

In writing this paper we have attempted, first, to present a summary of observed data on Song Sparrow song variation in one area; second, to call attention to the method of recording such data that we have found serviceable; and, third, to touch on lines along which it may be possible to analyze and explain bird song. We believe that having done this will be important just in so far as it leads to criticism, further observation, in short, continued investigation and discussion of the subject.

The editor has permitted us to add this note since the interesting article on bird song by A. A. Saunders in the April 'Auk', based on similar subject matter, has been available for study. Mr. Saunders has aimed for greater musical precision in his records and apparently has not been struck with any two main types into which Song Sparrow songs may be divided. In so dividing them we have used what we have translated as pitch of the main trill. Possibly what we have called pitch would be more readily recognized or translated by some observers as quality.

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New York.*

BIRD BANDING AT THOMASVILLE, GEORGIA, 1924.

BY JOHN B. MAY, M. D.

Plates XXVII-XXVIII.

It was my happy privilege to spend nearly three months, from January 6 to April 10, 1924, carrying on the bird-banding operations at Thomasville, Georgia, which were begun there in 1915 by Mr. S. Prentiss Baldwin of Cleveland. Several accounts have already been published in the pages of 'The Auk' describing the results of previous years.¹

As the location and history of the Thomasville station are known to the readers of these previous reports, I shall confine myself in this article to merely recounting the actual results of my own activities compared with those of my predecessors.

¹"Recent Returns from Trapping and Banding Birds." S. P. Baldwin, 'The Auk,' Vol. XXXVIII, April, 1921.

"Adventures in Bird-Banding in 1921." S. P. Baldwin, 'The Auk,' Vol. XXXIX, April, 1922.

"Bird Banding at Thomasville, Georgia, in 1922." L. R. Talbot, 'The Auk,' Vol. XXXIX, July, 1923.

"Bird-Banding at Thomasville, Georgia, 1923." T. E. Musselman, 'The Auk,' Vol. XL, July, 1923.

Owing to illness, Mr. Baldwin was only able to spend about three weeks at Thomasville this year, arriving the last of February, and during part of his visit I was called north on business. On January 28 Mr. S. E. Perkins, III, of Indianapolis, joined me for a fortnight, assisting with the banding and introducing several novel ideas in trapping devices. A few days later Mr. Frederick C. Lincoln of the Biological Survey joined us for ten days.

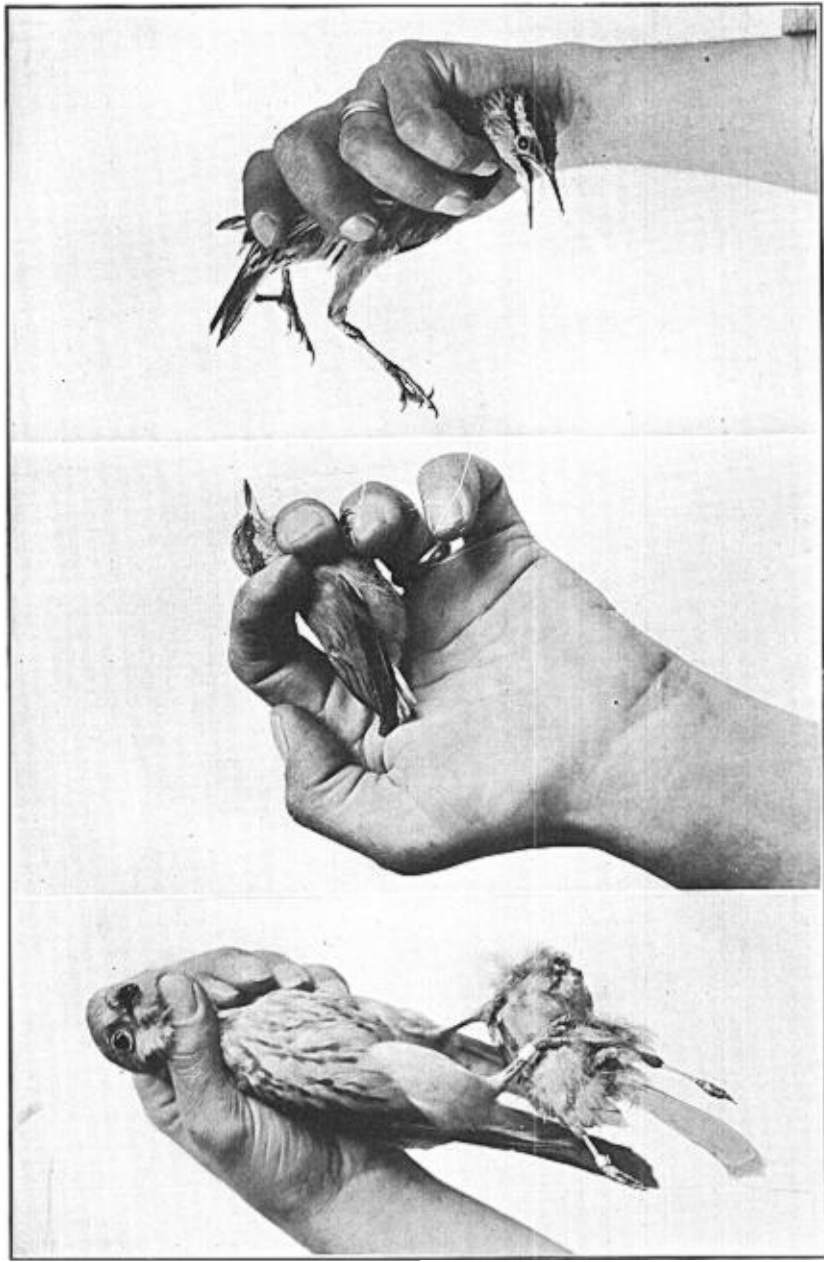
The season proved an exceptionally cold one for south-western Georgia, the thermometer having registered only thirteen degrees above zero a few days before my arrival, and frequently going below freezing during my stay. The native flora was apparently little affected by this weather, but the exotics were badly frozen in many cases. Oranges, kumquats, camphor trees, palms, and Japanese magnolias were brown and dead-looking, and the bird life was undoubtedly much affected by the conditions.

Chipping Sparrows, usually the most abundant birds during the banding operations at Thomasville, were absent in January. February first a small flight appeared, fourteen being taken that day, but cold weather followed and they apparently retreated southward, not becoming abundant until the middle of March. At this latter time some of the birds banded in early February reappeared.

Pine Warblers were very common, and during the cold weather came in numbers to the traps, eating cracked corn, bread crumbs, raw peanuts, cocoanut meat, etc., and even eating the suet fastened to trunks for the woodpeckers.

Probably due to the weather conditions, this year's results were rather disappointing in quantity in comparison with Mr. Musselman's records of 1923, when he banded 610 new birds and trapped 73 "returns." His total of 4031 new birds, "returns" and "repeats" in forty days, an average of one hundred daily, is far ahead of my 2141 in seventy-seven days.

In variety of species, on the other hand, my "catch" was much richer than that of any previous season, totalling thirty-seven species and sub-species, fifteen of which were new to the Thomasville station. The numbers in the following table represent individual birds, not "repeats." The newly-recorded species are marked with an asterisk (*).



1. SPARROW HAWK WHICH ENTERED TRAP AND CAUGHT A BANDED CARDINAL. 2. BROWN-HEADED NUTHATCH.
3. MEADOWLARK WITH OLD HEALED FRACTURE OF TARSUS.

Birds caught at Thomasville, Ga., January 18 to April 9, 1924.

| Species | New Birds | Returns | Total |
|----------------------------------|---------------|------------|-----------|
| Mourning Dove | 42 | 0 | 42 |
| Sparrow Hawk* | 1 | 0 | 1 |
| Southern Downy Woodpecker* | 1 | 0 | 1 |
| Red-bellied Woodpecker | 4 | 0 | 4 |
| Flicker* | 1 | 0 | 1 |
| Phoebe* | 1 | 0 | 1 |
| Blue Jay | 0 | 2 | 2 |
| Florida Blue Jay | 7 | 2 | 9 |
| Meadowlark* | 32 | 0 | 32 |
| Vesper Sparrow* | 18 | 0 | 18 |
| Savannah Sparrow* | 16 | 0 | 16 |
| Grasshopper Sparrow* | 1 | 0 | 1 |
| White-throated Sparrow | 7 | 1 | 8 |
| Chipping Sparrow | 131 | 23 | 154 |
| Slate-colored Junco | 13 | 0 | 13 |
| Song Sparrow | 2 | 0 | 2 |
| Swamp Sparrow* | 2 | 0 | 2 |
| Towhee | 3 | 1 | 4 |
| White-eyed Towhee | 5 | 0 | 5 |
| Cardinal | 13 | 12 | 25 |
| Cedar Waxwing* | 4 | 0 | 4 |
| Loggerhead Shrike | 1 | 0 | 1 |
| Myrtle Warbler | 42 | 2 | 44 |
| Pine Warbler | 72 | 2 | 74 |
| Palm Warbler | 1 | 0 | 1 |
| Yellow Palm Warbler | 5 | 1 | 6 |
| American Pipit* | 1 | 0 | 1 |
| Brown Thrasher | 16 | 5 | 21 |
| Mocking Bird | 4 | 2 | 6 |
| Carolina Wren | 2 | 0 | 2 |
| Southern White-breasted Nuthatch | 0 | 1 | 1 |
| Brown-headed Nuthatch* | 2 | 0 | 2 |
| Tufted Titmouse* | 2 | 0 | 2 |
| Ruby-crowned Kinglet | 1 | 1 | 2 |
| Hermit Thrush | 8 | 0 | 8 |
| Robin* | 1 | 0 | 1 |
| Bluebird* | 1 | 0 | 1 |
| 37 species and sub-species | 463 new birds | 55 returns | 518 total |

Again comparing with the 1923 records, I banded 131 Chipping Sparrows and 332 birds of other species, against 519 Chippies and only 93 birds of other species in 1923. Mr. Talbot had banded 258 Chippies in 1922, and Mr. Baldwin 220 in 1921, so that the scarcity of these birds is very noticeable.

The banding of Mourning Doves was one of the principal objectives of my trip to Georgia, as the Biological Survey wished to make a special study of this bird's movements. Being considered a gamebird in many states, a good percentage of returns could be expected, as sportsmen could be relied upon to report any banded birds which were killed. Mr. Talbot had banded one in 1922, and Mr. Musselman six in 1923. One of the latter birds, 113975, was banded March 24, 1923, and was killed a mile south of Thomasville on Dec. 29, 1923. This of course was negative evidence as far as migration was concerned, as the bird might either have remained in Georgia the entire nine months or travelled hundreds of miles to a northern breeding place and then returned.

I had been advised to bait and trap in a certain field about two miles from my headquarters, where Doves usually congregated by hundreds and even thousands. Some new traps were made from suggestions of Mr. Lincoln, which we named "clover-leaf" from their outlines, and later when Mr. Lincoln himself joined me, we put out a large "spring-pole" net of the type which he had used so successfully in trapping Ducks for banding. (See 'The Auk,' Vol. XXXIX, July, 1922, "Trapping Ducks for Banding Purposes," by F. C. Lincoln.)

For some unexplained reason Doves were scarce and this field, usually the haunt of great flocks, was visited only by small numbers this year and they came very slowly to our bait. Later other traps were located in a stubble field nearer headquarters, and a total of 42 birds were banded at the two locations, several of which repeated occasionally. The exposed locations of these traps, at a distance from houses, made them easily observed by predatory birds or animals, and several Doves, as well as Meadowlarks, were killed and partly eaten in the traps, between my visits. In one case, large footprints indicated the possibility that the culprit was a Red-tailed Hawk which frequented the field, though the actions of Crows in the nearby woods suggested the presence of a Barred Owl.

The only bird of prey captured was a female Sparrow Hawk, taken one Sunday afternoon in an ordinary sparrow trap of the well-known "government" type, the unintentional bait being a female Cardinal, a return bird of 1923. As one of these birds

frequented a nearby field where Sparrows, Warblers, and Blue-birds abounded, and apparently in perfect peace with them, often being seen perched within a few feet of the smaller birds, it was banded and photographed, and then released to see whether it would repeat its misdemeanor. After perching a few moments on a tree near the traps, it circled about and flew away across a wooded "branch" towards the field mentioned above, and on later dates I was quite sure that I saw the band on the bird's leg as it perched on its favorite telephone poles. The Hawk did not return to the traps.

Woodpeckers were abundant at Thomasville, the Redbellies and Redcockades being especially noticeable, with Sapsuckers third in noisiness. Owing to the failure of the local tinsmith to make the traps which he promised, little attempt was made to trap these birds, but the Redbellies came to the sparrow traps with fair regularity. They were interesting birds, clambering Parrot-wise about the traps when approached, and squealing and biting when handled. A female Downy was taken from its nest-hole one evening, and one big Flicker came under a pull-string trap while I was watching a pair of Cardinals feeding there. He flew down in a most business-like manner, and hopped under the trap without hesitation, frightening the Cardinals away before I could twitch the string.

The same pull-string trap was responsible for our one Phoebe, caught under rather amusing conditions. Mr. Perkins, watching the Phoebe fly-catching in a tree over the trap, conceived the idea of using an artificial fly as a lure. Two feathers from a Bobwhite were tied together and suspended inside the trap, so that they swayed in the light breeze. The next day Mr. Perkins saw the Phoebe light on the ground near the trap, hop towards it, and finally hop under the net. Without waiting for the bird to actually attempt to catch the fluttering feathers, he pulled the string, and Phoebe went on the records as No. 124975.

Blue Jays were captured fairly easily, but only two were the Northern type, both returns from 1922, the others being the Southern sub-species, easily distinguished in most cases in the field.

Meadowlarks were new to the Thomasville station, but they

came to my dove traps readily and in several instances repeated, even when released two miles from the point of capture. They were apparently of two sub-species, as there was a decided difference in size, but I did not have the facilities for positive identification in the field.

The stubble fields about the plantation were teeming with Sparrows of several species, though the grounds immediately around my cottage, where Mr. Musselman had banded his five hundred Chippies, were for some reason taboo while I was there. Vespers and Savannahs came into my dove traps frequently but most of the latter escaped through the one inch poultry wire mesh before I could get them into a receiving cage. Field Sparrows were common but none were banded. Just before my return North a sparrow trap was placed in an opening in a broom straw field and three Swamp Sparrows and a Grasshopper Sparrow were captured, one of the former being killed by a Cotton Rat, however. During my temporary absence in March, Mr. Baldwin trapped and banded two Song Sparrows, probably migrants just passing through, and one of them kindly repeated for me on my return so that I could have the species on my own list.

The interesting group of White-throated Sparrows which have haunted the shrubbery around the main house ever since Mr. Baldwin began banding there in 1915, was smaller than usual, and it was a long time before I trapped any of them there. Only one "return" was taken, 48698, banded March 17, 1921. It repeated March 29 that year, skipped 1922, returned in 1923 on March 10, 13, 17, and 23, and I recorded it on February 3, February 27, and March 31, 1924.

I had hoped to be able to throw further light on the foot disease attacking Chipping Sparrows, which Mr. Musselman has been investigating, but not only were the birds very scarce, but almost none showed any signs of active disease. Many birds had one or more toes or even an entire foot missing, but they were old, healed cases, and I was unable to send any fresh cases to Washington for pathological examination.

One Chippy had fractured its leg above the tarsus and it had healed with only slight distortion. A Savannah Sparrow and a Meadowlark were also found with fractured tarsi which had healed with very little deformity.

Cardinals were conspicuous at all times, and were interesting subjects to watch and to handle. And one needs to be watchful in handling them, for their powerful beaks are capable of giving quite a painful "nip." Often the return birds showed badly squeezed and scarred bands, and I was obliged to replace several of the old thin bands with newer ones.

Twelve of the 25 Cardinals handled were "returns," one from 1920, two from 1921, one from 1922, and eight from 1923. As twenty birds were banded in 1923, this was a return of forty per cent.

Towhees were present throughout my stay, but only one return bird was taken, 41516, banded by Mr. Musselman. This bird repeated day after day and showed a very catholic taste in traps, sometimes reporting the same day in traps a quarter of a mile apart. This was in contrast to the White-throats which seldom left the shrubbery immediately around the main house.

No White-eyed Towhees were trapped until March 24, when two were taken, another on the 30th, and two on April 8. Red-eyes were still present on this latter date.

A pleasant interlude was caused by a visit from a large flock of Cedar Waxwings, which appeared on February 22, absolutely stripped the berries from several large privet bushes around my cottage, then moved on to the hollies and cedars by the main house. A pull-string trap was set for them, baited with the usual chick-feed and crumbs, with sliced apple and sprays of privet berries added, and on February 24, I caught three Waxwings on one twig of privet. The next day added one more before they moved on, but after that I was unable to entice them to the ground.

Shrikes were common, and I had been warned of their destructiveness about a banding station, so decided to eliminate them as far as possible from my terrain. My score with the trusty "game-getter" was clean for the first eight but I missed the ninth. Then eight more in succession made the tally like "free silver," sixteen to one. This campaign probably saved many trapped birds from destruction (see Mr. Musselman's article) but in spite of my vigilance a Shrike got into one of the sparrow traps and killed a Hermit Thrush. Instead of pronouncing summary vengeance, I banded and released the Shrike to see whether it

would return but like the Sparrow Hawk, it did not repeat during my stay at Thomasville.

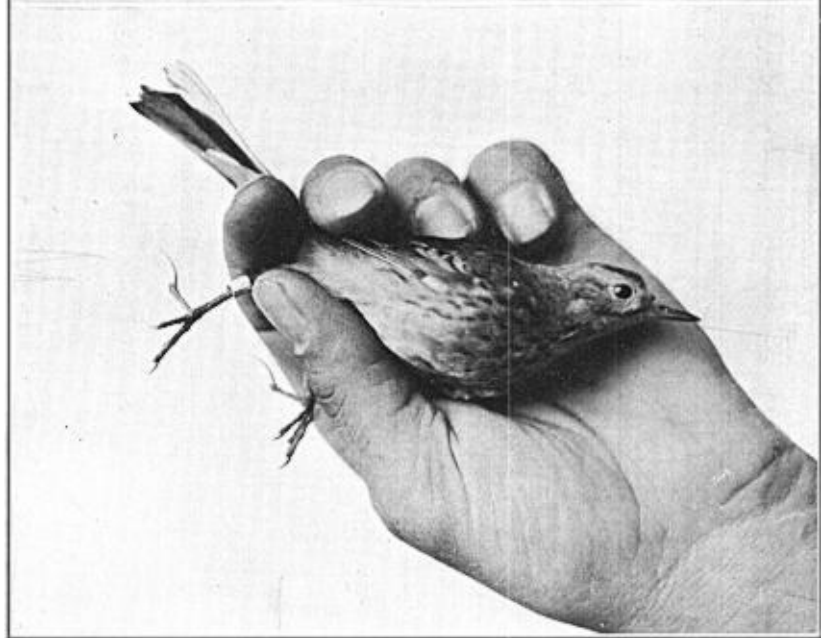
Warblers furnished some of the surprises of the season. Until this year only six Pine Warblers had been banded, one in 1916 and five in 1923. I trapped two on January 24, six more on February 6, and after that I was nearly swamped by new birds and repeats. A total of 72 were banded, and two of Mr. Musselman's five returned, a record of forty per cent. Many of these birds acquired the "trap habit" in severe form, often repeating five or six times a day, and some of them repeated as many as thirty-five times altogether. Early in March the catch of new birds decreased rapidly, and by April apparently only the breeding birds remained. I banded my last new bird April 2, and saw a completed nest on that date.

Mr. Baldwin had averaged over fifty Myrtle Warblers a season for five years, but Mr. Talbot and Mr. Musselman handled only two birds each. A few were seen in January this year, but none were trapped until February 5 when a "return" appeared. This bird, 46895, was banded by Mr. Baldwin February 24, 1921, and repeated six times that year. It was missing in 1922 and 1923, but this year it repeated frequently, the climax being reached February 12 when it was recorded seven times. February 13 it was taken four times, February 14 it was not seen, and on the 15th it was picked up dead, its stomach and bowels empty.

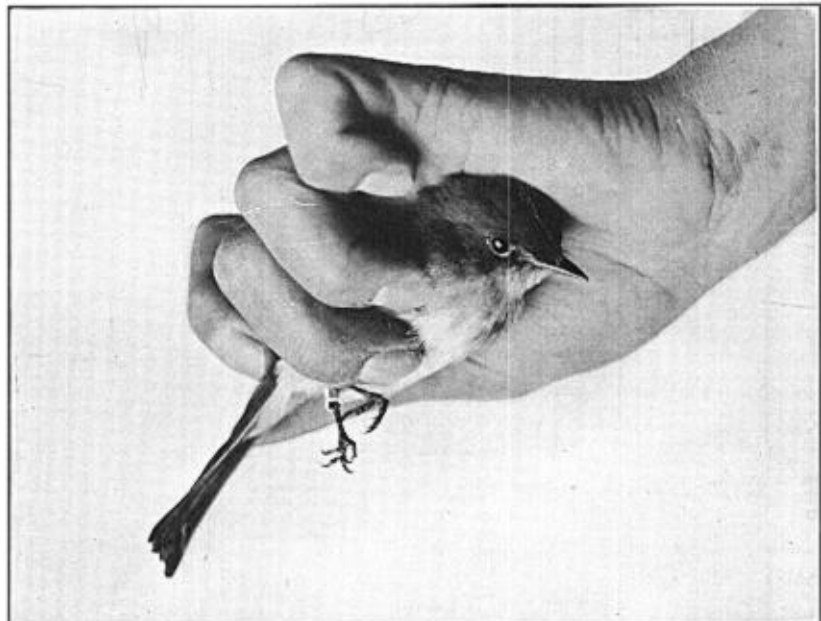
The second Myrtle was also a 1921 return, trapped three times that year and missing in 1922 and 1923. It reported to me on February 14, 1924, and three days later I began to catch new Myrtles. For over a month, until March 23, new birds were banded practically every day, with frequent repeats, but they were never as persistent as the Pine Warblers.

Yellow Palm Warblers were abundant, and Palm Warblers common, during my stay, but did not trap readily, though feeding on the ground all around my traps. Six Yellow Palms, one a return from 1923, and one Palm Warbler, were all the captures.

One of the most interesting birds banded was an American Pipit which strayed into our "four-leaf-clover" dove trap. This is apparently the second banding of this species reported to the Biological Survey.



1. РЫЖ.



2. РНОБЕ.

Brown Thrashers and Mockingbirds were both common, but quite different in their trapping relations. The Mockers were "trap shy," the few which were banded seldom repeating. 52301, banded February 21, 1921, did not return until February 14, 1924, a gap of three years. 46051 was handled twice in 1923 and twice this year. And one of the four birds I recorded was an accidental capture, flying into the garage one evening and being caught against the window.

In contrast to the six Mockers were the twenty-one Thrashers, five of which were "returns." The interesting story of Thrasher 19247 *alias* 57742, which was eight years old when last handled in 1922, has already been told in the pages of 'The Auk' by Mr. Baldwin and Mr. Talbot. Three five-year-old Thrashers reported this season, 53085, 53092, and 53093, banded respectively on February 19, February 29, and March 10, 1920. Of these the most interesting was 53085, whom I nicknamed "Old Pegleg" because of his missing left foot, amputated some time prior to his first capture. At his second appearance, March 8, 1920, he was accompanied in the trap by the famous 19247 mentioned above. (I say "he" but the sex is unknown.)

In 1921 Pegleg failed to report, but he was recorded twice in 1922 and three times in 1923. I took him on January 20 and two days later he repeated and was taken two miles in an auto to Thomasville to be photographed. At the studio entrance he escaped, disappearing promptly in the shade trees over the main street. Eight days later he was again trapped at his old haunts, and thereafter he reported at frequent intervals, in one of two nearby traps, but never seeming to stray to the others a hundred yards or so from his favorite roosting place in an old wistaria-covered pear tree. If released before his hunger was satisfied, he immediately returned to the traps, so that he was recorded five times on several different dates; he finally became so tame that he took his noonday siesta inside the trap, his head tucked back on his shoulders and he also learned the way out of the sparrow traps when he had finished his nap. He was last trapped on March 9, at a time when new Thrashers were apparently coming in from the south, and we hope that he joined the northward movement and will return to his old haunts next winter.

19247 had usually been trapped in the shrubbery around the main house, and a special effort was made to trap all Thrashers in that region this year. By using Pegleg as a decoy, we finally succeeded in capturing 53092, a bird which had reported every season since its initial appearance in 1920. Another old-timer, 53093, was handled twice in 1920 and 1921, failed to report in 1922 and 1923, but returned March 4, 1924 and repeated several times after that date.

The two other return Thrashers were both 1922 birds. Thrashers usually make a great fuss in the traps, well deserving their name, but Pegleg was very quiet after the first few times.

In 1915, the first year of the banding operations at Thomasville, Mr. Baldwin banded two Carolina Wrens, one of which was picked up dead the following season. No more were caught until this year, when two more were banded, neither of them repeating, however.

Mr. Musselman banded two White-breasted Nuthatches, one of which was attacked by a Shrike while in the trap, as described in his article in 'The Auk.' This was on February 28, 1923, and exactly one year later the same bird suddenly appeared, flew down to the ground beside a pull-string trap, and hopped briskly underneath as if it remembered the date and had an anniversary engagement. Examination showed it to be the southern subspecies.

The little Brown-headed Nuthatches caught my fancy from the first moment I heard them chattering in the great longleaf pines, and it was with much interest that I located a pair excavating a nest-hole in an old pear tree just back of my living quarters. After obtaining a series of pictures of the birds at their nest making, I slipped up one evening and placed a receiving trap over the entrance of the nest, tapped on the bark, and both birds emerged from the unfinished cavity, to become officially known as 90763 and 90764. To the best of my knowledge these are the first Brownheads banded.

Three other nests were located, but twice pickaninnies interfered with the building, and the other nest was inaccessible. One Nuthatch entered the "Brown Creeper" trap which had been placed especially for it above its nest-site, went through the glass

and zinc chute into the receiving cage, but retraced its course and escaped before we reached it to band it.

During my temporary absence in March Mr. Baldwin added a pair of Tufted Titmice to the new species listed at Thomasville, and both of them accommodatingly repeated after my return. They were interesting, pugnacious little chaps, pecking and nipping like miniature Cardinals.

One of Mr. Musselman's most unexpected captures was a female Ruby-crowned Kinglet, 37480, caught on March 9, 1923 and repeating March 20. This bird was my first "return," caught on January 19, the second day my traps were out, making a return record of one hundred per cent for this species. It repeated again on January 20, came twice on January 21, and on January 22 was found inside the trap in desperate conflict with a male Ruby-crown. The new bird was banded and both released, but no later repeats occurred, although I saw a banded Ruby-crown fluttering near the trap a few days later. (All the repeats were in the same trap where the bird was originally banded.)

One Hermit Thrush was captured on January 20, and single birds on February 21, 22, 23, 27, and 28, and March 15 and 16. This was more Hermits than had been banded in all the previous years at the station. The February 23 bird was killed by a Shrike when it repeated two days later.

Robins in the South are usually seen in large flocks, keeping to the woods and swamps, so that I was pleasantly surprised when one came under the pull-string trap when I was watching for Waxwings, on February 27.

Bluebirds were abundant in the stubble fields where some of our Sparrow traps were located, but ignored our bait. April first I found a nest in a fence-post and on the fourth I banded the female bird as she covered the full clutch of four eggs.

The automatic traps of the type of the government sparrow trap were generally very satisfactory, though some birds hopped around them in an aggravating fashion and refused to enter. Pull-string traps furnished a larger variety of species, especially the small all-wire traps in contrast to the larger ones with wooden frames covered with twine netting. The "clover-leaf" traps were made by bending a strip of two-foot poultry netting into

the outline of a clover-leaf, cutting a few strands at the bottom of the bend between leaflets, and roofing over the top with netting. The three-leaf was simpler to make and allowed the birds to be driven more readily into the receiving traps, than the four-leaf. Made of poultry wire without stiffening, it was too flimsy and was easily overturned by marauding animals, but the idea was excellent. It needed careful pegging down all around.

A few fatalities to captured birds occurred. A Cardinal, a Hermit Thrush, two Meadowlarks and a couple of Doves were killed by predatory birds or animals, and a couple of Chippies and a Swamp Sparrow were accidentally killed by rodents trapped at the same time. (Five Cottontail Rabbits, three Cotton Rats, and a Gray Squirrel were captured at different times, attracted by the cracked corn apparently.) One Myrtle Warbler and several Pine Warblers died, perhaps from a too hearty indulgence in cracked corn and similar un-warbler-like diet. One Pine Warbler was observed to have the entire back of his skull exposed, perhaps from poking its head through the wire mesh, but it survived over three weeks in this condition before finally succumbing, seeming strong and well in the interval.

All in all, my visit to Georgia was most interesting and enjoyable, and one long to be remembered. Many of the species handled were birds with which I had long been familiar in their northern breeding range, while others were entire strangers to me. But even the old friends showed a new side when viewed in such different surroundings and under such new conditions. And there is still much for me to learn of the everyday habits of some of our commonest birds.

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