

Birds" in volumes of simultaneous issue with his volumes of birds. This egg-book of Mr. Hume's is one of the best oological works ever published, and has long been out of print. A good deal of the additional matter which Mr. Hume had accumulated for a second edition, was stolen by a dishonest servant, and sold for waste paper in the Simla Bazaar, but enough has remained to enable Mr. Oates to put before us a very interesting record of the breeding habits of Indian birds; and if any tribute be wanted to Mr. Hume's energy and ability, the reader has but to refer to the present work, to study the oological records of the best circle of field-ornithologists which ever rallied round the central figure of any zoologist. The portraits of naturalists who have contributed to the development of our knowledge of Indian birds lend an additional interest to Mr. Oates's volume on the "Nests and Eggs of Indian Birds."

R. BOWDLER SHARPE.

EPHEDRA.

Die Arten der Gattung Ephedra. Von Dr. Otto Stapf. Pp. 112, 1 Map and 5 Plates. (Vienna: R. Tempsky, 1889.)

EPHEDRA is one of the three genera of the small Gymnospermous order Gnetaceæ, the two others being Gnetum and Welwitschia, that most curious of all gymnospermous plants. Ephedra is a type of remarkable habit, specially modified, though in a different way from Welwitschia, to inhabit the dry and sandy regions of the world. It has shrubby stems, with copious slender, whip-like, straight or turning branches, foliar organs and flower-wrapper reduced to a minimum, unisexual mostly dioicous flowers in small catkins with dry imbricated scales, the female catkins containing one or two flowers only, and the males several, with from two to eight stamens with the filaments usually joined in a column. The species are numerous and difficult of determination, partly because the leaves are nearly suppressed, partly because the stems of all the species are very similar, and that it is needful to have both staminate and pistillate flowers to study before any given plant can be determined confidently.

The map shows clearly at a glance the geographical range of the genus. It surrounds the basin of the Mediterranean, climbs the lower levels of the Central European Alps, attains its highest development in Central Asia, reaching southward to the north of India and all through Arabia, northward to Lake Baikal and the Ural Mountains, and eastward to the western provinces of China; and reappears in the New World—in North America in California and Mexico, and in South America in the Andes and over a wide area south of the tropic from Chili across to Buenos Ayres. Though spread so widely over extra-tropical South America, it does not reach either the Cape or Australia, where the climate and soil seem so suitable for it. None of the single species have a very wide range, but it is one of the instances where a well-marked, sharply isolated generic type is represented in many different geographical areas by distinct specific types.

The present monograph is one of the best and most complete works of the kind that have lately appeared.

It is extracted from the second part of the sixteenth volume of the *Denkschriften der Mathematisch-Naturwissenschaftlichen* class of the Kaiserlichen Akademie der Wissenschaften in Vienna. Dr. Stapf is one of the officials of the Botanic Garden of the University of Vienna, and has had the advantage of full command of material, both in the way of specimens and books. Two of the plates and a large proportion of the letterpress are devoted to the anatomy and morphology of the vegetative and reproductive organs of Ephedra. In the structure of the woody bundles Gnetaceæ establish some links of transition between Coniferæ and the typical Dicotyledons. Ephedra approximates in some points towards Casuarina. In the veining of its well-developed leaves Gnetum recedes from the ordinary Gymnospermous type. In Ephedra there is an unmistakable perianth to the male flower, but the homology of the outer wrapper of the seed is not so clear. Then follows the systematic portion of the monograph. Dr. Stapf admits twenty-eight certain and three imperfectly-known species, and for each of these he gives a diagnosis, a figure showing its essential characters, an extended description, and a full account of its synonymy and geographical distribution. He makes three sections, *Alatæ*, *Asarea*, and *Pseudo-baccatæ*, dependent mainly upon whether the seed is fleshy in a mature state, or dry and furnished with a wing. Then follows a list of local names, and a very full list of the books in which the genus is noticed, extending from Gerarde and Ray down to the present time. The monograph is one that deserves to be studied carefully, both by structural and systematic botanists.

J. G. B.

OUR BOOK SHELF.

Geological Mechanism; or, An Epitome of the History of the Earth. By J. Spottiswoode Wilson, C.E. (London and Manchester: John Heywood, 1890.)

THE nature of this little work of 135 pages will be best indicated by a brief statement of its contents. The book is divided into three portions of not very unequal length.

The first of these is "autobiographical," and relates, with much circumstance, the author's adventures at the Geological Society and Club, where, on the invitation of the late Sir Roderick Murchison, he read a paper in the year 1854. This is followed by an account (his own) of the causes which led to a disagreement between himself and the leaders of an exploring expedition of which he had been appointed a member. This part of the book is relieved from the charge of being prosaic, however, by the introduction of some very remarkable, and undoubtedly original verses.

Having devoted more than forty pages to himself, the author has left for the earth little more than fifty pages more; and in this space he contrives to dispose of a great number of highly important problems, beginning with "intelligence supreme; the nebular theory of Laplace; hypothesis of incandescence; theory of the crystalline rocks; hypothesis of metamorphism," &c.; and finishing up with "the lunar, magnetic, and solar tides; the progressive desiccation of the atmosphere and earth; the change of time; and the theory of creation."

Comprehensive as is this portion of the book, however, the author still finds much to put into his third part, or appendix—such as, "tails or atmospheres of planets and comets; the magnetic pole and change of climate; the magnetic tide of the atmosphere, &c." As in the first part he rose into poetry, here, in the appendix, he