

tured but ignorant fanatic and aid the worker, a devotion to the cause, and a well-trained band of helpers." In the Sudan where for many years smallpox was a dread calamity, it is now well-nigh as extinct as the dodo. The native is convinced of the beneficent results of Jenner's discovery and the anti-vaccinationist has not yet raised his voice in the desert.

The water supply of towns in the tropics and the bacterial standards to be enforced are discussed at length, with the general conclusion that the conditions are utterly different from those of civilized lands of temperate climates so that the problem of standards must be worked out anew in the tropics. Despite Clemesha's conclusions from analysis in India where soil contamination is great and sewage in streams relatively small, that the use of *Bacillus coli communis* in wider elastic sense as an indicator of contamination of water supplies in the tropics is inadequate and misleading, Dr. Balfour still concludes that this criterion gave useful results in detecting contamination in the municipal supply at Khartoum.

The second volume, devoted to general science, contains a wider range of articles, from a treatise on municipal engineering in the tropics by members of the staff of Gordon Memorial College, to a treatise on the venom of the spitting snakes of Rhodesia and the Sudan. Here are the reports of the staff chemist, Dr. Wm. Bean, and the entomologist, Dr. H. H. King, the former dealing with soil analysis, gum production, hashish and native poisons, and the latter treating of the insects destructive to crops, mosquito control and the relation of birds to insects. Experiments in exterminating mosquitoes in irrigation ditches by a small minnow of similar habit to "Millions" of the Barbados, known as *Cyprinodon dispar*, have been successful. Other biological papers deal with the mosquitoes, birds and scorpions of the region.

The anthropological interests are represented by an account of the ancient gold mines of the Sudan by Mr. S. C. Dunn, gov-

ernment geologist. The Turin papyrus (14th century B.C.) describes these mines and is accompanied by the oldest maps in existence. The cult of the Nyakang and the divine kings of the Shilluk peoples are investigated by Dr. C. G. Seligmann. The king is killed when old age or sickness threatens. Captain Anderson gives an interesting analysis of the tribal customs in their relation to medicine and morals of the Nyam Nyam and Goor peoples of the upper Sudan.

These two volumes are full of varied information, much of it of great interest and promise of permanent value. It is magnificently suggestive in its portrayal of the warfare of science on the firing line of civilization and full of incentive to the reserves at the rear.

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*A History of the Birds of Colorado.* By WILLIAM LUTLEY SCLATER, M.A. (Oxon.), M.B.O.U., Hon. M.A.O.U. (lately Director of the Colorado College Museum). With 17 plates and a map. Witherby & Co., 326 High Holborn, London. 1912. 8vo. Pp. xxiv + 576. For United States, \$5. Edition limited to 550 copies.

This is a well-planned and thoroughly up-to-date manual of the birds of Colorado, printed on light-weight paper, and, though a bulky volume of 600 pages, is easy and comfortable to handle. The work is based primarily on the collection of Colorado birds formed by Mr. C. E. Aiken during the last thirty-five years, recently acquired by the late General William J. Palmer and presented by him to the Museum of Colorado College, of which the author of the present book was recently for some years the director.

The introduction deals briefly with the physical features of Colorado, and contains an analysis of its bird fauna, with (1) respect to the season of occurrence of the species and (2) their distribution in the state with respect to altitude. Of the 392 species thus far recorded, about 17 per cent. are resident throughout the year, while the summer resi-

dents form about 30 per cent., the remainder being transient visitors in winter, spring and fall, of which about 106 species are of merely casual occurrence, with only from one to half a dozen records within the state for each.

The nomenclature and classification adopted conform to the third edition of the A. O. U. Checklist, which renders unnecessary the citation of original references for the genera and species. The author has also adopted a concise method of citing the Colorado references under each species, where the name of the author, an abbreviated date and a page reference direct the reader to the full title and place of publication of the paper given in the bibliography near the close of the volume (pp. 532-551), which mentions every publication of importance relating to Colorado ornithology up to December, 1910. This is followed by a gazetteer of the localities specially mentioned (pp. 553-562). With the keys to the higher groups, genera and species, the very satisfactory descriptions, the notes on distribution and habits, the author has succeeded in providing an admirable handbook of Colorado ornithology. Although there are here and there a few minor slips, the work bears the earmarks of a practised hand, and shows a thorough mastery of the subject, although the author's sojourn in Colorado was a comparatively brief one and his personal experience with Colorado birds thus necessarily limited.

The work is dedicated to his friend and patron, the late General Palmer, whose portrait forms the frontispiece of the volume. The half-tone plates illustrate the nesting habits of a number of interesting species, from photographs by well-known Colorado ornithologists. A contour map shows the principal streams, the counties and county-seats of the state, and indicates on a small scale the diversity of altitude and physical features.

J. A. A.

#### BOTANICAL NOTES

##### THE GARDEN IN EDUCATION

DORA WILLIAMS has done a good thing in writing a little book on "Gardens and their Meaning" (Ginn), and doing it in such an at-

tractive way that its reading is certain to accomplish what the author desired, namely, "to show the importance of science in the use of spade and hoe, and to urge that a garden for education may be, not merely in substance, but in spirit, a corner of the great world." A serial citation of the headings of the thirteen chapters will develop the topic, while at the same time giving the substance of the author's message. Thus we find headings as follows: What Makes a School Worth While? Little Studies in Cooperation; Situation and Soil; Plotting and Planning; A Word for Good Tools; Planting; The Art of Making Things Grow; Just How; Garden Foes and Garden Friends; Side Shows; New Life in Old Subjects; The Young Farmer's Almanac; The New Agriculture. The reader who knows something of the place of the garden in education can easily fill in most of these chapter headings, but few can do it in such enthusiastic words and such a genuine spirit of helpfulness and hopefulness. Her closing sentence may well be quoted as giving the purpose of the book:

Gardening, then, worked out at school after some such plan as has been sketched in these pages, will be a powerful lever to raise agriculture—rightly viewed the most rewarding of occupations—from the humble plane, where it has long remained, to the heights which it is destined to command.

The book is evidently designed for adults and the older only of the school children. It should be widely read and discussed in the "reading circles," especially those composed of earnest teachers, where it should do much good. One is tempted to suggest that the author should now write a complementary book for the children, a difficult task, but one for which she appears to be well fitted.

##### AN ISLAND FLORA

ABOUT seven years ago the California Academy of Sciences sent a scientific expedition to the Galapagos Islands (500 to 600 miles west of Ecuador), one of the incidents of which was an eleven days' visit to Cocos Island about midway between Costa Rica and the archipel-