

been a puzzle both to students of migration and of sequence of plumages (cf. review of Abel Chapman's 'The Borders and Beyond,' Auk 1925, p. 151).

Endless theory has been indulged in to account for the presence of these birds and their erratic plumage but Mr. Van Oordt has gone further and given us some definite facts which go far to clear up the matter.

A series of summering specimens of Knot and Turnstone from the mudflats and sandbanks of northern Holland, where many Limicolae remain all summer but do not breed, was collected and their genital organs studied. As the males largely predominated they alone were considered and it was found that in the majority of specimens spermatogenesis had not taken place and that the plumage of such birds was practically identical with that of winter, while in specimens which showed more or less of the nuptial plumage there had been a partial development of spermatocytes. The author's inference seems obvious that "the full summer plumage cannot develop unless spermatogenesis has started." He states that his attention had been called to the fact that "the development of the plumage of the birds investigated took place earlier than the time at which they were collected and it might have grown under the influence of gonads having a different histological structure." It seems to us that the point is that all individuals assumed the winter plumage at the end of the previous summer and those individuals in which spermatogenesis failed to take place did not molt, while those in which it was arrested after starting developed only a part of the prenuptial molt. In the same way it would seem obvious that the impulse for the northward migration also failed to develop and left these sexually inactive birds scattered along the way, as has been suggested and demonstrated by other authors. Why they should start to migrate at all is rather curious although this might be due to the flocking instinct which keeps them together through the winter or to a slight development of the migratory urge. Mr. Van Oordt has made a valuable contribution to a most interesting problem.—W. S.

Recent Papers on Quail Preservation.¹—The Conservation Department of Maryland has issued an excellent pamphlet by E. Lee LeCompte on Winter Feeding and Propagation of the Bob White with reports on the success of winter feeding in various other states. The section devoted to propagation with photographs of the ranks of incubation boxes in which the eggs laid by the Bob Whites are set under Bantam hens, and the laying and brooding pens, explain this recent activity in keeping up the supply of game birds in an interesting way.

Dr. Joseph Grinnell has an important contribution to the problem of

¹ Winter Feeding of Bob-White Quail. Propagation of Bob-White Quail. Song and Insectivorous Birds. By E. Lee LeCompte State Game Warden of Maryland. pp. 1-14, 1-13, 1-8. 1928. A Critical Factor in the Existence of South-western Game Birds. By Joseph Grinnell. Science, May 27, 1927, pp. 528-529.

preserving the California Quail which is disappearing in spite of all efforts made in its behalf.

After showing that conditions of food and shelter have not changed and that natural enemies such as predacious Hawks, foxes, etc., have decreased equally as fast as the Quail, if not more so, he seeks for some other cause and we think has found it in the increasing lack of available water. Young Quail in the downy stage must have water within walking distance which Dr. Grinnell estimates as within 400 yards, and when every possible source of water is being piped to irrigate thirsty ranches and even seepage is being caught by underground pipes scarcely a drop is left available for the little birds which probably die at an early age. As Dr. Grinnell says "water supply available in the dry season is a factor delimiting not only human but certain other vertebrate populations in the arid southwest" and if the humans are going to take it all the Quail and probably other species would seem to be doomed.—W. S.

An Outline of Bird Study.¹—The General Biological Supply House of Chicago is issuing a series of scientific pamphlets "each of which is prepared by a scientist whose training lies in the special field presented." One of these recently issued is entitled 'An Outline of Bird Study,' and is by C. Blair Coursen. It consists of brief accounts of the principal activities of the bird student with a series of questions or "study suggestions" following each, and in an appendix a list of books, periodicals, ornithological associations and bird study material with addresses where information may be obtained.

The chapter headings are: The Value of Bird Study—covering economic ornithology; How to Study Birds—field study, recording data etc; Birds in Nature—distribution, migration and nesting; Birds in the Class Room—classification, structure and molts; Activities for the Individual Bird Student—bird houses, feeding and photography; Activities for the Bird Class—winter feeding, sanctuaries and bird banding.

The pamphlet seems to be an admirable introduction to the study of birds and should be especially useful to beginners who have no one at hand to help them.—W. S.

Recent Papers by Dr. Chapin.²—Dr. Chapin has presented a popular account of his late expedition to Uganda, central Africa, in 'Natural History' which is exceedingly interesting reading.

Of a more technical character is his review³ of the African Cookoos of the genus *Cercococcyx*, in which is described a new species from Ruenzori

¹ An Outline of Bird Study. By C. Blair Coursen, 1928. General Biological Supply House, Chicago, Ill., pp. 1-47, numerous illustrations. Price \$1.00, \$10.00 per dozen.

² Ruenzori from the West. By James P. Chapin. Natural History, XXVII, No. 6, pp. 615-627.

³ The African Cuckoos of the Genus *Cercococcyx*. By James P. Chapin. Amer. Mus. Novitates No. 313. May 16, 1928, pp. 1-11.