

the nature or the manner of its inheritance. Not one cause but a complex series of causes may have operated."

Wetmore says: "It appears that the beginning of the present instinct for migration and the habit of its continuance are so ancient that they are wholly obscure and may be interpreted only in terms of present conditions. The underlying cause is certainly complex and is due to multiple factors. We have in the past fifty years cleared away many uncertainties regarding it but must look to the future to explain definitely the basic reasons for the instinct of migration and the method of orientation followed in pursuing flight over courses which to young individuals at least are unknown."

Therefore we, it seems, may continue to enjoy "the love of mystery" to which Dr. Allen referred and wonder whether the curtain which shrouds the ancient origin of migration and the development of animal instinct will ever be drawn aside.

Dr. Wetmore's little volume is virtually the printing of a course of lectures delivered before the Lowell Institute of Boston in the autumn of 1925. Intended for a popular audience it is prepared in a style that is extremely interesting and readable while it, at the same time, presents all of the technical aspects of the subject. It is moreover essentially an American product as almost all of the persons whose observations are quoted are Americans and many of the observations have been made in the United States. By far the greater number of incidents quoted in illustration are from the author's experience and as he has travelled widely in carrying on his ornithological studies—to Alaska, Hawaii, Argentina, the West Indies and remote sections of the United States, he has had exceptional opportunities for observation. The pages therefore teem with original matter, which is refreshing after the somewhat hackneyed examples that we are wont to find quoted in the literature of bird migration.

His six chapters treat of (I) history and theories, (II) nocturnal and diurnal migration, weather, speed and sense of direction, (III) regularity of migration (IV) altitudinal migration, distance travelled and mortality, (V) lines of migratory flight, (VI) migration in special groups of birds.

The book at every page is so full of meat that it is difficult to pick out special topics for comment and it should be read in its entirety. It is by all odds the best and most thorough treatise on migration that has been published in America and the most readable and entertaining account with which we are acquainted.—W.S.

Taverner's 'Birds of Western Canada.'¹—One of the pleasant surprises of the recent Ottawa meeting of the A. O. U. was the presentation

¹ *Birds of Western Canada.* By P. A. Taverner. Canada. Department of Mines, Victoria Memorial Museum. Museum Bulletin No. 41. Biological Series, No. 10, September 15, 1926. Ottawa. F. A. Acland, Printer to the King's Most Excellent Majesty. 1926. pp. 1-380, pls. I-LXXXIV, figs. 1-315. Price 75 cents paper cover, \$1.00 cloth.

to each attending member of a copy of Mr. Taverner's 'Birds of Western Canada,' fresh from the press, with the compliments of the Minister of Mines. The volume is not only a valued memento of the meeting but an important contribution to the ornithology of North America. In plan it follows very closely the author's 'Birds of Eastern Canada,' reviewed in 'The Auk' for 1920, p. 147 and 1922, p. 582; a large part of the introduction, the key and some of the descriptions being very properly reprinted, almost verbatim, from that work. Notable improvements are the introduction of many line cuts of heads, feet wings etc., with some very useful silhouettes of Hawks and other birds of the air as they appear from below, following the plan of Seton's paper in 'The Auk' for 1897, p. 395.

The color plates, which are scattered through the text instead of being massed at the end of the volume, are from paintings by Allan Brooks and F. C. Hennesy, arranged as before two to a page. Those by Hennesy are from the east Canada work while those by Brooks are new with the present publication and represent, usually, exclusively western species. Altogether 167 species are figured.

Mr. Taverner is to be congratulated upon doing for west Canada what he had already done for the eastern provinces and doing it still better. The work will enable western students to familiarize themselves with the bird life of their region and will result in the development of many an ornithologist for the future. Furthermore it provides ornithologists in general with an admirable work of reference on western birds while it contains much general information of importance from the pen of the author. Under the birds of prey, for instance, we find this pertinent contribution to the Hawk problem: "Raptorial birds, like human beings, tend to subsist on that which is first to hand, and a generalization based on one set of conditions will not always hold good for others. It is also a natural psychological fact that we ourselves feel a definitely known, concrete loss, more keenly than we do a much greater one that we have more or less unwittingly escaped. The loss of a single partly grown chicken to Hawks is more keenly realized than the absence of some hundreds of gophers that never intruded themselves upon our consciousness. The one fact is taken as a calamity, the other as a matter of course. It is such warping of judgment that we must particularly guard against in estimating the real value of our Birds of Prey." An excellent and timely warning when every private game preserve in the South is paying well for the slaughter of every Hawk that appears on the premises because they kill a few Quail which the proprietors wish to kill themselves, and incidentally by taking away nature's check they are opening the way to a pest of rodents in the future! There are many other similar discussions. Under the Cowbird the author argues that every Cowbird raised to maturity means the destruction of a nestful of other birds and even though the economic value of the two species be the same "the substitution cannot be looked upon with equanimity." It occurs to us that the widespread hostility to the Cowbird is a curious example of psychology

too. Figures show that on the average not more than one young bird in a nestful reaches maturity and a single Cowbird is of probably greater economic value than a single Warbler owing to its greater size. Therefore more than ever is the hostility against the Cowbird a matter of sentiment and not of economy.

Mr. Taverner, as in his previous works, strives to suppress the subspecies as much as possible and we find in the brief mention of the subspecies which is appended to the account of the species, again and again such statements as: "the distinction between the two forms is too fine for general recognition" or "the differences are so slight as to be of little popular interest." We quite agree with the advisability of suppressing the subspecies in such a work as Mr. Taverner has written, in the majority of cases, because as he says they are too finely drawn to concern the general public. But we must not lose sight of the fact that subspecies are not based upon degree of difference but upon the criterion of intergradation and that there are many subspecies quite as distinct as many species. Indeed some of the subspecies of Song Sparrows are far more easily distinguished than are the small Flycatchers to which full recognition is accorded. If it is a question of which forms can be recognized by the general student and which cannot, we are going on the degree of difference schedule which has nothing to do with subspecies, and it would be far better to accord the most distinct forms of Song Sparrow, Horned Lark, Fox Sparrow, etc., their place in the list regardless of whether they write their names in two words or three. As a matter of fact that is exactly what is done in another popular book, Walters' 'Wild Birds in City Parks.' The general reader cares not a rap whether two forms intergrade or not but he wants all the birds that he can distinguish placed on his list.

This commentary is not intended as a criticism in any way of Mr. Taverner's excellent book but merely a suggestion of a "way out" of a difficult problem which confronts many authors who in their attempts at a solution appear to us to be confusing two very different propositions.—
W. S.

Audubon's Delineations of American Scenery and Character.¹—

How many of our older ornithologists who were fortunate enough to have had access, in their youth, to a copy of 'Audubon' have pored by the hour over the "episodes" which the author inserted after every fifth bird biography of his first three volumes. In them he described many of his personal experiences as well as places that he had visited in his varied travels through the wildernesses of America.

Just where the term "episode" is applied to these sketches we are not

¹ *Delineations of American Scenery and Character.* By John James Audubon. With an introduction by Francis Hobart Herrick, Ph.D., Sc.D., Professor of Biology in Western Reserve University, Author of 'Audubon, the Naturalist: A History of His Life and Time.' G. A. Baker & Company. New York, 1926. pp. i-xlix, 1-349. Price, \$4.50.