

tions of others obtained in this region, first traversed by Pallas in 1772-3. There is a general account of the characteristics and the physical features of the country, a tabular list of species with their distribution in the several regions indicated, and finally a fully annotated list of 303 species with a bibliography and six half-tone plates illustrating the variation in plumage in *Hierofalco cherrug progressus*.

The publication forms a valuable contribution to the ornithology of a little known region.—W. S.

Wetmore's 'Ornithology' in Encyclopaedia Britannica.¹—In this day of abundant bird books the average student of ornithology does not ordinarily think of going to an encyclopaedia for a brief but at the same time comprehensive survey of the science. Doctor Wetmore's account in this recently issued work, however, so well summarizes the entire subject, and in such a readable manner, that we know of no other single digest that furnishes a comparable insight to the study of birds. In fact, the information compressed into this article may well be considered the meat of the information contained in an extensive ornithological library.

The introductory section is historical, beginning with the records left by Aurignacian man in France and Spain during the last Glacial Epoch of the Ice Age. From these early paintings and carvings man's notice of birds is traced through Egyptian, Hebrew, and Greek writings to the modern contributions that date from the middle of the 19th Century. "Ornithological Societies," "Bird Protection," "Economic Studies," and "Aviculture" are treated in this section.

"Types of Living Birds" are considered at some length, followed by a section on "Geographic Distribution." "The Avian Life-Cycle" is then taken up and traced through the courtship, nest-building, egg laying, and incubation periods. Here is given information on territory, mating performances, types of nest architecture, eggs, incubation periods, the temperature required, and parasitism.

Under "Post-Breeding Life" the discussion is devoted mainly to the change in feather covering by molt and the development of colors and pattern by wear.

"Migration" is treated at length, under the sub-headings "Superstitious Beliefs," "Theories of Origin," "Methods of Migration," and "Bird Banding," illustrative examples being used to bring out the salient features of each. Under "Songs and Calls," the entire range of bird notes is considered, from the practically silent vultures and pelicans to the finished music of the Mockingbird and the Nightingale. Reference is also made to mimicry and to the faculty for imitation of the human voice that is possessed by certain Parrots, Crows, Jays, Magpies, Starlings, and Mynahs. In the discussion of voice and also of the mechanics of flight, Doctor Wetmore

¹ Encyclopaedia Britannica: A New Survey of Universal Knowledge, Vol. 16, pp. 917-933. The Encyclopaedia Britannica Co., Ltd., London, Encyclopaedia Britannica, Inc., New York. Fourteenth Edition, 1929.

brings to bear his extensive knowledge of avian anatomy. In referring to the "Speed of Flight" he cites data that disprove the tremendous velocities sometimes credited to birds.

Under the heading "Food," the discussion extends from the herbivorous habits of such birds as the Ostrich and the Goose, through those that feed upon insects, seeds, and living prey to the scavenging habits of the Vultures, which are remarkable in that these birds "eat with impunity where death from poison from bacillary action would be the fate of another creature." Reference is made in this section to the storing habits of some birds, as certain of the Woodpeckers; to the remarkable pellet forming action of the stomachs of the Hawks, Owls, Albatrosses, Flycatchers, and Hummingbirds; and to the maintenance by human friends of nesting boxes and lunch counters, a practice that has had a rapid rise in popularity during recent years.

Two full pages are devoted to the presentation of a modern "Systematic Classification," in which the birds of the World are treated down to family. As an introduction to this section there are several interesting paragraphs on "Origin and Evolution," the progress of the avian group being traced from the earliest reptile-like *Archaeopteryx* and *Archaeornis*. Here Doctor Wetmore's extensive researches in the field of ornithological palaeontology are of inestimable value and are interpreted in a thoroughly readable and enlightening account. The article ends with a well-selected bibliography of the different phases of the subject.

The whole account is such an excellent survey of the great ornithological field that one could wish that separates might be made available for distribution to the constantly growing number of bird students, many of whom, more or less bewildered by the extensive literature of ornithology, would unquestionably welcome this digest of the subject. It is most fortunate, however, that Doctor Wetmore's article is available to anyone in position to consult the encyclopaedia. In this connection, it is interesting to recall that the ninth edition of the Encyclopaedia Britannica (1885) contained Alfred Newton's article under the same title. This essay, which was considered the most masterful treatment of the subject that had then appeared, formed the basis for the 'Dictionary of Birds.'—F. C. L.

Economic Ornithology in Recent Entomological Publications.—

Recent reports on bird enemies of insect pests that are of interest to ornithologists refer to the following:

Mormon cricket (*Anabrus simplex*).—This is the cricket that threatened the very existence of Utah settlers in early days, but which was checked in the midst of a most destructive invasion by flocks of Gulls. It was in commemoration of this event that the monument to Gulls was erected within the Mormon Temple Grounds in Salt Lake City. An account of these matters is given in a bulletin¹ on the cricket by Frank T. Cowan, who notes

¹ Tech. Bul. 161, U. S. Dept. Agr., 28 pp., 24 figs., Dec. 1929.