



SHIP CANAL (BUFFALO BAYOU) A FEW MILES EAST OF HOUSTON, TEX.



MIXED OAK AND PINE WOODLAND ON BUFFALO BAYOU, WEST OF
HOUSTON, TEX.

ON THE NESTING OF CERTAIN BIRDS IN TEXAS.

BY GEORGE FINLAY SIMMONS.

Plates XXI-XXII.

THE following notes are from observations made by the writer in the southern portion of Harris County, Texas, during the breeding seasons of 1910, 1911, 1912, 1913, and 1914.

The area under consideration is in the southeastern part of the State, and lies wholly within the semitropic or Gulf strip of the Austroriparian zone. Thus we find a slight intermingling of birds of unquestionable tropical affinities with a preponderance of Lower Austral species.

Houston, where nearly all of the observations were made, is about 50 miles northwest of Galveston, which lies on the Gulf of Mexico. Buffalo Bayou runs eastward through the city 28 miles to Galveston Bay; Bray's Bayou skirts the city on the south and joins Buffalo to the east. Each of these streams is skirted on either side by heavy strips of timber, varying from a quarter to a half mile in width. This timber is mostly pine, with a general sprinkling of deciduous trees. Northeast and north of Buffalo Bayou the great southern pine woods begin, and here on these bayous we find the most southwesterly extension of such forests.

The country between Buffalo and Bray's Bayous and south of the latter is typical flat, open and almost level coastal prairie, with little vegetation and few farms or ranch houses. Sprinkled about this prairie are numerous grass-grown ponds and marshes.

The majority of the records are from two sections; the first is a narrow strip of country extending west from the city, about a mile wide, and having Buffalo Bayou as its northern boundary; the second is an expanse of prairie within a mile's radius of Pierce Junction, a small flag-station $6\frac{1}{2}$ miles south of Houston. The woodland records are from the first, while the prairie and marsh records are from the second. All distances are in miles from the flag-station at Pierce Junction and the county court house in Houston.

Little time could be spared during the breeding season to search for nests and eggs; hence the notes are by no means as complete as might be desired. Excessive rains often made it impracticable to go afield during that period, for so level is the country that for weeks after a rain water stands in the woodlands and on the prairies. Though over 50 miles from the Gulf of Mexico, Houston's altitude is but 53 feet.

With few exceptions, the notes were all taken on short afternoon walks within a few miles of the city. But as there are few nesting records for the eastern half of Texas, an expanse of territory comprising over one twenty-fifth of the United States, I feel that I am justified in publishing the more interesting of these notes in order to settle the question of the breeding of certain species in that region.

Anas fulvigula maculosa. MOTTLED DUCK.— On April 17, 1911, Captain Patrick Daly of the Houston Fire Department, while out hunting plover on the coastal prairie about a mile southeast of Pierce Junction, and driving about in a small wagon among a number of small prairie ponds, frequently mentioned in the following notes, flushed a female of this species from a nest containing eleven eggs. As is the case with all ponds in this section of prairie, the whole with the exception of a small spot near the center was thickly covered with tall grass, rushes, water plants of various sorts, and sprinkled with a few bushes or reeds, locally known as 'coffee bean' or 'senna.'

The nest itself was placed about eight inches up in thick marsh grass and rushes, over water four inches deep, and was neatly hidden by the tops of the grasses and rushes being drawn together over the nest. It was but two or three inches thick, a slightly concave saucer of dead, buffy rushes and marsh grass, supported by the thick grasses and by two small 'coffee bean' reeds. The lining was of smaller sections and fragments of the rushes and marsh grass, and a small quantity of cotton; and the eleven eggs were well, though not thickly surrounded by down and soft feathers, evidently from the breast of the parent.

From its resting place in the tall marsh grass in the neck of the prairie pond, Captain Daly transferred the nest and all the eggs to his wagon, and after covering them with a sack drove for three or four hours over the uneven ground. In the afternoon he drove back to the city, leaving the eggs at a farm house about four miles from the ponds. They were then placed under a setting hen and ten young hatched.

Then came the problem of feeding them. At first they were placed in a pen where they could have both sunlight and shade, a pan of water

and a little sand, while for food a quantity of common corn chops was thrown to them. But it was soon found that they would not touch chops; so numbers of small, tender angle worms were taken, cut into sections about a quarter of an inch long and thrown into the water where the downy young ducks could reach them. These were eagerly devoured, as was boiled rice, but before this menu was arranged six of the young *maculosa* departed this life. Three of the remaining four lived to become full-fledged adults, and are alive and healthy at the time of the writing of this note.

Another, and probably the best method of feeding the remaining young was to place in their pen a stale soup bone which drew large numbers of flies. These the young eagerly caught and devoured, soon waxing fat and luxuriant.

Ixobrychus exilis. LEAST BITTERN.—Prior to the breeding season of 1914 I had recorded but few specimens of this rare summer resident, and had never found a nest.

On May 30, 1914, while splashing through the small, marshy prairie ponds about a mile southeast of Pierce Junction, and searching hopefully for nests of the Mottled Duck and Louisiana Clapper Rail, I saw one of these birds fly up from the reeds ahead of me. It was some time before I could locate the nest, for it was evident that the bird had gone some distance through the rushes before taking wing.

But when I did find it I was fully repaid for my search, for it contained five eggs. The nest was supported by several rushes, dead reeds and the broken stem of a small persimmon sapling growing in the pond. At this point the reeds and rushes were not so thick, and the nest and eggs could easily be seen at a distance of fifteen or twenty feet. The bottom of the nest just touched the water, which was there about eighteen inches deep.

The nest itself was quite firmly built, with few loose ends projecting from the mass. It was built entirely of straight stems and twigs of a brushy reed which grows about the ponds, quite different from the flexible reeds and rushes used in the construction of the nests of the other water birds of the region. It measured about six and a half inches across the top and five inches high, being cone shaped and tapering towards the bottom. So flat was the top of the nest that it seemed the slightest jar would cause the eggs to roll off, for there were no rushes or grasses to guard the sides of the nest as in the case of the Rails and Gallinules.

The five eggs were of a pale, bluish white color, much paler than other eggs of the Least Bittern I have examined. They were well incubated, and measured: $1.19 \times .89$; $1.18 \times .90$; $1.18 \times .89$; $1.17 \times .90$; and $1.15 \times .88$.

On the same day, but in another of the small ponds or sloughs, I found a second nest of this bird, which contained nothing but shells and fragments of shells to show that the young had already left the nest. It was built of the same rusty, inflexible twigs used in the first nest.

On June 6 I made another trip to the pond last mentioned, and discovered a third nest, similar to the first two, a nest that I had doubtless overlooked in my hurried search of the previous trip. This nest was wider but not so thick as the others, and was resting on several water plants of the lily family, almost flush with the water. It was well hidden by thick reeds and grasses, and had apparently already been used.

Ionornis martinica. PURPLE GALLINULE.—A fairly common summer resident about the marshy ponds of the open coastal prairie, but I never found a nest until the season of 1914.

May 30, in the same pond with the nest and five eggs of the Least Bittern, I flushed one of these Gallinules from a nest containing five well incubated eggs. The nest itself was about eight inches in diameter, three and a quarter inches thick, and about ten inches above the water. It was placed in an isolated clump of rushes on the edge of the open water at the center of the pond, the water at that point being about thirty inches deep.

The living tules or rushes of the clump composed about half of the nesting material, the stalks being broken and bent over and the nest resting on these. The nest was composed of buffy rushes, loosely woven into a slightly concave mass.

The five eggs measured: 1.60×1.10 ; 1.53×1.08 ; 1.52×1.08 ; 1.50×1.07 ; and 1.47×1.09 .

On this trip, as well as on the next (June 6), I carefully searched all of the ponds in the vicinity, and found several nests that had already been used, as well as numbers of platforms that were evidently 'shams.' In one pond in particular, I found at least ten of these platforms about ten feet apart; they were all formed by the tops of the saw grass and rushes being bent over or broken and interlaced. From the fact that each of these platforms was stained by the white excreta of the bird, I am led to believe that the birds use them as perches during the night so as to be safe from the depredations of the smaller mammals inhabiting the region.

Gallinula galeata. FLORIDA GALLINULE.—But once have I found a nest of this Gallinule. On May 28, 1910, while examining a number of nests of the Florida Red-wing in the tall reeds and grasses on the edge of a lagoon in the San Jacinto bottoms, adjacent to Galveston Bay, I observed a platform of grasses and reeds about six inches in height. There the water was about a foot deep, while the grasses and rushes grew nearly as high as one's head.

Seeing this platform set me to searching and I soon found several more, all empty. And then, as I was about to give up the search, I flushed the Gallinule from a clump of tall rushes and grasses. The nest was cunningly concealed over but three inches of water, and built up ten inches above it; a slightly concave mass about nine and a half inches in diameter and four inches thick, and loosely composed of rushes, reeds and saw grass. It was entirely surrounded by reeds, with but one open side. Since that date I have never returned to the locality.

The six eggs in this nest measured: 1.77×1.27 ; 1.76×1.26 ; 1.75×1.25 ; 1.73×1.26 ; 1.72×1.27 ; and 1.67×1.23 .

Numenius americanus. LONG-BILLED CURLEW.—On June 1, 1910, in company with Messrs. H. G. Hill and E. G. Ainslie, I came on a marshy pond near Alameda station, thirteen miles south of Houston. Through the tall reeds and rushes we could see a number of birds on a short stretch of silt between the reeds and water on the far side of the pond, and decided to investigate. By crawling slowly through the tall grass and reeds we were able to approach within about twenty yards of the birds before they saw us. There were three adult Long-billed Curlew and seven smaller ones, almost fully fledged but barely able to fly.

The actions of the adults were especially interesting. Often one would spring into the air for a few feet, circle the pond, and relight on the silt. At other times it would merely spring into the air for a few feet, flap its wings several times and then alight, raising its wings over its back as it did so, and then refolding them.

Finally, as one of the adults flew up and circled the pond, it observed us as we lay at full length in the tall grass. At the sound of the hoarse, noisy alarm call the whole flock took wing and flew about a hundred yards, disappearing into the tall marsh grass. As I had expected, the flight of the smaller birds was exceedingly labored and heavy. After giving the alarm, the adult circled the pond again and followed the flock.

The number of birds puzzled me greatly. It is not unlikely that this flock was composed of two families, the younger birds being doubtless reared somewhere in the near vicinity.

Colinus virginianus virginianus. BOB-WHITE.—During the five breeding seasons covered by this paper I found but two nests of this fairly common resident.

The first, May 26, 1912, contained thirteen eggs, the nest being under the edge of a bale of hay in an old shed on the prairie not far from a ranch house about a mile southeast of Pierce Junction. Entrance on the north side of the bale, with the cavity of the nest slightly sunk in the ground; well lined with dead grasses. Nest quite difficult to locate and only found by flushing the bird.

The second, July 20, 1912, contained ten heavily incubated eggs. The nest was skilfully concealed in a small tangled clump containing a blackberry vine, several weeds and several thick tussocks of prairie grass, in a weedy old pasture on the edge of the pine woods, about four and a half miles west of the city. The pasture was sprinkled with such small thickets as the one that contained the nest. The nest was but fifty feet from the edge of the timber, where the pine woods were encroaching on the prairie. The nesting cavity was well arched, sunk slightly in the ground, and faced the east.

The following day, on visiting the nest, I found all of the eggs broken and scattered about in front of the thicket, perhaps the work of the parent itself, or, what is more likely, the work of some four-footed enemy.

The cavity was five and a half inches from side to side, and five inches from top to bottom; it was well lined with dry grasses.

The set containing thirteen eggs yielded the following: $1.25 \times .95$; $1.25 \times .94$; $1.25 \times .94$; $1.25 \times .94$; $1.24 \times .95$; $1.24 \times .95$; $1.24 \times .95$; $1.22 \times .93$; $1.21 \times .94$; $1.20 \times .94$; $1.20 \times .93$; $1.19 \times .94$; $1.19 \times .92$.

Tympanuchus americanus attwateri. ATTWATER'S PRAIRIE CHICKEN.—Not uncommon as a resident in the wilder portions of the prairies, but I have never found a nest. On June 7, 1913, at Aldine, a station eleven miles north of Houston, two adults and twelve downy young were observed by the side of the railroad track.

Meleagris gallopavo silvestris. WILD TURKEY.—I know of but one nest of this scarce resident for the region under consideration. On May 8, 1912, a farmer by the name of Whicker found a nest by the side of a log in the bottom woods near Penn City, thirteen miles east of Houston. The seven eggs were placed under a domestic hen, and five puny young hatched. They lived but a few days.

Zenaidura macroura marginella. WESTERN MOURNING DOVE.—Common resident in all open country. As I have found dozens of nests, general descriptions would be best.

The nests I have found on the ground, in low bushes and trees, and as high as sixty feet in tall pines. They are usually placed about six feet from the ground on the lower limbs of pine trees along the edges of the woods, in huisache trees on the prairies, in the post oak trees of the scattered motts in the open country, and in the shade and orchard trees around ranch houses. When they are placed in pine trees along the edges of pine woods, the nests are nearly always composed entirely of dead pine needles. When in trees on the prairies, the nests are shallow saucers of straws and dead grasses.

With only one exception, each nest contained two eggs. On May 21, 1911, a nest was found on the horizontal limb of a pear tree in a deserted pear orchard; it contained three eggs. One nest contained two eggs which were quite small, measuring: $.98 \times .54$ and $.97 \times .50$. The largest measured $1.17 \times .89$, and the average of a large series is $1.10 \times .80$. The nesting season extends from April 16 to July 20, though the majority of nests are found in latter April and early May. Only a few pairs rear second or third broods.

Chæmepelia passerina passerina. GROUND DOVE.—My only record for the occurrence of this bird and my only breeding record are one and the same. On June 1, 1910, I flushed a bird from a nest containing two young nearly ready to leave the confines of their birthplace. The nest itself was hardly a nest at all, for it was only a slight hollow in the ground, amid the short grass and stubble on the edge of an orchard on the prairie near Almeda, thirteen miles south of Houston, and lined with only a few tiny grasses and hairs.

Buteo lineatus texanus. TEXAS RED-SHOULDERED HAWK.—A common resident for so large a bird, but the nests are generally in such tall pines as to be practically inaccessible. Of the many nests I have found, and of the few I have been able to reach by climbing, I have found but one that was occupied.



BETWEEN THE PRAIRIE AND THE TIMBERLAND, COASTAL REGION NEAR HOUSTON, TEX.



OPEN PINE WOODS ON BUFFALO BAYOU.

On April 29, 1911, I found the nest when it contained two downy young only a day or two out of the shell. The nest was placed about thirty feet up in a small pine tree in the woods on Buffalo Bayou about eight miles west of Houston. It was a well-constructed domicile, and had evidently been used for several seasons. It was a mass of sticks, dead leaves and Spanish moss twenty-four inches high, in a crotch formed by three branches of the main trunk of the tree. It measured twenty-one inches across the top; and the cavity, which was three inches deep, was neatly lined with quite a quantity of fresh, green and fragrant pine needles.

Seven days later (May 6) the young were slightly larger, and the sheathed tips of the primaries were beginning to appear. And on May 14 they faced me with snapping beaks and showed a strong desire to claw me. Both were gaining in strength and size day by day, though one of the birds appeared smaller and more timid than the other. The tips of the primaries had appeared.

On May 27, the last day I was able to visit the nest, the young were nearly as large as the parents. With the exception of their heads they were apparently fully feathered. Their heads had a rather mottled appearance, caused by the feathers appearing amid the grayish down. Undoubtedly they would leave the nest in a day or two.

On the various trips I made to the nest, I found beside the young the remains of their food: small snakes, frogs, and on one occasion the remains of a bird, a male Louisiana Cardinal (*C. c. magnirostris*).

The other nests which I located were all in pines, from forty to eighty feet from the ground, generally in open pine woods with little underbrush.

***Haliaeetus leucocephalus leucocephalus*.** BALD EAGLE.—Very rare resident, inhabiting the wilder country around Galveston Bay. I was shown a young bird which was taken from a nest in the bottom woods on Taylor's Bayou not far from the bay, and later viewed the nest, a massive structure seventy feet from the ground in an immense pine. This nest was destroyed by a violent storm in the latter part of 1911. Another nest has been reported to me from the north side of the bay, but I have not had the time to visit the locality and investigate.

***Otus asio mcallii*.** TEXAS?¹ SCREECH OWL.—April 5, 1913, in the woods on Buffalo Bayou about four and a half miles west of Houston, I found a nest in a natural hollow of an elm tree standing on the slope of the bayou; it contained four eggs, incubation far advanced. The entrance to the cavity was nine feet from the ground at a bend in the trunk of the tree; from the bend the cavity extended almost vertically down into the heart of the tree, about thirty inches deep and six inches in diameter; trunk of tree about ten inches in diameter. Only a few leaves and grasses, with a slight lining of feathers, were between the eggs and the bottom of the cavity. It was some time before I could force the female to leave the nest;

¹ Cf. Ridgway, Robert. *The Birds of North and Middle America. Part VI.* p. 694, footnote b.

poking her with a stick had no effect other than to make her snap her mandibles, so I was forced to use a hook and pull her out by the neck.

These four eggs measured: 1.32×1.16 ; 1.31×1.12 ; 1.30×1.19 ; and 1.30×1.17 .

Coccyzus americanus americanus. YELLOW-BILLED CUCKOO.—May 17, 1914, I found my only nest of this fairly common summer resident. It was placed on the horizontal limb of a young pine on the edge of the Buffalo Bayou woods four miles west of the city, and contained three eggs. The nest was a slight platform about eleven feet up, through which I could see with ease; it was composed of small pine twigs, about an eighth of an inch in diameter and averaging six or eight inches long, and was much more concave than I had expected. This shallow saucer was neatly, though quite thinly lined with a few pine needles, a small quantity of Spanish moss and several tiny buds.

A week later I visited the nest and found that some bird, presumably the rightful owner, had pecked a hole in one of the eggs and the nest was deserted. The three eggs measured: $1.22 \times .93$; $1.20 \times .94$; and $1.20 \times .92$.

Ceryle alcyon alcyon. BELTED KINGFISHER.—On May 28, 1910, I made an investigation of the sand banks along the south side of the Houston ship channel (Buffalo Bayou) about six miles east of the city, bent on finding the burrow of this bird, for on several occasions I had observed individuals during the breeding season in that section. There the banks were almost vertical, from eight to ten feet high, and had a narrow shelf between their base and the water's edge.

Several old tunnels were located, but as they were nearly all covered with spider webs I passed them by. Finally, after walking and scrambling about a half mile along the base of these sand banks, I came to a likely looking hole about seven feet up and about a foot and a half from the turf of the solid ground above. Several old roots offered footholds, and I was soon peering into the cavity; with the aid of a mirror I ascertained that the tunnel did not curve, and that it contained eggs. I did not attempt to dig them out, but used a make-shift hoe (a piece of wire bent on the end of a stick) and by careful work dragged out the eggs, six in number, together with a small amount of rubbish on which they were laid. The parents did not appear until I had already secured the eggs.

This set of six measured: 1.35×1.08 ; 1.35×1.02 ; 1.33×1.09 ; 1.33×1.08 ; 1.32×1.09 ; and 1.30×1.07 .

Dryobates borealis. RED-COCKADED WOODPECKER.—In a certain section of the pine woods on Buffalo Bayou, about eight miles west of Houston, I had occasionally noted Red-cockaded Woodpeckers, and was convinced they nested in that locality. But it was not until May 25, 1912, that I had an opportunity to thoroughly investigate the locality.

I had spent several hours searching before I saw the bird, clinging to the side of a dead pine in a small clearing densely covered with thickets. And by the side of the bird was a likely looking hole. On my approach the bird

left the tree, and during the time I was at the nest stayed a considerable distance away, now and then uttering its short, shrill note.

I had some difficulty in reaching the base of the tree; but to climb the twenty-one feet to the cavity was the work of a moment. Removing the front, I found the eggs to be two in number, nest stained and well incubated, and laid on a small quantity of pithy pine chips.

The two eggs measured: $.91 \times .69$ and $.87 \times .69$.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.— During the seasons covered by this paper I located several excavations of this Woodpecker, but the majority were in dead pines too large and unsteady to attempt to climb. It was not until May 27, 1912, that I located a cavity containing eggs. The birds had selected a dead pine on the edge of a patch of timber by the side of a railroad track on the southern edge of Houston, and thirty feet from the ground had chiseled a domicile. The pine was quite rotten and swayed dangerously, but the bird did not leave the nest until I was within four or five feet of the cavity. Three eggs, evidently fresh, formed the set. Two days later I returned with a companion, this time bent on chopping into the cavity, but found that the eggs had disappeared.

Colaptes auratus auratus. FLICKER.— This Woodpecker is quite rare in Texas, and the only previous nesting record I can now recall is that of J. A. Singley from Lee County.

During June of 1911 I was encamped at Sylvan Beach, on the shores of Galveston Bay, about twenty-eight miles east of Houston. On the 11th, while crossing the picnic grounds, I was extremely surprised to observe one of these birds. I followed it to where it lit on a sweet-gum tree near the pavilion, noting that there was a hole in the stub of a branch broken off close to the trunk, about twenty-five feet from the ground.

The next day, June 12, I returned, climbed to the cavity, and removed a section from the front. The cavity was only ten inches deep, but was quite roomy, and contained seven slightly incubated eggs, nest stained and laid on a few chips from the rotten limb in which the nest was situated.

The set yielded the following measurements: $1.20 \times .88$; $1.19 \times .87$; $1.18 \times .86$; $1.18 \times .83$; $1.15 \times .86$; $1.14 \times .80$; and $1.12 \times .85$.

Chordeiles virginianus chapmani. FLORIDA NIGHTHAWK.— Though this species is a common summer resident on all the open prairies, and evidently breeds commonly, I have but once found its egg. On June 4, 1913, about a hundred and fifty yards east of the flag-station at Pierce Junction, I flushed a Nighthawk from a single egg on a bare, hard-baked spot on the open prairie, several miles from the nearest timber. Returning a few days later I found that the egg had disappeared.

Myiarchus crinitus. CRESTED FLYCATCHER.— A not uncommon summer resident in the vicinity of Houston. In May, 1911, a pair of these birds occupied the joint and elbow of a stove-pipe hanging loosely by wires against the side of a small house on the edge of the Buffalo Bayou woods about six miles west of Houston. On the 20th I took a stepladder and

climbed up to investigate, causing the birds to desert the nest. Later the pipe was taken down and cleaned out, and the nest found to contain three eggs. The nest itself was a mass of rubbish of all sorts: cedar bark, twigs, grasses, feathers, pine needles, and dead leaves, and was lined with horse hair, feathers and cast off snake skin.

I found another nest of the bird on June 6, 1914, which contained five eggs. An old lard bucket lying on its side in a tiny trough in a well shaded sheep-pen on Taylor's ranch had been half filled with rubbish of various sorts: grasses, cedar bark, snake skin, straws, chicken and guinea feathers, etc., and the eggs had been laid in a hollow in the material near the back of the bucket. To me this nest was especially interesting from the fact that Taylor's ranch is on the open prairie about a mile south of Pierce Junction, and at least four miles from the nearest timber. Quite a number of shade trees surround the house and sheep-pens, but I never would have expected this Flycatcher at such a place.

The five eggs measured: $.98 \times .67$; $.94 \times .67$; $.91 \times .68$; $.90 \times .67$; and $.89 \times .68$.

Cyanocitta cristata florincola. FLORIDA BLUE JAY.— Though this bird is a common resident, I have found but two nests, one of which was accidentally destroyed before the eggs were laid.

The other was discovered May 6, 1911, by watching the birds carry mud to be used in its construction. I did not climb to the nest until May 14, thinking the birds were still building the nest, and hence was surprised to find that it contained three eggs very heavily incubated.

The nest was forty-eight feet from the ground, on a three-inch limb about six feet from the trunk of the pine tree in which it was situated, and was composed of twigs and a little Spanish moss, plastered together with wet clayey mud, and lined with rootlets. The birds were quite shy and quiet, in sharp contrast to their conduct at other times of the year. This nest was about a hundred yards north of the house where my first Crested Flycatcher's nest was found.

These three eggs measured: $1.07 \times .81$; $1.05 \times .79$; and $1.04 \times .81$.

Sturnella magna argutula. SOUTHERN MEADOWLARK.— During the breeding season these birds are quite common on the prairies, but their nests are very difficult to discover and it was not until the season of 1914 that I was able to locate even one.

It was on May 30, 1914, that my first nest was discovered. I was walking slowly across the grassy prairies about a mile north of Pierce Junction, when the bird flushed from almost under my feet leaving its arched or domed nest and four heavily incubated eggs for my inspection. The nest was cunningly concealed in a small clump of grass on a slight knoll, and was thus several inches above the surrounding surface, which was under water from the recent heavy rains. The nest inside measured four inches from side to side, four inches from front to back, three and a half inches from top to bottom, and the entrance was four and a half inches across. The specks on the eggs were all grouped at the extremity of the larger end.

June 6, 1914, I was shown a nest in a small pasture back of Taylor's ranch house, a mile south of Pierce Junction. It was exactly similar to the one above described, but faced the west where the first faced the north. It was in a small tussock of grass on the closely cropped surface, and contained three young fully fledged.

On June 11, I flushed a female from another domed nest on the prairie, a half mile north of Pierce Junction. The nest was well concealed under a tussock of grass, slightly sunk in the ground, well lined with dry grasses, and contained four fresh eggs.

Set No. 1 measured: $1.20 \times .82$; $1.10 \times .80$; $1.04 \times .81$; and $1.03 \times .78$; while the eggs from nest No. 3 yielded the following: $1.11 \times .79$; $1.10 \times .79$; $1.09 \times .77$; and $1.06 \times .76$.

Passerherbulus maritimus sennetti. TEXAS SEASIDE SPARROW.— Not an uncommon resident in the salt marshes near the bay, but I have only once recorded the bird in the vicinity of Houston.

June 1, 1910, found Messrs. Howard G. Hill, E. G. Ainslie and myself walking southward from Houston across the open coastal prairie. A half mile north of Pierce Junction we stopped at a small marsh to check off a few of the more common species on our list, and in tramping through the rushes and tall grass I flushed one of these Sparrows from a nest on the moist ground in a clump of the thick grass. The nest was composed of coarse dry grasses, lined with finer, and contained three well fledged young. The nest was not a domed structure, but was more on the order of the nests of the Florida Red-wing (*Agelaius phoeniceus floridanus*) which surrounded it, for some of the nesting material was entwined about the stalks of the grass. Inside, the nest measured two and a fourth inches in diameter by one and a half deep. Both parents were present, and though nervous were not at all shy, for they often approached within three or four feet of us, perching for a moment on one reed and then on another.

Peucea aestivalis bachmani. BACHMAN'S SPARROW.— On April 25, 1914, Mr. George B. Ewing (my companion on some hundred-odd field trips) came to me with the information that he had that morning found a nest the like of which he had never seen. In company with a party of surveyors in the woods about nine miles east of Houston and two miles north of Buffalo Bayou, he was tracing a line through the timber when he discovered the nest with three eggs under a small brushy sage-bush in a clearing.

We visited the locality, and though several of the birds were observed, the first nest was the only one found. The nest was *not* arched or roofed over, as I had read in the manuals, but more perfectly fitted the description of the nest of the Pine-woods Sparrow. It was perfectly round, with the rim everywhere of equal height, and was set down on the ground amongst the short grass and stubble. It was a well-constructed nest, composed entirely of dry grasses, and was lined with fine grass tops and a few long horse hairs. As it lost its shape on being carried back to the city in Ewing's knapsack during the afternoon, I was not able to take its measurements.

Although the day was misty and rainy the nest and eggs were quite dry in the shelter of the bush, so that an arched nest would not have helped matters to any considerable extent.

After being emptied of their contents, the eggs lost their faint pinkish tinge and became a dead white; the shell was smooth of texture and had very little gloss. They measured: $.78 \times .61$; $.75 \times .61$; and $.73 \times .62$.

Cardinalis cardinalis cardinalis. CARDINAL.¹—Common resident, but though I have found numerous nests in the thickets and moss-covered trees along the bayous after the nesting season is over, my occupied nests have been few.

May 29, 1910, I found my first nest. It was placed in a blackberry thicket on a farm about four miles west of the city, and contained two eggs. April 29, 1911, nest No. 2 was found in the open woods on Buffalo Bayou about eight miles west of the city. It was placed on the horizontal limb of an oak sapling, twelve feet from the ground, and was composed of twigs, corn husks and gray Spanish moss; inside, it measured one and three-quarter inches deep and three inches in diameter. It contained four slightly incubated eggs.

Nest No. 3 was discovered in a patch of cut-over woods on the north side of the bayou about nine miles west of the city; it was placed in a post-oak sapling five feet from the ground, and was composed of moss, plant fibre, corn husks, and pieces of newspaper. The lining was of smaller strips of corn husks and plant fibre. The three eggs which the nest contained were advanced in incubation. Date, May 6, 1911.

Nest No. 4 was six feet from the ground in a small oak sapling in a clearing of the Buffalo Bayou woods about six miles west of Houston, and on April 20, 1912, contained three eggs. It was composed of Spanish moss, pieces of broom weed, and dead leaves, and was lined with dry grasses. Nest No. 5 turned up on May 11, 1912, and contained three eggs. It was in a pear orchard on the farm where nest No. 1 was found, and was placed six feet from the ground on the tip of a limb. It was composed of Spanish moss, and lined with firmly-woven strips of corn husks about a quarter of an inch wide.

Nest No. 6 was an unusually small, neat structure, and when found on July 21, 1912, contained four newly hatched young. It was in a small oak on the edge of the orchard where No. 5 was found, and I feel sure belonged to the same pair of birds. The nest was composed of the usual corn husks and grasses, but contained no moss; it was firmly woven, and placed in a fork twelve feet from the ground; inside, it measured two and a half inches across by one and three-quarter inches deep.

Probably the most interesting nest of the lot was No. 7. I did not discover it until August 17 (1912), evidently some time after it had been

¹ These birds belong in all probability to the form which Bangs has described as *C. c. magnirostris* from Louisiana, cf. Proc. N. E. Zool. Club, IV, p. 5. March, 1903.

deserted. It was placed four feet up in a small peach tree in the orchard where the last two nests were found, and appeared to be an unusually high nest. It contained fragments of two Cardinal eggs and one egg of the Dwarf Cowbird. The nest was collected for the reason that the outer layer was composed of at least a half dozen cast-off snake skins, and on pulling it apart to determine the exact amount of that material used I was extremely surprised to find that it was a two-story structure. The lower floor contained two Dwarf Cowbird eggs imbedded in the nesting material.

The last nest, No. 8, was found on April 21, 1914, in a small thicket on Taylor's ranch, one mile south of Pierce Junction. It was placed two and a half feet up in a small Mexican mulberry, and contained three eggs, which were destroyed several days later by heavy rains.

One of the deserted nests which I found was placed thirty feet from the ground in the open woods on Buffalo Bayou, in easy view.

The eggs cannot with certainty be distinguished from those of the other subspecies of Cardinals, though some of the eggs are quite different. Set No. 1 measured: $.90 \times .72$ and $.88 \times .71$. Set No. 2 measured: $.86 \times .63$; $.82 \times .65$; $.82 \times .65$; and $.77 \times .61$. Sets 3, 4 and 5 in their respective order, yielded the following: $1.13 \times .72$; $1.04 \times .71$; $.98 \times .73$; $.93 \times .71$; $.90 \times .70$; $.89 \times .71$; $1.01 \times .78$; $.99 \times .75$; and $.98 \times .76$.

Guiraca caerulea caerulea. BLUE GROSBEEK.—This bird is a very rare summer resident in the vicinity of Houston, and I have found but one nest. On May 17, 1913, it was found in a small marshy place of an orchard on an old farm about four and a half miles west of the city. The male and female were both present, but were not at all noisy and showed no alarm. The nest was three and a half feet up in a small bush in a damp thicket, and was composed of grasses, corn husks and a few withered leaves. It was lined with fine brown rootlets and a few horse hairs; on the outside it was four and three-quarter inches in diameter; inside, two and a half inches in diameter by two inches deep.

The four eggs which the nest contained measured: $.87 \times .63$; $.86 \times .63$; $.85 \times .62$; and $.82 \times .62$.

Passerina ciris. PAINTED BUNTING.—Rare summer resident; only one nest was found, and that on May 17, 1913, in a small bush in the thicket where I found the nest of the Blue Grosbeak, and not over fifty feet from that nest. The female flushed, and revealed four of its eggs and one egg of the Dwarf Cowbird. It was three and a half feet up in a small crotch, well hidden, and composed of weeds, grasses, strips of bark, leaves, and a few small twigs of grape-vine; the lining was of fine dry grasses. It was indeed a neat and compact little nest.

The four Bunting eggs measured: $.80 \times .58$; $.79 \times .56$; $.78 \times .58$; and $.77 \times .56$; and the egg of the Dwarf Cowbird: $.75 \times .59$.

Spiza americana. DICKCISSEL.—Common summer resident on the prairies, and though I have several times found fragments of their egg shells I have found but one nest. On May 21, 1911, in the small marsh a half mile north of Pierce Junction, it was discovered, almost on the ground

in a small bush and well hidden. It was a compact structure, composed of grasses, weed stems, fragments of the dry marsh grass, and a few dead leaves, and was lined with finer dry grasses.

The four eggs which it contained measured: $.88 \times .64$; $.84 \times .66$; $.83 \times .65$; and $.80 \times .61$. The first specimen is quite pointed at the smaller end, while the last three are quite equally rounded at either end.

Piranga rubra rubra. SUMMER Tanager.— Though a fairly common summer resident in the vicinity of Houston, particularly in deciduous woods, I have been able to locate but one of its nests. On July 6, 1912, I discovered the domicile of this bird, about twenty feet from the ground in an oak tree in a patch of oak woods on Buffalo Bayou about five and a half miles west of Houston. It was built in the smaller branches of the tree, near the extremity of the limb, and it was only by climbing above it that I was able to examine the contents, three young nearly ready to leave the nest. The nest itself appeared to be a very carelessly built structure, composed of a few grass stems, bark strips, pieces of dry leaves and weeds, and was lined with fine grass stems and a few catkins. Both parents were present, and very nervous; the female remained quiet while the male continually uttered its call of *pit-tuck, tuck*.

Geothlypis trichas trichas. MARYLAND YELLOW-THOAT.— Only one nest of this fairly common summer resident was found. On June 1, 1911, in a two-acre marsh a half mile north of Pierce Junction, I came on one of these birds which acted as if it had a nest nearby, so I lay down to watch. The bird, a male, was quite nervous, and it was some time before he would approach the nest; finally, after I had lost him for a moment, he appeared with an insect in his bill and flew to a tall clump of rushes about a hundred feet away. I was soon at the place, parting the stems, and it was but a moment until I located the nest. As I parted the rushes surrounding the nest, the three fully fledged young which it contained hopped from it and scattered in the surrounding grassy jungles, where I had some difficulty in catching them. The nest itself was wedged in between the stalks of the rushes about three inches above the slush of the marsh, and was composed of very coarse dry grasses and lined with the finer dry grass tops. Inside it measured one and forty-five hundredths inches in diameter and an inch and a half deep.

Icteria virens virens. YELLOW-BREADED CHAT.— Very rare, and I have found but one nest. On May 8, 1910, a nest containing four eggs was found in low underbrush by the orchard of the farm where the nests of the Blue Grosbeak and Painted Bunting were found, and not over thirty feet from either of those nests. It was three feet up in a small thicket in a damp spot, and was composed of dry grasses, strips of bark, a few weeds and leaves, laid in layers. It was lined with finer grasses and a few rootlets; inside, it measured two and a half inches across by two and a quarter inches deep.

The four eggs measured: $.92 \times .69$; $.92 \times .68$; $.91 \times .70$; and $.87 \times .67$.

Bæolophus bicolor. TUFTED TITMOUSE.—On May 20, 1911, I located my first nest of this common resident. It was in an old Woodpecker hole thirty feet up in a tottering pine stump in a clearing in the Buffalo Bayou woods about nine miles west of the city. I could not examine it, for it was impossible to make my climbers hold in the soft wood, but I felt sure it contained young as one of the parents carried an insect in its bill.

On March 22, 1913, while wandering through the woodlands along the bayou about four and a half miles west of Houston, I found a cavity containing five eggs. The dead oak stood in open woods not a hundred yards from the line dividing the prairie and the timber lands. The nest was in a natural cavity, between the bark and wood of the stub of a five inch limb, about ten feet from the ground. It was a mass of rubbish of all sorts: pieces of dead elm leaves, horse hair, cast-off snake skin, small chips of the oak bark, cow hair, pieces of dead grass, small green lichens, weeds and plant fibres, and was back in the body of the tree eleven inches from the entrance. So closely did the bird sit that I was forced to pull her out by the tail. She was sitting with her head towards the heart of the tree, in a space scarcely large enough for her body.

The five eggs measured: $.73 \times .56$; $.72 \times .56$; $.72 \times .55$; $.71 \times .56$; and $.70 \times .56$.

Hylocichla mustelina. WOOD THRUSH.—Very rare during the summer months in deciduous woods, and breeds.

On April 29, 1911, I discovered a nest in easy view on a bare limb of a small oak sapling in open oak woodlands on Buffalo Bayou about six miles west of the city. It was twelve feet from the ground and set firmly on a horizontal fork three feet from the trunk, and was composed of grasses, weed stems, inner fibre of Spanish moss, and fine rootlets; it contained large quantities of mud, and was shaped into a very neat bowl, the bottom almost flat and the sides perpendicular. No mud showed outside, though the sides of the nest were very thin, but the inside was as smooth as a piece of pottery, none of the nesting material showing through the wall of mud. Into this neat bowl had been placed a lining of fine rootlets and grass stems. The nest measured two and three-quarter inches in depth externally, two inches deep inside, four and three-quarter inches in diameter externally, and three and a quarter inches in diameter inside.

The nest contained one of the Wood Thrush's blue eggs and one egg of the Dwarf Cowbird. On May 6, I returned and found both eggs in fragments on the ground beneath the nest. On both trips the birds were present; the nest was deserted with the destruction of the eggs.