

The zoological gardens and private aviculturists can confer a great boon upon all bird lovers by perpetuating through breeding in captivity the various beautiful species of Quail Doves of the Oceanic genus *Gallicolumba*.

Exactly the same situation obtains in the great insular region of the New World, the West Indies, as in Oceania. The mongoose and the cat are fast making extinct the beautiful Quail Doves of the genera *Oreopeleia*, *Starnoenas*, and *Geotrygon*, all of which are terrestrial in habits. Only the zoological garden and the aviarist can save these beautiful species for posterity by breeding them in confinement where they are protected from the natural enemies introduced by modern man.

Examples of the Gray-hooded Quail Dove, the subject of this brief paper, may be seen in the zoological parks at New York, Washington, Milwaukee, and London.

*University of California,
Berkeley, California.*

NOTES ON THE BREEDING HABITS OF SOME GEORGIA BIRDS.

BY THOS. D. BURLEIGH.

Blue Jay (*Cyanocitta cristata*, *sub-species?*).

To one unfamiliar with southern bird life the habits of the Blue Jay, in Georgia at least, come as a distinct surprise. In the North it is a bird of the woods, with a natural curiosity in the ways of man but suspicious of any intimacy and during the breeding season shunning civilization as much as possible. In the South, however, it has apparently lost this shyness and is as much a bird of the towns and even cities as is the English Sparrow. In Athens, which lies in the northeastern corner of the State, the birds are common throughout the town, not only in the residential section but even in the business district, and as this town has a population of about 20,000, with street cars, several "skyscrapers" and other modern improvements, the confidence of these birds in man is easily realized. In many ways they replace the Robin which is

of course lacking here during the summer months, and this impression is strengthened by their breeding habits. Like the Robin they nest early before the trees are in leaf and as there is little opportunity for concealment the nests are generally placed in crotches of the larger trees where they are easily seen but by no means conspicuous. Many of the streets of Athens are lined with large trees, the commonest being possibly the water oak (*Quercus nigra*), and it is in these that the nests can usually be found. There are several good sized cottonwoods in the front yard of the house adjoining that in which I live and each year a pair of these birds build here and successfully rear their young. A nest which shows very well the lack of fear these birds possess is one I found this past spring. It was fifteen feet from the ground in a crotch of one of the limbs of a large water oak at the corner of two of the principal streets of the town, on one of which a street car ran at frequent intervals, and almost beneath an arc light. This was early in April when the tree was still practically bare and the nest easily seen. In structure the nests vary little, being built of twigs, rootlets, weed stems, dead leaves, bits of paper and mud, lined well with fine rootlets. Two broods are seemingly raised each year for fresh sets can be found early in April and again the latter part of May. My earliest breeding record is a nest found April 2, 1923, that held six slightly incubated eggs, my latest a nest that held three fresh eggs June 5, 1923. From three years' experience I consider from the 12th to the 15th of April the average date when fresh sets can first be found.

Florida Grackle (*Quiscalus quiscula aglaeus*).

The breeding range of this species in Georgia is rather limited for it apparently is confined at present to the extreme southern counties that border the Florida line. My personal experience has been largely about Waycross, in Ware County, and it was in the Okefenokee Swamp, some forty or so miles southeast of this city that I really came to have more than a passing acquaintance with these birds. The Okefenokee Swamp was at one time almost impenetrable, and little known except to a few venturesome settlers that lived on the larger islands, but a logging company began cutting out the cypress and changed things quite radically. Among

other things they ran their narrow guage railroad to Billy's Island, approximately twenty miles into the interior of the Swamp, and established a permanent camp there, making access to the Swamp easy and comparatively safe. Billy's Island itself is merely a bit of solid land in the middle of seemingly endless miles of swamp, and is characterized, as are the other scattered islands, by what was once a fine virgin stand of longleaf pine (*Pinus palustris*). These have of recent years been badly turpented, and many have been cut for fuel wood, but possibly two-thirds of them remain and form a small stretch of open woods about the logging camp. It is here that a small colony of Florida Grackles nest each year, and here I had a brief but intimate glimpse of their home life. There were possibly a dozen pair on the Island, and I was interested to see that they showed a decided preference for the trees at the very edge of the camp. Trees equally good for this purpose covered the larger part of the island, and the birds could have had real privacy in some of the more remote corners, but one and all preferred to nest as close as possible to the houses. The trees averaged two feet in diameter, with no limbs for thirty or forty feet from the ground, so the risk they ran of being molested was after all rather slight. At the time of my visit this past spring, April 28, 1923, nesting was well under way and there was seemingly little difference in the actual day when each pair had begun to build. The nests, never more than one to a tree, ranged from twenty-five to fully a hundred feet from the ground, some of them being at the outer end of the upper branches where they were quite inaccessible. The average height was fifty feet, and they were usually in a crotch of one of the limbs eight or ten feet from the trunk. I managed to reach three of them, and found in two five eggs and in the third four, all of them half incubated. The nests proved very similar in construction, being well built of gray usnea moss intermixed with dry pine needles and grasses, coated on the inside with mud and then well lined with fine grasses. In each case the female was incubating but flushed quietly and showed practically no concern over the nest, disappearing and not being seen again. The males were seen at intervals during the day, flying by overhead or feeding in the swamp close by, but as a whole the colony was, at this time at least, a quiet and inconspicuous one.

Goldfinch (*Astragalinus tristis tristis*).

As a general rule where a species has a wide breeding range there is little actual difference in the manner in which it nests in widely separated localities. A Catbird in Pennsylvania or Ohio, or Montana, or a Cedar Waxwing in New York, or Washington, remains true to its inherited tendencies and nests as one familiar with its breeding habits would expect. The Goldfinch, however, seemingly prefers to be individual in this respect and in the Piedmont region of Georgia, the farthest south that it breeds in the East, it has departed quite radically from the habits of its Yankee brothers, and sisters, farther north. Such at least has been my experience about Athens. Here the original forest was probably entirely coniferous, with the loblolly pine, (*Pinus taeda*), and the shortleaf pine, (*Pinus echinata*), covering large areas with practically pure stands. Gradually, with the encroachment of civilization, this virgin forest was cut out and replaced with scattered stands of mixed hardwoods, the pine timber remaining being largely second growth, even-aged, and in comparatively short stretches. Through this section the Goldfinch breeds in small numbers and while by no means common it can still be found during the summer months quite regularly in certain spots. I felt that I was reasonably familiar with its breeding habits and as the middle of July approached, during my first year in Georgia, I made an attempt to locate a nest, feeling confident that I would have little difficulty in doing so. I made the error, however, of confining myself to the scattered stretches of hardwoods, spots such as, in Pennsylvania, these birds would unquestionably have chosen, and it was only by accident that I finally found my first nest. I was passing through a short stretch of open pine woods when a male Goldfinch flew by overhead, circled, calling and was answered almost immediately by another bird in a tree near me. A short search revealed the nest in a large shortleaf pine, sixty feet from the ground and six feet out at the outer end of one of the upper limbs. This was the 30th of July, 1921, and the nest on that date held five fresh eggs. It was typical of this species, being compactly built of weed stems, grasses, shreds of bark and numerous small dried flowers, well lined with thistle down, and covered somewhat on the outside with spiders' webs. It was not until

the following year that I was able to devote more time to these birds, but with this one experience as a clue to where and when to look I had little trouble in verifying the data already at hand. On the 31st of July, 1922, I found a nest that held four well incubated eggs that was thirty feet from the ground at the extreme outer end of a limb of a shortleaf pine at the edge of a short stretch of open pine woods. Like the last it was compactly built of weed stems, grasses, shreds of bark and plant down, deeply cupped and well lined with thistle down. Almost two months later, in another stretch of open pine woods, I found a nest that on the 23rd of September held either eggs or young, and was forty-five feet from the ground at the outer end of an upper limb of a shortleaf pine. Attracted by the very evident distress of both the birds I looked about for the cause and was just in time to see a Blue Jay fly from the nest to an adjoining tree and calmly wipe its bill. The nest proved to be empty, but it unquestionably had held either eggs or young earlier in the day and was probably the second brood of this pair of birds. This past summer, 1923, I was in Athens only for a few days during the middle of July, and, while the birds were again about the scattered stretches of pine woods where I had found them before, I was a little too early and did not succeed in finding a nest. Summed up briefly, the following facts seem to me to be worthy of emphasizing in so far as the breeding habits of these birds are concerned. First, they do not nest early as other birds do this far south but wait until the latter part of July or the first of August before rearing their young. Such species as the Field Sparrow and Brown Thrasher nest a month earlier than I found them to breed in Pennsylvania, but the Goldfinch appears unaffected by the early arrival of spring and the long stretch of warm weather. Second, hardwoods are consistently avoided and pines invariably selected as a suitable nesting site, in direct contradiction to the breeding habits of this species farther north. The birds are close associates of the Pine Warbler in this region, nesting much as these birds do both in so far as they are confined to the pine woods and also in that they nest high and well out toward the ends of the branches. This latter fact is also at variance with their usual habits for in Pennsylvania I have very frequently found nests in red maple or chestnut saplings within eight or ten

feet from the ground. All in all these birds are individual enough to be well worth a little study, and I personally have been much interested in watching them through the summer months.

State Agricultural College, Athens, Ga.

A FOSSIL BIRD'S EGG FROM THE POST-TERTIARY MUD-ROCKS OF FIJI.

BY CASEY A. WOOD,

Plate XX.

IN September, 1923, while examining an extensive collection of Polynesian curios and antiquities made during the previous 40 years by the Hon. Mr. Turner¹ of Suva, Fiji, the writer discovered a well-preserved fossil egg (or, as he prefers to call such a specimen, a partially petrified egg shell) that had been dug out of the Suvan "soapstone." During an excavation made less than 200 yards from the seashore and about a mile and a half from the town, the workmen came upon a number of fossilized objects, among them, fifteen feet below the surface, the egg in question. It was a very good example of a fossilized egg, the shell being intact except at two or three small, scattered points and at one more extensive patch close to the larger rounded end. The color was a dirty gray, sparingly spotted with reddish-brown. The shell was quite free of dried earth or mud, although it had evidently not been cleaned. Both the naked eye and lens examination (through the cracks and defects in the outer covering) showed that the solid contents filled the shell completely, and were identical in appearance with and of similar structure to the friable rock by which it was originally surrounded.

The egg measured 1.90 × 1.45 in. The photographs give a good idea of its external aspects. Like the age of the fossil, its specific character is quite speculative, except that it is *probably* (in view of its size, coloring and proximity to the ocean) the egg of a water

¹ This gentleman has since donated his collection to the Museum of the City of Auckland, New Zealand, his native town.