REVIEW

Travels and Traditions of Waterfowl by H. Albert Hochbaum (pp. x, 301. Oxford University Press. 40s.).

SOME research workers pour out a continuous flow of papers throughout their working life. Others publish but seldom and when they do their productions are often the more lastingly valuable, distilled as they are from long years of accumulating data, of careful interpretation and reflection.

In 1944 Al Hochbaum published a book, *The Canvasback on a Prairie Marsh*, which was quickly recognised as an outstanding text, received the American Ornithologists' Union's Brewster Medal and has served as an important reference point for subsequent work on wildfowl biology. Now, in 1956, with this second book, Hochbaum has again performed a signal service to ornithology which will surely receive even wider recognition.

This is a finely produced book with elegant format, clear printing and delightful sketches from the author's own pen. The style is lucid, the arguments clearly and unhurriedly presented. One only regrets the breaks in the smooth flow of the narrative by long direct quotations, of generally inferior prose, taken from other authorities.

One of Hochbaum's main contentions is that migration must be considered as part of a bird's normal behaviour, not as something discrete and esoteric. He therefore first examines these usually neglected, everyday movements round the home area, and the means whereby the bird maintains itself in relation to the environment. We are treated to masterly expositions of complicated concepts. Sensory physiology and aerodynamics are explained in clear terms and by illuminating analogies to human experiences. Apart from this marshalling of published data there is the first account of experiments carried out at Delta on the flight of birds temporarily blind-folded with paper hoods. Although deprived of all visual clues such birds had apparently normal, stable flight. However, they usually flew in circles or loops and so inevitably drifted downwind. They showed no awareness of wind direction, except in momentary gusts, and would attempt to land from any direction. These observations have great relevance to the problem of bird migration in the absence of terrestial or celestial reference points, to 'drift' migration.

From this first part of the book emerges a clear picture of wildfowl as creatures of habit, adhering to regular aerial tracks though having the freedom of the air; of their ability to learn quickly and of their iron memory; of the pre-eminence of their eyes among their sense organs, superbly adapted to the detection of detail and movement; of their flying stability based on the semi-circular canals of the ear; of their keen awareness of time, based on both solar and metabolic clues.

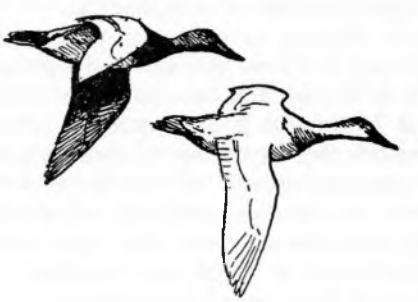
The second part of the book is devoted to a consideration of migration itself. Again, with his regard for basic facts, Hochbaum begins with the description of migration in progress—the 'visible migration' which has received so much attention in Europe during recent years (though not in the case of wildfowl). He presents clear evidence of migration in 'standard directions,' modified to some extent by topography. At the same time he stresses the apparently random 'explosion' of young birds of the year and suggests that this is converted into a southward movement by their joining up with older, experienced birds. Emphasis is laid on the tendency for wildfowl to travel in mass or at least in groups. It is inferred that there is no need to postulate innate directional tendencies such as have been demonstrated in passerine migrants.

Much space is given to discussing the means by which birds guide themselves on migration. There is a thoughtful chapter on the relativity of the distance of travel to the height and velocity of movement. It is pointed out that orientation by visual landmarks actually becomes simpler the higher and faster a bird (or man) flies for we have to deal then with general patterns and a few landmarks rather than a mass of detail. Some forms of navigation, such as those based on geo-physical or astronomical co-ordinates could only become established when swift, long-distance movements were carried out. An able exposition is given of the modern experiments and hypotheses and the conclusion is reached that some form of sun-navigation is the most likely answer. Certainly observations on wildfowl support the idea of a dependence on the sun, many examples are given of migrants refusing to start out with overcast skies. But once initiated a movement may continue through bad weather and Hochbaum is at pains to stress that the birds may well have more than one method of orientation. Recognition of visual landmarks is an important subsidiary. A strong correlation is shown between the occurrence of mass migrations at Delta and the establishment of favouring air-streams over the North American continent. Such conditions might serve to orientate randomly-wandering young birds as well as assisting old birds who knew where they were going. For the first time some interesting experiments at Delta are described. Migrating duck were subjected to the effects of 3 cm. radar transmissions. Twelve out of 14 flocks reacted as if a shotgun had been fired at them. Ducks flying locally or on the ground were apparently not affected, nor were gulls, swallows and passerines whether these were migrating or not. The experiments are considered to be inconclusive but no more suggestive of navigation with reference to the earth's magnetic field, than reaction to loud noises is evidence of navigation by sound waves.

The last part of the book is devoted to a consideration of the part that biological traditions play in the lives of wildfowl. By learning alone each new generation receives its knowledge of the location of home and winter ranges and of the routes between. These chapters are perhaps the most stimulating in the whole book, presenting a thesis which has received little attention before, and backing the conclusions with a mass of detailed examples. The way in which new traditions may be built up as the result of natural changes or by the intervention of Man are considered. Contrariwise the ease with which traditions may be broken by drainage or by over-shooting is emphasised, together with the difficulty of re-establishing a migratory population in an area from which it has gone. Traditions also have an important effect on evolutionary developments by causing smaller breeding groups to be set up than would be likely on purely geographical considerations.

This excellent book is completed by a full bibliography of more than 500 references, and by a good index. Thus to the end it continues to give us a really factual presentation of the subject. The wonder is that this has been done in such a very readable way. Some people who hurry through life may declare with irritation that the book could have been condensed. And without a doubt it could, but at what a loss. We would have had another dry authoritative text, thumbed by a few scholars, instead of a work that will not only be useful to the minority but will stimulate a wide range of readers to discover more about these fascinating problems for themselves. The descriptive passages are never purple, but clean-spoken and evocative. As but one example of the excellence of Hochbaum's style I will end with a quotation from a passage describing the bathing of ducks. 'Sometimes a mad excitement overtakes the crowd. One bird races across the surface as if the devil himself were on its tail. Then in full stride it dives. The instant it comes up it goes down again; up it comes, down it goes. All the birds in the flock may be consumed in this devil-chase, helter-skelter, this way and that, over the water and down under. After a few minutes the divings end. The flock regains composure and settles quietly to the job of preening.' The rhythm and pace of the words fit their meaning so well that the scene comes to life before us. And yet this is a book written by a scientist! Would that such excellence could become commonplace.

G. V. T. M.



A FLYING VISIT TO DELTA WATERFOWL RESEARCH STATION

By G. V. T. Matthews

In April 1955 I attended an informal conference on bird orientation held at Duke University, North Carolina, the necessary funds being provided by that university and the U.S. Office of Naval Research. As I was shortly to join the staff of the Wildfowl Trust it seemed a good thing, while in North America, to visit Delta Waterfowl Research Station in Manitoba. The Institute of Wildlife Management, Washington, most generously produced the additional funds needed to allow this deviation from track.

For one reason and another time was short and it was very much a flying visit. My impressions were mainly of people and places, so those who are interested only in birds need read no further. My Fisher Index (new species seen) was quite absurdly low.

To arrive at Idlewild airfield is a most disappointing introduction to New York—17 miles distant and giving no indication of its famed panorama. The entry road passes an alternation of cemeteries and used car dumps. Both must