial map of the ground. This view may possess an element of truth when the ground is flat, but it cannot be used as a basis for aerial survey. It has already called down the contempt of surveyors, and in 1916 led the General Staff of the French Army to prohibit the use of photo-mosaics and squared maps made from them. Under the impression that an assemblage of photographs—or a photo-mosaic, to use a more precise term—is a map, the author goes on to give a useful description of the method by which such a mosaic is made, but is, in consequence, confused when he tries to introduce the work and suggestions of Bagley. Aerial map-making can be developed only by recognising that, while a photograph may seldom itself be regarded as a map, it does give a representation of the ground from which an accurate map can be compiled (so long as

certain conditions are known). With a good modern lens aberrations are negligible, and every other factor may be determined more or less accurately; the greater the accuracy attained in the estimation of the factors—height and such like—the greater will be the accuracy of the resulting compilation.

The conceptions of metrophotography and photogrammetry do not seem to find any mention in the book. It is almost inconceivable that an author should devote a section of his book to aerial mapping without any reference to the work already done in survey by photography from balloons. The subject of mapping by aerial photography was of vital importance in the war, and is the most promising outlet for the aeroplane camera in peace; its inadequate treatment here forms a serious blemish on an otherwise useful book.

H. H. T.

Our Bookshelf.

The Flowering Plants of South Africa. Edited by Dr. I. B. Pole Evans. Vol. i. No. 1, November, 1920. Pp. ii+10 plates. (London: L. Reeve and Co., Ltd.; South Africa: The Speciality Press of South Africa, 1920.) 15s., coloured; 10s., plain.

EUROPEAN gardens owe so much to South Africa for the plants which adorn them that the appearance of a *South African Botanical Magazine* is an event of considerable interest. Dr. I. B. Pole Evans, the energetic Director of the Botanical Survey of South Africa, who is editing "The Flowering Plants of South Africa," is to be congratulated on this new venture to bring the treasures of the South African flora to the notice of a wider public. In the preface it is stated that the publication is due to the keenness and interest of a South African lady, "whose love for her country and its natural beauties has been the means of procuring the necessary funds for the initiation of the work." The plants illustrated will represent so far as possible the flowering plants of the several provinces of the Union of South Africa.

It is unfortunate that in this first number the plants depicted, though familiar garden plants, are not for the most part of very special interest, and it is to be hoped that in succeeding numbers some of the less known and more striking flowers of South Africa will be represented.

The work being prepared in South Africa and produced in England has suffered considerably, and both the illustrations and the descriptions leave a good deal to be desired. The printing of the names at the foot of the plates is also unfortunate in view of the corrections that have had to be made in England in the text of plates 3 and 4, so that an incorrect name appears on each plate.

The experience gained from the publication of this first number will, we hope, lead to a con-

NO. 2680, VOL. 107]

siderable improvement in following numbers. In making criticisms on this useful and interesting venture it is realised fully how great the difficulties in its production must have been.

The Garden Doctor: Plants in Health and Disease.

By F. J. Chittenden. Pp. x+154. (London: Country Life, Ltd.; New York: Charles Scribner's Sons, 1920.) 7s. 6d. net.

THERE are few gardeners, even scientific ones, who will not learn much from these pages, for Mr. Chittenden's position at Wisley gives him many opportunities of ascertaining the common pests of plants and their appropriate treatment. After giving an excellent and popular synopsis of the structure and physiology of the plant, he treats of those ailments due not so much to parasites as to wrong treatment. He deals with fungus pests by mentioning the common plants in alphabetical order, and in a few words sketches both diseases and treatment. His chapter on insect pests is not so good, though here, as throughout the book, he deals with principles, and if these are grasped the reader should be able to diagnose the nature, at any rate, of most of the common pests. There are chapters on fungicides, insecticides, and spraying generally, the usual formulæ being given. The illustrations on the whole are excellent, but lose much of their usefulness by having no text references, and appear to have been collected casually. Several of them are taken from the Ministry of Agriculture leaflets without acknowledgment, while others are of pests not mentioned in the book. The reference to the winged form of American blight as the "fly," and to the apterous form as the "insect," is not to be commended, while the full explanation of the plate of the "Daffodil Fly," which has a humorous touch, would be interesting. Despite minor criticisms which might be made, this is a most readable and interesting book.

G. C. G.

The Birds of the British Isles and their Eggs. By T. A. Coward. Second series. *Families Anatidae to Tetraonidae.* Pp. vii+376+159 plates. (London and New York: Frederick Warne and Co., Ltd., 1920.) 12s. 6d. net.

THIS second series completes Mr. Coward's work on British birds, already favourably noticed in the pages of NATURE. It treats of the numerous and varied forms of aquatic and wading birds, storks, bustards, rails, pigeons, and the game-birds. The coloured figures, which represent practically every species, have been nicely reproduced in miniature from the late Lord Lilford's well-known book, most of them being the work of Mr. Archibald Thorburn. The coloured figures of the eggs are less satisfactory, but may be regarded as acceptable. In addition to these plates there are sixty-nine photographic illustrations of both birds and their nesting haunts. This wealth of illustration, in conjunction with the author's excellent and appropriate letterpress, renders this work the best of the minor books devoted to a subject which is ever growing in popularity.