

may obtain the prize; he must dig and drain and enrich the soil, must plant, protect and prune, and, like the husbandman, he must have long patience before the harvest comes. He must be prepared for failures and disappointments, for nipping frosts and scorching suns, hailstones and drenching rains, for blight and mildew, fungus and thrip, for aphids and grubs, spiders and beetles, suckers and weeds. The obstacles are many, and the enemies are fierce, as ever to those who would attain excellence.

But perseverance will prevail, and he who has an expert for his guide will reach the summit, however steep may be the mountain. He who has a productive soil, a situation sheltered but not overshadowed, an atmosphere not polluted by smoke or smut, who adds to these inseparable adjuncts of success a determination to succeed, and then follows, in strict obedience, the teaching of Mr. Foster-Melliard, will repeat his achievements; the pupil will become a professor, and the entered apprentice will be a master-mason.

On the subject of "garden roses," roses which have not the perfect symmetry and fulness required for exhibition at our shows, the author declares that he is no authority, and he tells us little or nothing of their infinite variety and beauty in beds, borders and shrubberies, on pillars, pergolas and walls; but as a manual for the production of those roses, which have been most admired by rosarians, in their loveliest form, his admirable essay is complete.

OUR BOOK SHELF.

The Birds of North and Middle America. Part i. "The Fringillidae." By R. Ridgway. *Bulletin* U.S. Museum, No. 50. Pp. 715; 20 plates. (Washington, 1901.)

MR. RIDGWAY is such a well-known authority on the birds of North America that anything coming from his pen is sure to obtain a welcome at the hands of his brother ornithologists. The size of the present volume, which, as stated in its title, deals only with a single family, affords an index of the bulk and extent of the work of which it forms the commencement. The amount of labour involved in such a task is enormous and can only be properly appreciated by working naturalists. Preparations for the work, the author tells us, have been in more or less active progress for the last twenty years, and so long ago as the autumn of 1894 the task of putting together in proper form for press the vast accumulation of material was taken in hand. The labour of measuring specimens of more than 3000 forms of birds and making the necessary references to previous descriptions was, however, so vast that it has only been possible to issue the first part after this long lapse of time. It is hoped, now that much of the drudgery is accomplished, future progress may be more rapid.

The object of the work is to describe in detail every definable form of bird—whether species or subspecies—met with on the American continent, from the Arctic districts to the eastern end of the Isthmus of Panama, together with the West Indian and Galapagos Islands. Moreover, besides the indigenous denizens of the area, the accidental or casual visitors, as well as artificially introduced species, are included, so that the list is as full and comprehensive as possible. Needless to say, the work is written on modern American lines, so that the number of forms regarded as entitled to distinction is very great; while the number of genera and subgenera is likewise

unusually large. An especial feature of the work is the large number of forms which are relegated to the rank of subspecies.

As regards the description and keys to the different groups and species, the work appears to be admirably written, the number of specimens of which the measurements are given rendering it especially valuable. Perhaps it was somewhat unnecessary to give a general account of birds and their various orders, but this is a fault on the right side, and the work should prove invaluable to all zoologists on both sides of the Atlantic. In replacing the name "Central America" by the unfamiliar "Middle America" the author may be etymologically right, but if this be the reason of the innovation, it is somewhat curious to find such a change advocated by American naturalists, who are notorious for the contempt with which they treat the synthesis and orthography of scientific names.

R. L.

The Lens. A Practical Guide to the Choice, Use and Testing of Photographic Objectives. By T. Bolas, F.C.S., F.I.C., and George E. Brown, F.I.C. Pp. vi + 176. (London: Dawbarn and Ward, Ltd., 1902.) Price 2s. 6d. net.

THIS is a useful book, not only for beginners in the use of the camera, but for many photographic workers who have never studied the optics of lenses. The elementary treatment of lenses is far in advance of that of most professed English text-books of optics, as from the outset it does not make the assumption of an infinite thinness of lenses, but treats them by the method of Gauss by means of principal planes and principal points. Unfortunately, the authors persist in calling the principal points "nodal" points, a confusion of language which will puzzle students if when they come to the eye they discover that the nodal points of that organ are not the same as the principal points. There are good discussions of the subjects of angle of view, inequality of illumination and "depth of focus." We are glad to see that the authors have summoned up courage to omit "indigo" from the tints of the spectrum. It has long been recognised that there is no indigo tint between the blue and the violet. It is a pity that the authors admit the vulgarism in chapter iv. of writing the aperture-ratios $f/24$, $f/16$, &c., as $f24$, $f16$, &c. On p. 49 they give the notation correctly. The lens diagrams would be improved by cross-hatching the sections of the lenses; it is impossible by looking at the mere outline, for example, of the composite back lens of Fig. 104A, on p. 91, to tell whether it represents three lenses cemented together or two lenses separated by an air-space. The practical hints on focussing, copying and enlarging are excellent; and we quite concur in the advice on p. 95 to avoid second-hand lenses. Some admirable examples of the performance of lenses are reproduced in half-tone blocks. That of King Henry VII.'s Chapel on p. 171 is really marvellous.

A Text-book of Geology. By Albert Perry Brigham, A.M., F.G.S.A., Professor of Geology in Colgate University. Pp. 477; illustrated. (London: Hirschfeld Brothers, Ltd., 1902.)

ALTHOUGH this work bears on its title-page the name of a London publisher, it is evidently prepared with a view to the requirements of teachers and students in the United States. It forms one of the "Twentieth Century Text-books" edited by Dr. A. F. Nightingale, formerly of Chicago. According to its author's preface, this text-book has been especially prepared as an elementary treatise for secondary schools in America, and it seems admirably adapted for this purpose. While modestly disclaiming any great originality in the plan of the work or novelty in the mode of treatment of geological problems, the author may be