THE ORIOLE

A Quarterly Journal of Georgia Ornithology; Official Organ of the
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THE ORIOLE

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Katherine Weaver, Box 452, Milledgeville, Georgia

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THE USES OF TRINOMIALS IN ORNITHOLOGICAL WRITINGS

BY DAVID W. JOHNSTON

About twenty years ago I submitted a short note to the editor of *The Oriole* describing a sight observation of a bird in the Atlanta region. In the note I had supplied the subspecific name of the eastern form (religiously copied from my "Peterson") which, to my way of thinking, was the only possible choice for the area and, by including all three names, was provided an extra measure of scientific accuracy. To my astonishment the editor deleted the subspecific name, maintaining that in the absence of a study specimen critically compared with others in a museum, the observation could not validly be recorded as being that of any definite subspecies. More recently, it has been shown that the western subspecies of this bird also occurs and has been collected in the state. So, in those earlier years of inexperience I was spared the embarrasment of committing a scientific *faux pas* by an editor far wiser than I. But the point really is the fact that I shared with others the common belief that use of the trinomial was the most precise and correct way of listing the record.

Since that time I've learned more about subspecific names or trinomials, and it is evident that a basic understanding of them would save both authors and editors some unnecessary headaches. Some people, for example, believe that this third name when applied to a bird in the field is more accurate (or pedantic!), but such is rarely the case, for in most instances a subspecies cannot be correctly identified as such in the field. Of course, one can rather confidently say that all our mallards are *Anas platyrhynchos platyrhynchos,* simply because the closest geographical subspecies, *A.p. conboschas,* inhabits Greenland. But what would this statement *really* mean when applied to a sight identification? Actually, nothing.

Still others will argue that these trinomials or subspecific names are useless or, at best, have questionable value if one has to kill every bird,

stuff it, then send it off to a specialist in a museum for his own identification. I don't propose that any bird should ever be taken by a collector needlessly, but this is one of the places where scientific collecting is a real asset. Tom Burleigh, that intrepid collector and nonpareil of the skinning table, has always insisted upon "bringing in the feathers;" in other words, if a record is to be substantiated, let's have the specimen for study and comparison. Only by being adamant in this philosophy was he able to compile records of the many subspecies of birds occuring in Georgia.

Much of the misunderstanding in this area lies in a failure to grasp firmly the biological meaning of the species and subspecies. Although biologists disagree somewhat about the definitions of these terms and their roles in nature, there is fair agreement among ornithologists as to their application among birds. A species is a population or group of similar birds which has its own distinctive characteristics, occupies a certain geographical area, and will not normally interbreed with other such populations. Thus a robin is a species and a bluebird is a species because each has its own shape, size, coloration, etc., and because they will not breed with each other or with any other population (species). A subspecies is a part of a species. It is that portion of the species population which differs (perhaps in a minute fashion) in color or size from other portions of the species population. Potentially or really, contiguous subspecies of the same species freely interbreed. Whereas differences between species are frequently gross (as in size, shape, and/or color differences), those between subspecies are often minor and more difficult to assess—fine shades of color or minute mensural features. For example, one subspecies of robin might differ from a neighboring one by being slightly larger or slightly darker, these differences being detectable only when substantial numbers of specimens can be compared critically.

These definitions obviously pose many questions, some of which are purely academic. Just how large is a subspecific population and how much area does it occupy? The answer depends ultimately upon the characteristics which some authority has assigned to the subspecies; it might occupy a few square miles or hundreds of square miles. For example, a subspecies of yellowthroat (*Geothlypis trichas sinuosa*—name supplied by A.O.U. Check-list) is restricted to San Francisco Bay. On the other hand a form of the pine warbler (*Dendrocia pinus pinus*) occupies practically all of eastern North America. In both of these examples, at the border of their ranges these subspecies interbreed with neighboring subspecies of yellowthroats and pine warblers, respectively. Along this border

(technically called the zone of intergradation) the characteristics of one subspecies gradually blend with those of the next subspecies. That is to say, there usually are not sharp geographical boundaries between subspecies.

There are known instances where subspecies are spatially separated by hundreds of miles, e.g., the Florida and California subspecies of the scrub jay. In these cases, the morphological differences are believed to be those of subspecific magnitude, and it is assumed, though not proved, that these two groups could interbreed if brought into contact. As far as I know there are no instances of two recognizable subspecies of birds occupying the same geographical area and ecological niche.

What portion of a given subspecies can be accurately identified by the competent museum worker? Certainly not all, especially because of the zone of intergradation, for specimens taken from this zone or even at its edge would likely show features somewhat intermediate between those previously assigned to each subspecies. Futhermore, some subspecies characteristics are more apparent than others, making for easier identification and less chance of equivocation. Fine color differences might be striking when series of specimens are arranged into groups, but in other cases the investigator might have to make some very precise measurements. Even so, there are usually some specimens which cannot be allocated correctly to any subspecific population, so the cautious investigator cannot and will not always place a subspecies name on the specimen label.

Who decides the differences to be used in delimiting a subspecies? This decision is made by an experienced investigator who has studied thoroughly representatives of the entire species, making critical comparisons of color and measurements. If, in his judgment, one portion of the species population differs significantly from another portion, then each will be described as a separate subspecies, identifiable on the basis of the proposed characteristic differences. Unless the differences can be used to separate a large proportion of specimens, other ornithologists might not consider the subspecies as being valid.

Let us now attempt to assess the value of a subspecies concept. In the days of descriptive American ornithology in the 19th and early 20th centuries, there was a rush to describe as many subspecies as possible by examining only the stuffed bird in the museum tray. In recent years, ornithologists with broader biological backgrounds have sought the value of the subspecies concept in the field rather than in the museum. The

subspecies has been found to represent a portion of the species population which *may* become isolated from another portion which, with the lapse of time, may occasion the prevention of interbreeding. In other words the subspecies *may* be an incipient species. If this were the case, then a correct evaluation of the subspecies today, would lead to a better understanding of the new species tomorrow and the means by which the latter came into being.

To illustrate a striking misuse of the trinomial even in contemporary literature, let me call your attention to a reference in the new, "revised" editions of *Birds of North Carolina* wherein the Florida Crane, *Grus canadensis pratensis,* is reported from the state. In the first place, the specimens (represented only by heads) were not positively identified in a major museum by critical comparison with other specimens. In the second place, and this is more important, Walkinshaw and others have demonstrated that the Florida subspecies is non-migratory, whereas the eastern form, *G. c. tabida* regularly migrates to and from the southeastern states. In this case the failure to comprehend the migratory habits of a given subspecies population led to a rather serious error in the literature.

Finally, it is likely that most readers of *The Oriole* are not particularly concerned with the use of the scientific trinomial, but have used the cumbersome common names for the subspecies. It is well, I think, that the A.O.U. Check-list committee has abandoned this use, so that now one doesn't have to worry about Wayne's Warbler, or Cairns' Warbler, San Lucas Solitary Vireo, Seattle Wren, and the like. Nowadays it is easier and more useful if the lay ornithologist simply recognizes and employs a standard common name for each species, not being concerned with the subspecies involved.

Gratitude should be expressed to Drs. Robert Norris and Loye Miller for their pertinent suggestions toward the preparation of this paper.

Department of Biology
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June 5, 1961

GENERAL NOTES

BALTIMORE ORIOLE BREEDING NEAR AUGUSTA, GA.—During the third week in June, 1960, Father J. L. Dorn, a well-known ornithologist of Mobile, Ala., visited his brother at Augusta, Ga. The home where he visited is located in a surburban area on Ga. Hwy. 56 approximately one mile south of the city. A small creek runs along the south side of the yard and vegetable garden while a railroad passes along the rear of the yard. A row of mature pecan trees extends along the north edge of the property, beyond which is a field of strawberries.

Late in the afternoon of June 25 Father Dorn observed an adult female and three young Baltimore Orioles (*Icterus galbula*) feeding on blackberries growing at the edge of the railroad right-of-way. On being disturbed the birds flew into a large sycamore tree and were not observed further. A few minutes later a male Baltimore Oriole approached the same blackberry bushes to feed, thus establishing the presence of both members of the pair. Realizing the unusualness of his observation Father Dorm made a brief but unsuccessful search for the nest.

Father Dorn telephoned me about the Orioles when I returned to Augusta three days later. On June 30, Mrs. Gary Satcher and I visited the Dorn home and searched for the birds. We were unsuccessful except for seeing one young oriole that might or might not have been a Baltimore since there were Orchard Orioles in the area also. A further visit to the Dorn home on February 5, 1961, when the trees were bare of leaves failed to reveal the location of the nest.

During May and the first week in June, 1961, there were several reports of Baltimore Orioles being seen or heard in North Augusta just across the Savannah River in Aiken County, S. C. On June 8 I investigated the area at the intersection of Georgia Ave. (U.S. Hwy. 25) and Buena Vista Dr., where a bird had been seen two days before. I soon located a male Baltimore Oriole in a black walnut tree overhanging an alley behind the Esso Service Station. The bird which was not singing at the time attracted my attention by uttering a low gutteral call-note which I had never heard before. Soon after I located him he flew over an adjoining house to a row of large hackberry trees in the narrow park along the highway. Soon he returned to the same spot in the walnut tree. Suspecting a nest I began a systematic search of the tree. While I moved slowly around under the tree the male sat quietly preening on a small limb near the top. Occasionally he uttered the low gutteral note, then

flew again to the hackberry trees. No nest was located but on his third visit to the same spot in the walnut tree he was noted to feed a young bob-tailed bird just out of the nest—probably just that morning. The female, nest and other young were not discovered before the search was discontinued because of more pressing duties. However, this is sufficient evidence to conclude that at least one pair of Baltimore Orioles nested in North Augusta this spring.

Burleigh (1958 Georgia Birds) reports observations of this species during the breeding season at Lincolnton, Washington, northern Warren County and Indian Springs, Georgia. These records plus the recent ones of the bird breeding at Augusta and in south central Alabama near Livingston (Alabama Birdlife, 8:17) suggest that it might possibly be found breeding anywhere in the Piedmont Region of Georgia. Furthermore, one might wonder if the large number of winter records of this species in the southeast in recent years is a reflection of a population increase that might be resulting in an extension of its breeding range. J. Fred Denton, 1510 *Pendleton Rd., Augusta, Ga., August* 7, 1961.

HORNED LARK BREEDING AT MACON, GEORGIA.—Horned Larks were first observed at Macon Municipal Airport (Cochran Field) on April 6, 1961. The airport is located in the extreme southern portion of Bibb County, which is just south of the fall line. I obtained permission from Airport Manager Lewis Wilson to search the area to see if they were nesting there. His interest in my project prompted him to ask people having business on the field to be on the lookout for a nest. On May 13, Major L. B. Bachtell of the Middle Georgia Soaring Society found a Horned Lark's nest holding two young birds and one egg. It was in a depression in the ground next to a tuft of grass about six inches tall. On a trip to the nest site to collect it prior to mowing operations on June 24, several adult and immature birds were observed. They are still present on the field this date. M. Alma Cooke, *Butler, Georgia, July* 25, 1961.

ANOTHER BLUE JAY CAPER.—Six or seven BLUE JAYS (*Cyanocitta cristata*) were on our feeder grounds on the late afternoon of June 12, 1961. One was attentive to a certain other member of the party and fed it several times. This was nothing unusual for the time of year; the yard was full of parent birds feeding their young. It was what he next did that caused me to pause and look again.

He dropped one wing and strutted a semicircle about this individual. I looked closely now and sure enough during the second act he scraped his foot against his wing for all the world like a bantam rooster doing a wing-scrape before one of his barnyard harem. He fed her again and repeated the act a third time.

Unfortunately, in trying to get near enough to hear any accompanynig sound, I frightened them away. Having never seen, heard, or read of, this antic performed by a jay, I thought it possibly would be of interest to others. L. A. Wells, *Green Island Hills, Rt.* 1, *Columbus, Ga., June* 15, 1961.

LONG-EARED OWL FROM WHITFIELD, COUNTY, GEORGIA.—A dead Long-eared Owl (*Asio otus wilsonianus*) was found during the first week in January, 1961, by Phillip L. Lowery in a pine thicket on his farm two miles west of Rocky Face in Whitfield County. The plumage was in excellent condition and the internal parts seemed completely dessicated, for there was no odor during the nextf ourm onths from the specimen. In April, 1961 the specimen was sent to Richard A. Parks, who verified its identification.

This is the first record of this species for Whitfield County, though Thomas D. Burleigh (GEORGIA BIRDS, p. 329) states: "As it is so adept at concealing itself during the daylight hours, it is possibly commoner in Georgia during winter than the infrequent records would indicate." Mrs. R. E. Hamilton, 704 *Greenwood Drive, Dalton, Georgia, June* 14, 1961.

BREEDING DATA FOR SEVERAL SPECIES IN IRWIN COUNTY.—Field Sparrow (*Spizella pusilla*)—For several years I have suspected the breeding of the Field Sparrow in this area, having had several late May and early June records of this species last year. On May 30, 1961 approximately 1/4 mile northeast of Osierfield, Irwin County, Georgia in a planted twenty-acre slash pine orchard I noted four field sparrow fledglings being fed by two adults. The nest was not found. The male of the pair occasionally sang from the top of a pine. The pines are four years old and are approximately 6 to 8 feet in height.

The location of these young prompted me to investigate an area 1 1/2 miles southwest of Osierfield where the species was observed in June of 1960. This area is an old field now grown up in broomsedge, slash pine, and blackberry bushes. Three adults were immediately seen and sparrow chirps were heard here. I searched for over two hours for the nest

but was unable to find one so withdrew thirty or forty yards and began watching the pair through binoculars. They continued to carry insects to a particular clump of blackberry bushes and their trip's end was pinpointed at one bush where their chirping stopped and a shrill chipping or tseeping was started. In this location a single young sparrow, tailless and less than two inches long, was found. The nest was probably on the ground since after thorough search of the area and all standing bushes I could not find it.

On June 30, 1961 in the same general area an apparently new but unoccupied nest was found in a blackberry bush. A male was seen and heard singing nearby then and on towards the end of July and the first week of August. The species probably raises at least two broods here.

Bobwhite (*Colinus virginianus*)—A nest of this species containing ten eggs was located 12 feet from a tobacco barn at the base of an *Andropogan* clump on July 19, 1961. A male incubated the eggs until July 22 except for short periods away for feeding. On this date the remains of the male and one egg were found near the nest site. Possibly the female and this male were killed by a feist dog which I saw flushing the male on one occasion.

Prairie Warbler (*Dendrocia discolor*)—While I was walking in a mature long-leaf pine stand interspersed with turkey oak one mile WSW of Osierfield on June 1st a male of this species was observed and heard singing. He was accompanied by a female which I lost from view soon after seeing the pair. The male continued to sing in a circle of approximately 100 yards in diameter. I could find no evidence of a nest on this date or on two succeeding days although the male continued to sing. After the third day no evidence of the pair was found. Robert Norris observed two individuals of this species approximately 8 miles north of Fitzgerald, Ben Hill County, on June 7, 1942 but no nest was located. Indigo Bunting (*Passerina cyanea*)—While in the above area on June 1, 1961 I flushed a female of this species from a nest containing three white eggs. It was built approximately two feet from the ground on three blackberry briar limbs that had crossed each other. It was delicately constructed of fine rootlets and what appeared to be wire grass strands. Light could be seen through the sides and bottom of the nest. The male scolded from a nearby pine. This species' favorite haunts around here are edges of thick branches facing old fields or young pine plantations and this is the type of niche that I had searched in vain for breeding evidence of this bunting for the past few years.

Blue Grosbeak (*Guiraca caerulea*)—On May 30, 1961, a nest containing three young was located in the crotch of a small slash pine, being in a cluster formed by a pitch canker (*Fusarium sp.*). On May 31, 1961 another nest of this species was located approximately one mile west of Osierfield in a bush besides a railroad embankment. It contained three pale bluish green or nearly white eggs which appeared more elongated than eggs of a similar sized bird in relation to their thickness. The nest was 30 inches from the ground and was constructed on top of a mass of paper and shedded snake skins. MILTON HOPKINS, JR., *Osierfield, Georgia, August* 22, 1961.

FULVOUS TREE DUCK AND GLOSSY IBIS IN SOUTHEAST GEORGIA.—On March 26 and April 2, 1961, a Fulvous Tree Duck was observed at the Altamaha Waterfowl Management Area just south of Darien, Georgia. On both dates the bird was within 50 feet of U. S. Highway 17 and was studied for a considerable period of time at distances up to 25 feet. It did not appear to be diseased or injured as it was actively feeding and diving, and was observed in flight. Apparently this is the first record for the State of Georgia. The species is not mentioned in "Georgia Birds" (Burleigh, 1958). There have been numerous records from the Carolinas and Florida during the past three years (*Audubon Field Notes*—June, 1960, August, 1960, and February, 1961), including as many as 32 at one time at the Savannah River National Wildlife Refuge. The birds seen at the Savannah River Refuge, however, have all been on the South Carolina side.

The Glossy Ibis was seen this spring at the Altamaha Waterfowl Management Area on three occasions: 47 on March 26, 16 on April 2, and at least 60 on April 9. No inference can be made from the difference in the numbers seen on the three succeeding Sundays as to whether or not it was always the same flock since the birds move around a great deal in their feeding and are not always visible from the road or refuge levees. On all three occasions, however, at least some of the birds were close enough (as close as 50 feet) so that there could be no question as to their identity. An individual of this species was also seen (at a distance of about 75 feet) on Jekyll Island on June 11, 1961. Burleigh lists the Glossy Ibis as a rare transient along the coast, and while there have been many records over the years, all have been of individual birds. Their recent appearance in numbers is not unexpected though in view of their well publicized increase as a breeding bird along the coast north of Georgia. ALAN M. AND JEAN T. CRAIG, 2822 *Maple Road, Brunswick, Georgia, June* 17, 1961.

FROM THE FIELD

Charles M. Jones and Charles M. Jones, Jr., report an observation of "twenty-five to forty" Cattle Egrets among cattle in a pasture approximately six miles north of Albany in Lee County. Ivan Tomkins collected the 2nd Georgia specimen of the Black-necked Stilt on June 3 and mentions a Gull-billed Tern nest and many Least Tern nests located in walking distance from the Tybee Road.

Mr. and Mrs. Hugh Darden of West Point, Georgia observed the successful nestings of a Yellow-shafted Flicker and a Bluebird in a dogwood tree. The dead tree was utilized by these two species at the same time in cavities on opposite sides about five or six feet from the ground. Fr. M. Martin of the Monastery of the Holy Ghost, Conyers, Georgia reports the Whip-poor-will on May 21-22, 1959 and the Goldfinch on May 21 and 28 and June 4, 24, and 29, 1961. He states that the Prothonotary Warbler is a summer resident in that area but has been unable to locate the White-breasted Nuthatch there. L. A. Wells of Columbus sends many interesting spring records for his territory including two Mississippi Kites on April 21, twelve Scarlet Tanagers on April 28-29, Semi palmated Plovers on May 4-6, and Tree, Bank, Barn, and Cliff Swallows on April 16.

M. Alma Cooke observed the Mississippi Kite in Taylor, Peach, Houston, and Crawford counties during the summer. She noted a Peregrine Falcon at Cochran Field, Bibb County on May 17, 1961. Milton Hopkins found a Pied-billed Grebe on July 4 and three immature Black Terns on July 14 at Osierfield, Georgia.

NEWS AND COMMENTS

MINUTES OF THE FORTY-FOURTH SEMI-ANNUAL MEETING OF THE GEORGIA ORNITHOLOGICAL SOCIETY

The 44th semi-annual meeting of the G.O.S. was held at the Biological Sciences Building, Science Center, The University of Georgia, Athens, Georgia on April 28, 29, 30, 1961.

The business meeting was opened at 1:00 P.M. on Saturday. Minutes of the previous meeting as taken by Frank Fitch were approved as read. Katherine Weaver gave a treasurer's report which was approved as read. President Cypert called for a report from the Regional Vice-presidents. Those present made short reports.

Miss Nunnally gave a report on the Newsletter. She stated that she has a shortage of material for the letter. Milton Hopkins stated there has been an unavoidable delay in publishing the current Oriole. May 15 was set as the deadline for material for Oriole Chirps. President Cypert stated that the G.O.S. has joined the Georgia Sportmens' Federation.

A report was called for from the Committee on Hawks and Owls. Ben Maulsby made a report. Mrs. Oliver joined in the discussion. She and Bill Griffin agreed that impetus must be added by contacting people in authority who might assist in getting a bill through the legislature. They felt that the Georgia Sportmens' Federation might help in informing the public and gaining support for the bill.

Mrs. Cypert opened discussion on the fall meeting, to be held at Callaway Gardens. Mrs. Cater discussed prospects and mentioned that Lee Marshall, who is now with Callaway Gardens would be of great assistance in making arrangements. Mr. Marshall then discussed facilities.

The membership was informed of the death of Fred Hebard. It was agreed to publish a memoriam in the next Oriole. Ivan Tomkins read a letter concerning a manuscript on Birds of the Okefinokee, co-authored by Mr. Hebard, and proposed for publication under G.O.S. sponsorship. Fred Denton assisted in the discussion. This matter was left in the hands of a committee appointed by the president.

Mrs. Cypert appointed a nominating committee for new officers of the G.O.S. Their nominations are to be given along with elections at the fall meeting.

Mrs. Charles Hamilton reported on a study being made on blackbird roosts by the Public Health Communicable Disease Center, and others. The study is concerned with transmission of *histoplasmosis*. Dr. Denton discussed his experince with this disease.

A registration fee was called for by President Cypert and the business meeting adjourned at 2:15 P.M. Dr. Odum introduced Dr. McGee, head of the Zoology Department, who officially greeted the gathering. Dr. Odum then introduced Dr. Charles Hartshorne, professor at Emory University, who gave the first of a series of highly interesting and informative technical papers. One of the highlights of the afternoon session was a display of live South American hawks and eagles by Mr. Fowler of Albany, Georgia. Frank W. Fitch, Jr., Secretary.

ANNOUNCEMENT OF THE FALL MEETING OF THE GEORGIA ORNITHOLOGICAL SOCIETY

The fall 1961 meeting of the G.O.S. will be held at Ida Cason Callaway Gardens, Pine Mountain, Georgia on October 13, 14, and 15. Members will receive further details on this meeting within a few days.

PUBLICATIONS OBTAINABLE FROM THE BUSINESS MANAGER

BACK NUMBERS OF THE ORIOLE AND OTHER PUBLICATIONS OBTAINABLE FROM THE BUSINESS MANAGER.—Ralph Ramsey, 814 Drewry St., N.E. Atlanta 6, Georgia has indicated that all back numbers of The Orioles are available except the following out-of print isues:

Vol. V No. 3—September 1940
Vol. VI No. 2—June 1941
Vol. XII No. 4—October 1947

These out-of-print numbers will be reprinted as funds become available.

Libraries and others who may wish to obtain a complete set of The Oriole should be encouraged to buy a set now while most of the numbers are still available. Anyone who buys a set now will be sent the out-of-print numbers as soon as they are reprinted. The price of the complete set, Vol. 1 to Vol. XXIV, is $55.00. The majority of the back numbers of The Oriole sell for 50 cents each, however, there are several which sell for $1.00 and a few for 25 cents each.

The following regional papers are also available: Birds of Athens, by Thomas Burleigh, 50 cents and The Birdlife of the Savannah River Delta, Gaviiformes through Charadriiformes by Ivan R. Tomkins, $1.50.

RECENT LITERATURE

THE BIRD WATCHER'S GUIDE.—by Henry Hill Collins, Jr., 1961, Golden Press, 630 Fifth Ave., New York 20, New York, 123 pp. $3.95.

THE BIRD WATCHER'S GUIDE is primarily designed for the beginning bird watcher and for those who have been introduced to the hobby of bird watching by a few trips into the field or garden. It provides brief, but essential information for those who wish to further explore the many facts of the subject.

Facts and suggested references include information on equipment, how, when, and where to find different species of birds, methods of attracting birds about ones' home, photographic hints, bird banding, and much more useful data in these related fields.

This book is profusely illustrated with many very good color photographs, black and white pictures, and diagrams.

A list at the end of the volume of bird-watching clubs and ornithological societies in the U. S., Canada, and Europe should serve to aquaint the beginning bird watcher with others of kindered interests in any section of the country.

BIRD SONGS IN YOUR GARDEN.—by Arthur A. Allen, 1961, Cornell University Press, 124 Roberts Place, Ithaca, New York, $5.95.

Twenty-five species of birds commonly heard in gardens in the Eastern United States are recorded in sound and photographs in this latest publication of Cornell University. The text and photographs are by Dr. Arthur A. Allen and the 33 1/3 rpm high fidelity phonograph is the work of Pete Paul Kellogg. The book accompanying the record contains 53 photographs, 31 being in full color. One side of the record is narrated while the other is a continuous playing of all twenty-five species represented. The book also contains suggestions for attracting birds to the garden as well as a list of reading references.

BIRD STUDY.—by Andrew J. Berger, 1961, John Wiley and Sons, Inc., 440 Park Avenue South, New York 16, New York, 389 pp., 178 illus., $9.00

Dr. Berger's volume contains chapters on "Introducing the bird, field identification, bird habitats, migration, behavior, song, courtship and nest building, eggs and young, structure and function, conservation, systematics, general references, and common and scientific names of birds."

In designing the work for a one semester course in ornithology, Dr. Berger has accomplished his stated purpose of motivating the student to independent study after completion of the book by providing the information contained in each chapter in a clear, interesting, and readable style that should steer the "inquiring mind" in the right direction.

Georgia ornithologists will be particularly interested in references to Drs. Johnston and Odum's work on breeding bird populations in re-

lation to plant succession on the Piedmont of Georgia contained in Chapter 3.

Many of the excellent photographs contained in the volume are credited to Brooke Meanley and Samuel A. Grimes.

Dr. Berger's apparent deep feeling for favoring conservation in all fields as expressed so nicely in Chapter 10, however, leaves the uninformed reader with a grossly one sided picture of the evils of the farm program. Not mentioning the fact that agriculture is not the only American business that is heavily subsidized by the Federal Government, he fails, or overlooks, in my opinion, the importance of the conservation and futherance of the ability and technological know-how to produce the abundance we have without depleting the land.

As we shall see, our farm surplus is our greatest blessing. The waste and folly is in the administration of and the number of people "needed" per farmer to administer the program.

A list of general references arranged in chapter number listings should prove very helpful to the student who wishes to further pursue any given subject discussed in the text. Milton Hopkins, Jr.