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NOTES ON THE BIRDS OF TENNESSEE

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IN continuation of studies begun last year in the east-central group of States, to secure needed material in birds and mammals for the United States National Museum, we conducted field work through the season of 1937 in the State of Tennessee. As in West Virginia in 1936, W. M. Perrygo of the National Museum was in charge of the field party; Carleton Lingeback assisted during the spring and Henry R. Schaefer during the fall. Traveling in a small truck, the party left Washington on April 3 and continued in the field until July 17, when work was terminated for the summer. In fall field work began on September 9 and continued to November 11.

The following account presents in sufficient detail the results of studies of the birds obtained. A similar statement¹ covering the mammals has been prepared by Dr. Remington Kellogg, assistant curator of mammals in the United States National Museum.

In addition to remarks on the specimens obtained in 1937, I have included throughout this report reference to other skins from Tennessee in the National Museum so far as these have come to attention. Most of these were collected by W. H. Fox near Chattanooga and on Lookout Mountain in 1882 and near Rockwood in Roane County in the spring seasons of 1884 and 1885. Fox published only a few records from the Lookout Mountain area,² but he gave a complete list of his observations in the latter region.³ It has seemed desirable to include his specimens so far as they have been found in order to

¹ Proc. U. S. Nat. Mus., vol. 86, no. 3051.

² Stray notes from Lookout Mountain, Tenn. Bull. Nuttall Orn. Club, 1882, pp. 191-192.

³ List of birds found in Roane County, Tennessee, during April, 1884, and March and April, 1885. Auk, 1886, pp. 315-320; 1887, p. 164.

bring their identification up to date, in view of the long period that has elapsed since his notes were published. Included also are notes on a few specimens from northeastern Tennessee collected by A. H. Howell in 1908 and 1910.

All the data assembled are made available here for the use of those working on the list of birds of the State or occupied in other ways with the birds of Tennessee. I have not attempted to make an exhaustive search of literature for State records, as that is the province of those engaged on a complete report of all the birds that have been found in Tennessee. The notes include some records based on observations where specimens were not taken.

Tennessee is so located geographically that it covers an area where there is intergradation between a number of forms, so that handling the present collection has been interesting and, in part, difficult. That a region of mergence is covered should be borne in mind in reading the following notes, as otherwise some of the statements may be misunderstood. Assignment of names has been made only after careful consideration of the characters found in the individual specimens.

Our work was carried on under permits granted by Howell Buntin, Director of Game and Fish, Department of Conservation of Tennessee. We are deeply indebted to Mr. Buntin for his cooperation and to the officers under his direction throughout the State, who were uniformly of assistance. The National Park Service courteously granted permission for work in the Great Smoky Mountains National Park, where our party had the friendly assistance of J. R. Eakin, superintendent, and of Arthur Stupka, park naturalist. Arrangements for investigations in the Unaka National Forest were made through the courtesy of J. B. Spring, district forest ranger at Bristol, and in the Cherokee National Forest through J. W. Cooper, district forest ranger at Cleveland.

Everywhere in Tennessee our party had friendly reception from citizens and landowners, who aided in many ways, particularly in granting permission to enter on their lands. We are much indebted for this assistance, without which the work would not have been possible.

ITINERARY

The collecting work was planned so as to cover the different sections of Tennessee as completely as possible in the time available. As stated above, the party had a small truck for transportation. Work began in the southwestern corner of the State with headquarters at Ellendale, not far from Memphis, and covered Shelby and western Fayette Counties during the period from April 8 to 22. Important collections were made in a large area of cypress swamp near Hickory Withe, where permission for hunting over an exten-

sive tract was courteously afforded by A. Weber. On April 23 the party moved to a new base near Union City to remain until May 8, collecting principally in the region adjacent to Reelfoot Lake. Through permission of the State authorities these investigations covered the lake and that part of the adjacent shore included in the State reserve. Dr. Herbert Friedmann joined the party here from May 2 to May 5.

On May 9 Perrygo moved to Waynesboro, where collections were made until May 19 in a region of forested hills extending 10 miles to the north and covering sections on the Green River and near Flat Woods on the Buffalo River.

The party then moved to a point near Crossville, on the Cumberland Plateau. Collections were made here until May 31 over a considerable area, mainly on Birds Creek and near Pikeville and Melvine. The men then proceeded to the mountainous area of eastern Tennessee, and on June 1 through the friendly permission of Roy P. Blevins made camp on a grassy area above Beaverdam Creek behind the post office at Shady Valley. From this camp, at 2,900 feet elevation, there was easy access to the Holston Mountains on the west and to the Iron Mountains on the east, while to the south collections were made on Cross Mountain and in the valley to the south as far as Carter. I joined the party here from June 5 to 8. Perrygo and Lingebach remained in this region until June 16.

On June 17 the men drove south to Gatlinburg in the Great Smoky Mountains National Park, where through arrangements made by J. R. Eakin, park superintendent, and Arthur Stupka, park naturalist, they located next day at a camp $4\frac{1}{2}$ miles southwest of Cosby at an elevation of 2,700 feet, a point highly advantageous for the work in hand. From here studies were made on Cosby Knob, White Rock, Inadu Knob, Snake Den Mountain, Old Black Mountain, and Mount Guyot, the work extending to elevations of 6,600 feet. Much valuable and important material was obtained, the work continuing until July 5. Mount Guyot proved most fruitful for Canadian Zone birds.

On July 6 camp was made at Ocoee in the Cherokee National Forest, through the kind permission of the district forest ranger, J. W. Cooper. In this region collections were made on Big Frog Mountain to elevations of over 4,000 feet, and on the dry, pine-covered slopes of Beans Mountain. Birds were most abundant between 1,800 and 3,000 feet. The party broke camp for the return to Washington on July 16.

In fall Perrygo left Washington on September 9, accompanied by Henry R. Schaefer, and on the following day called on the district forest ranger in Bristol, Tenn., to arrange permission for work on the lower slopes of Roan Mountain. That afternoon they drove up the

mountain, with some difficulty due to wet and slippery roads, and camped at 6,200 feet elevation. On September 13 camp was moved to the eastern side of the summit, and two days later the men secured a cabin as a necessary shelter from the almost constant fog and rain. While through force of circumstances the camp was located across the State boundary in North Carolina, all collections were made in Tennessee. There was much migration movement among the smaller birds here, black-throated blue warblers and red-eyed vireos being particularly abundant. Birds were obtained from altitudes of 4,200 feet below Carvers Gap to 6,200 feet across the summit of the mountain. After the extreme heat of the lowlands the cool air of this high mountain was almost reminiscent of winter.

On September 25 the men moved down to Elizabethton and the following day established a base near Bean Station 12 miles northeast of Rutledge in Grainger County for work in the Clinch Mountains. This area proved to be rather dry, with a mixed second-growth forest of pine and hardwood, with little of note except a considerable migration of wood warblers. Collections were made here until October 2. The following two days were occupied in driving across to Reelfoot Lake, where on October 4 the party located in a cabin on the western shore of the lake, 4 miles northeast of Tiptonville. Plans called for work here until October 23 to follow the fall migration, but results were less than had been expected as birds were only fairly common and often hard to find because of strong winds that made them seek cover. Trips were made on the lake by means of boats, and the western and southern shore lines and adjacent regions were covered from near Samburg around to Ridgely. They also worked along the Hickman-Reelfoot Levee near the Mississippi River.

From October 24 to 31 the party located in the tobacco-growing section at Clarksville, collecting along the Cumberland River near Dover and Indian Mound and also working in heavy woods north of the latter point. On November 1 the work was transferred to a farming section in Lincoln and Giles Counties with headquarters at Fayetteville. Most of the specimens secured here were obtained in the vicinity of Pulaski and of Frankewing, near where there is a considerable tract of heavy timber. Work terminated on November 10, and the following day the party reached Washington.

Family COLYMBIDAE

PODILYMBUS PODICEPS PODICEPS (Linnaeus): Pied-billed Grebe

An adult female was taken on May 14, 1937, on the Green River about 8 miles north of Waynesboro, Wayne County. It does not seem probable that the bird was on its breeding grounds, as suitable

cover for nesting was not available. On October 8 an immature female, with the streakings on the head of the juvenile plumage, was shot on Reelfoot Lake about 6 miles northeast of Tiptonville. Others were seen here on October 21. A bird only recently hatched was taken on Reelfoot Lake on May 25, 1938.

Family PHALACROCORACIDAE

PHALACROCORAX AURITUS AURITUS (Lesson): Double-crested Cormorant

Common on Reelfoot Lake, where 12 were seen on May 7. Many were recorded from October 6 to 21. A female in brown plumage, taken 6 miles northeast of Tiptonville on October 8, is typical in size of the larger, northern race, having the following measurements: Wing 311, tail 140, culmen from base 56.2, and tarsus 64.8 mm.

Family ANHINGIDAE

ANHINGA ANHINGA (Linnaeus): Water-turkey

On Reelfoot Lake two were seen on April 26 and another on May 1.

Family ARDEIDAE

CASMERODIUS ALBUS EGRETTE (Gmelin): American Egret

Observed at Reelfoot Lake from April 24 to May 7 and from October 5 to 22.

BUTORIDES VIRESCENS VIRESCENS (Linnaeus): Eastern Green Heron

Observed as follows: Hickory Withe, April 14; Eads, April 21; Hornbeak, May 4; Reelfoot Lake, 6 miles northeast of Tiptonville, October 6; Waynesboro, May 13 and 18; Pikeville, May 31; Rogersville, June 1; Shady Valley, June 3 to 9.

NYCTICORAX NYCTICORAX HOACTLI (Gmelin): Black-crowned Night Heron

Recorded at Reelfoot Lake April 30, May 7, and October 5.

BOTAURUS LENTIGINOSUS (Montagu): American Bittern

One seen at Reelfoot Lake May 6.

IJOBRYCHUS EXILIS EXILIS (Gmelin): Eastern Least Bittern

On Green Island, Reelfoot Lake, two were seen on May 7, and a female was taken.

Family ANATIDAE

QUERQUEDULA DISCORS (Linnaeus): Blue-winged Teal

Six seen on Reelfoot Lake on October 21.

AIX SPONSA (Linnaeus): Wood Duck

Seen regularly at Reelfoot Lake from April 29 to May 7 and October 6 to 21.

Family CATHARTIDAE

CATHARTES AURA SEPTENTRIONALIS Wied: Eastern Turkey Vulture

The turkey vulture was observed regularly though not in great abundance in all the localities where collections were made from the Mississippi River to the mountains along the eastern border. On October 24 a flock of 34 passed traveling south, evidently in migration. Three specimens taken, all females, one from Hickory Withe, Fayette County, April 10, and two from near Ridgely, Lake County, October 15, have the measurements assigned to the eastern form as defined by Dr. Friedmann,⁴ the wings being 530, 532, and 538 mm, and the tails 279, 283, and 287 mm.

CORAGYPS ATRATUS (Meyer): Black Vulture

Records for the black vulture are as follows: Eads, April 21; Ellendale, April 19; Reelfoot Lake, April 29, October 12-19; Union City, May 24; Pulaski, November 1-4; Frankewing, November 8; and Crossville, May 24. None were recorded from the higher elevations of the eastern mountain section, though the species is found there on occasion.

On October 12 a male was taken near Phillippy, Lake County, in the vicinity of Reelfoot Lake. This bird has a wing measurement of 415 mm. Friedmann,⁵ through examination of considerable material, has confirmed the impression of other workers that there is no appreciable difference in size between the black vultures of North America and of South America, so that subspecies in this group cannot be recognized. In the A. O. U. Check-list for 1931 this bird is listed as *Coragyps atratus atratus*.

Family ACCIPITRIDAE

ACCIPITER STRIATUS VELOX (Wilson): Sharp-shinned Hawk

Seen at Reelfoot Lake on October 16; Union City, April 30; Indian Mound, Cumberland River, October 29; near Bean Station on Clinch

⁴ Proc. Biol. Soc. Washington, vol. 46, Oct. 26, 1933, p. 188.

⁵ *Ibid.*, pp. 187-188.

Mountain, September 27; in Shady Valley, June 9 (one chasing a quail); and at 6,000 feet elevation on Roan Mountain September 13 and 14.

As the sharp-shinned hawk of the United States is conspecific with the West Indian races, it must bear the specific designation *striatus* of Vieillot as indicated above, since this name antedates in publication *velox* of Wilson. It is given in the A. O. U. Check-list for 1931 as *Accipiter velox velox* through error.

ACCIPITER COOPERII (Bonaparte): Cooper's Hawk

A common species, recorded at Ellendale, April 20; Hickory Withe, April 9; Reelfoot Lake, April 29 and October 7; Tiptonville, October 18; 12 miles northwest of Waynesboro, May 13; near Pulaski, November 2 and 3; Crossville, May 28; Shady Valley, June 3 and 5; Roan Mountain, September 13 and 22; and 4 miles southeast of Cosby, June 29.

BUTEO JAMAICENSIS BOREALIS (Gmelin): Eastern Red-tailed Hawk

Recorded as follows: Ellendale, April 7 (partial albino); Samburg, October 18; Tiptonville, October 20; Waynesboro, May 16; Pulaski, November 2; Fayetteville, November 3; Frankewing, November 4; Birds Creek near Crossville, May 26; 3 miles north of Pikeville, May 28; Clinch Mountain, west of Bean Station, September 27 and 28; 6 miles northeast of Shady Valley, June 3; Roan Mountain, September 20 and 23; Great Smoky Mountains, southeast of Cosby, June 19, 21, and 27, and Inadu Knob, a pair from June 25 to 29; Big Frog Mountain, July 10. Listed in the A. O. U. Check-list for 1931 as *Buteo borealis borealis*.

BUTEO LINEATUS LINEATUS (Gmelin): Northern Red-shouldered Hawk

The red-shoulder was fairly common, being recorded at the following points: Frayser, April 8; Hickory Withe, April 12 to 22 (three taken); near Reelfoot Lake, April 24 to May 5 and October 7 to 20; Dover, October 30; Pulaski, November 3; Melvine, May 21; and Kingston, June 1.

The three specimens secured at Hickory Withe, Fayette County, on April 12, 13, and 15 include one male and two females. These are somewhat intermediate toward the southern form *Buteo lineatus alleni* but appear decidedly nearer to true *lineatus* and are identified as that subspecies. Measurements are as follows: Male, wing 309, tail 203, culmen from cere 20.4, tarsus 78.3 mm; two females, wing 331, 327, tail 206, 199, culmen from cere 23.3, 23.3, tarsus 81.5, 82.1 mm.

The male is within the minimum range of *lineatus* and the maximum of *alleni*. The crown is slightly grayer than most *lineatus* but is definitely browner than typical *alleni*. The back is well marked with brown, agreeing with *lineatus*, while below the bird is light, as in *alleni*. Both females are definitely like *lineatus* above and both are darker below than the male. Their measurements, while within the maximum for *alleni*, are larger than the average for that form.

The birds from Hickory Withe were on their breeding grounds, and may be considered representative of the species from that region.

BUTEO PLATYPTERUS PLATYPTERUS (Vieillot): Broad-winged Hawk

Seen near Waynesboro, May 10, and 10 miles east of Pulaski, November 2. In the mountain area one was recorded 4 miles southeast of Cosby on June 29, and others at 2,000 feet elevation on Big Frog Mountain on July 10 and 15. An immature was taken on July 10, 8 miles southwest of Copperhill on Big Frog Mountain.

AQUILA CHRYSÆTOS CANADENSIS (Linnaeus): Golden Eagle

On Roan Mountain one was seen over the summit on September 12 and another on September 14.

HALIAEETUS LEUCOCEPHALUS LEUCOCEPHALUS (Linnaeus):
Southern Bald Eagle

On April 29 a bald eagle was seen at Reelfoot Lake, and a nest that may have been abandoned was recorded. In fall one or two were observed regularly from October 6 to 23.

CIRCUS CYANEUS HUDSONIUS (Linnaeus): Marsh Hawk

Seen at Reelfoot Lake, October 5, 19, and 21; Huntingdon, April 7; Dover, October 26 and 30; and near Pulaski, November 2 and 4. In Carvers Gap on Roan Mountain two were seen daily from September 13 to 23, feeding over the grassy bald and occasionally flying over the low spruces.

While given in the fourth edition of the A. O. U. Check-list (1931) as *Circus hudsonius*, current usage today recognizes the North American marsh hawk as a geographic race of the Old World hen-harrier, *Circus cyaneus*. The difference between these two is found in the more heavily spotted under surface in the adult male of the American bird (this being regularly without spots in *cyaneus*) and in the darker coloration of the female and immature. The two are quite distinct but seem so allied as to belong to the same specific group.

PANDION HALIAETUS CAROLINENSIS: Osprey

An osprey was seen on Reelfoot Lake on October 7 and another 3 miles north of Waynesboro on May 12.

Family FALCONIDAE

FALCO PEREGRINUS ANATUM Bonaparte: Duck Hawk

Near Walnut Lodge on Reelfoot Lake, October 14, a duck hawk swooped repeatedly at a barred owl. In the Great Smoky Mountains one was recorded on Mount Guyot at 6,300 feet on June 29 and another on Inadu Knob at 5,700 feet on June 30. One was noted at 6,200 feet on Roan Mountain, September 16.

FALCO SPARVERIUS SPARVERIUS Linnaeus: Eastern Sparrow Hawk

The only sparrow hawk obtained was a male collected at an elevation of 2,150 feet on Beans Mountain, 2½ miles northeast of Parksville, Polk County, on July 13, 1937. This bird has the wing 183, tail 109.5, culmen from cere 12.5, and tarsus 37 mm. The breast is nearly immaculate, but there are scattered spots over the abdomen. There is also in the National Museum a female, taken by W. H. Fox on Lookout Mountain, March 31, 1882, that held an egg ready to be laid. This bird has the following measurements: Wing 183, tail 114, culmen from cere 13.5, tarsus 34.4 mm. In short tail and fine streaking of under surface this bird shows some approach to *paulus* but is considered to represent *sparverius*.

Interesting sight records by Perrygo include a sparrow hawk at 3,700 feet in the Great Smoky Mountains, June 21; two on Big Frog Mountain near Copperhill, July 8; and others on Roan Mountain at 5,900 feet on September 12 and at 5,500 feet on September 13.

Family TETRAONIDAE

BONASA UMBELLUS TOGATA (Linnaeus): Canada Ruffed Grouse

Three specimens taken include one from Shady Valley, June 4; one from 6,300 feet elevation on Roan Mountain, September 25; and one from 6,600 feet on Mount Guyot in the Great Smoky Mountains, June 21. All these display the heavily barred under parts and the amount of brown in the under tail coverts that characterize this race.⁶

⁶ See Wetmore, Proc. U. S. Nat. Mus., vol. 84, 1937, pp. 406-407.

In addition to the specimens listed the ruffed grouse was recorded by Perrygo as follows: One was heard 5 miles east of Crossville on Birds Creek on May 28 and another in the Clinch Mountains 6 miles southwest of Bean Station on September 29. In the Holston Mountains above Shady Valley grouse were common in June, and females with young were recorded from June 11 to 15. On June 6 on Iron Mountain I saw two females with young, one brood of half a dozen being as large as quail. In the Great Smoky Mountains Perrygo found two broods on Cosby Knob at 5,000 feet on June 19 and recorded others on Mount Guyot, June 21, on Snake Den Mountain, June 23, and on Inadu Knob, July 2. Two were drumming on July 13 at 2,100 feet on Big Frog Mountain.

Family PERDICIDAE

COLINUS VIRGINIANUS VIRGINIANUS (Linnaeus): Eastern Bobwhite

Recorded at many localities. An adult male was taken at Shady Valley on June 10.

Family MELEAGRIDIDAE

MELEAGRIS GALLOPAVO SILVESTRIS Vieillot: Eastern Turkey

One seen at 6,100 feet on Old Black Mountain in the Great Smokies on June 27.

Family RALLIDAE

GALLINULA CHLOROPUS CACHINNANS Bangs: Florida Gallinule

On Reelfoot Lake an adult and an immature gallinule were taken on October 6, and nine others were seen on October 21.

FULICA AMERICANA AMERICANA Gmelin: American Coot

On Reelfoot Lake three coots were seen on April 26 and eight on May 7. In fall they were common from October 6 to 21, specimens being taken October 6 and 8.

Family CHARADRIIDAE

OXYECHUS VOCIFERUS VOCIFERUS (Linnaeus): Killdeer

A male was taken at Hornbeak, Obion County, on May 4. Another was collected by W. H. Fox at Rockwood on March 9, 1885.

While the killdeer is evidently allied to the plovers usually placed in the genus *Charadrius*, the decidedly longer and more graduated tail and the distinct color pattern seem to me to warrant its separation

in a distinct genus, instead of listing it in *Charadrius* as proposed by Peters.⁷

Family SCOLOPACIDAE

PHILOHELA MINOR (Gmelin): American Woodcock

One was observed in Shady Valley on June 11 and another at 5,000 feet elevation on Cosby Knob, in the Great Smoky Mountains, on June 19.

CAPELLA DELICATA (Ord): Wilson's Snipe

One was seen 6 miles east of Pulaski on November 4. There is one in the National Museum taken at Rockwood, March 9, 1885, by W. H. Fox.

TRINGA SOLITARIA SOLITARIA Wilson: Eastern Solitary Sandpiper

Solitary sandpipers were seen near Phillippy on April 27 and near Reelfoot Lake on April 29. On April 15 near Hickory Withe three were seen and two were shot, one being the eastern form, a female with a wing measurement of 134 mm. A specimen collected by W. H. Fox at Rockwood on April 22, 1885, with a wing of 135.4 mm, is also the eastern form, though slightly intermediate.

TRINGA SOLITARIA CINNAMOMEA (Brewster): Western Solitary Sandpiper

A female taken in company with one of the eastern race 3 miles west of Hickory Withe, Fayette County, April 15, has the following measurements: Wing 140.5, tail 61.3, culmen from base 32.5, and tarsus 31.9 mm. In addition to large size this specimen has the white spottings on the back reduced and the inner web of the outermost primary distinctly marbled with whitish.

This western race must be considered only casual in its occurrence so far east of its normal range.

Family COLUMBIDAE

ZENAIDURA MACROURA CAROLINENSIS (Linnaeus): Eastern Mourning Dove

The widely distributed mourning dove was recorded in all the areas visited both in spring and in fall. Specimens identified as the eastern form *carolinensis* were collected 2 and 8 miles north of Waynesboro, May 12 and 13; near Rockwood, April 8, 1884 (taken by W. H. Fox);

⁷ Check-list of birds of the world, vol. 2, 1934, pp. 252-253.

and 3 miles north of Pikeville, Bledsoe County, May 21. The last is an immature male in juvenal dress. An immature male, supposed to be a migrant from farther north, was secured 7 miles northeast of Tiptonville, Lake County, October 20, 1937. The eastern race appears to be the breeding form of Tennessee except in the extreme west. It is almost certain that it extends clear to the Mississippi River from fall until the opening of spring, as in that period many northern migrants invade the State.

ZENAIDURA MACROURA MARGINELLA (Woodhouse): Western Mourning Dove

A pair of mourning doves taken 4 miles southeast of Hickory Withe, Fayette County, on April 20 show definitely the paler color above and below that characterizes the western form. A male secured at Hornbeak, Obion County, May 4, also belongs here though slightly darker in color and therefore somewhat intermediate toward the eastern bird. An immature male taken 7 miles northeast of Tiptonville in Lake County on October 20 is also somewhat intermediate, being darker on the dorsal surface, but it is nearer *marginella*. Apparently the western bird is the mourning dove of the extreme western part of Tennessee, in the northwest intergrading with *carolinensis*, the eastern race. Further details as to the range of *marginella* will be of interest, especially with regard to specimens that are definitely breeding.

Family CUCULIDAE

COCCYZUS AMERICANUS AMERICANUS (Linnaeus): Yellow-billed Cuckoo

The first one of the season was collected on May 1 near Hornbeak, Obion County. In fall another was secured and others were seen on October 18 near Tiptonville. Near Waynesboro yellow-billed cuckoos were common from May 10 to 18, and two were taken. Others were found near Pikeville on May 28 and 31 (one collected on the latter date). They were recorded at 2,700 feet elevation near Cosby on June 25, at 2,000 feet on Big Frog Mountain on July 14, and on the same day at 2,900 feet on Beans Mountain near Parksville, where one was taken.

COCCYZUS ERYTHROPHthalmus (Wilson): Black-billed Cuckoo

The two specimens taken of this cuckoo include a female from Obion County near Reelfoot Lake on April 30. Others were seen in this area near Hornbeak on May 6 and on Caney Island on May 7. Another female was shot 4 miles east of Waynesboro on Buffalo

River, May 17. One was recorded from Low Gap near Cosby in the Great Smoky Mountains on June 19.

Family STRIGIDAE

OTUS ASIO ASIO (Linnaeus): Southern Screech Owl

A male taken 6 miles east of Frankewing in Lincoln County on November 9, with a wing measurement of 150 mm, belongs to the southern race, as defined by Bangs.⁸ A female collected on Lookout Mountain on March 20, 1882, by W. H. Fox, has a wing measurement of 160 mm and is also this form. On this basis the southern screech owl has a more extensive range through the southern section of Tennessee than has been supposed.

BUBO VIRGINIANUS VIRGINIANUS (Gmelin): Great Horned Owl

On September 20 a male was secured at 5,500 feet elevation in Carvers Gap on Roan Mountain. This species is not included in A. F. Ganier's list of the birds of Roan Mountain.⁹

STRIX VARIA VARIA Barton: Northern Barred Owl

A male taken at Shady Valley on June 7 and a female from 3,500 feet elevation on Snake Den Mountain (Cocke County) in the Great Smoky Mountains have the feathering on the toes extending down past the middle of the final joint, as is characteristic of the northern race. It is supposed that others heard or seen at 5,000 feet on Roan Mountain on September 22 and on Cosby Knob (5,000 feet), Inadu Knob (5,700 feet), and near Cosby (2,700 feet) between June 19 and June 29 were of this same race.

One heard on Big Frog Mountain is of doubtful status.

STRIX VARIA GEORGICA Latham: Florida Barred Owl

Two young barred owls about two-thirds grown, taken near Eads, Shelby County, on April 20, have the distal joints of the toes entirely bare except for a narrow line of feathers down the side of the central toe. These are characteristic of the southern form. An immature about three-quarters grown, secured near Hickory Withe, April 22, seems somewhat intermediate, as the feathering comes down nearly to the middle on the two lateral toes and to about one-third of the length of the middle toe with a line down the outer side. This seems somewhat intermediate but is nearer the southern bird. An adult male, taken 3 miles south of Ridgely in Lake County on October 14,

⁸ Auk, 1930, p. 404.

⁹ Migrant, 1936, pp. 83-86.

has the outer toe with the proximal third feathered and a line of feathers down the inner side nearly to the end, the distal joint of the middle toe bare except for a fairly heavy line down its outer side, and the inner toe bare for half the distal joint, being somewhat intermediate but nearer the southern bird. These owls were noted in the vicinity of Reelfoot Lake on April 26 and May 7 and from October 7 to 16. There is no question that Leon Kelso¹⁰ is correct in indicating that *Strix georgica* of Latham¹¹ applies to the southern form of the barred owl, currently known as *Strix varia alleni* Ridgway.¹² In addition to the characters discussed by Kelso, it may be noted that Latham includes his *Strix georgica* in the group *Inauriculatae*, as distinguished from his *Auriculatae*, *pennis auriculatum instar extantium*, showing clearly that he was describing a smooth-headed bird.

Family CAPRIMULGIDAE

ANTROSTOMUS CAROLINENSIS (Gmelin): Chuck-will's-widow

Heard calling near Ellendale on April 20 and 1 mile east of Waynesboro on May 10 and 11.

ANTROSTOMUS VOCIFERUS VOCIFERUS (Wilson): Eastern
Whip-poor-will

Specimens were taken 9 and 10 miles north of Waynesboro on May 11 and 12 and 4 miles south of Crossville on May 29. Whip-poor-wills were heard in Shady Valley from June 1 to 13, 4 miles southeast of Cosby at 2,700 feet elevation on June 24, and on Big Frog Mountain on July 14.

Family MICROPODIDAE

CHAETURA PELAGICA (Linnaeus): Chimney Swift

In the wilder sections of the Great Smoky Mountains from June 19 to 30 chimney swifts were found nesting in hollow trees on Mount Guyot, Inadu Knob, and Old Black Mountain. A male was taken near Cosby on June 19. On July 10 several pairs were observed about old trees at 3,700 feet elevation on Big Frog Mountain, and it was supposed that they were using them for nesting sites.

¹⁰ Auk, 1933, pp. 106-107.

¹¹ *Strix georgica* Latham, Supplementum indicis ornithologici, 1801, p. xv (southern Georgia).

¹² *Strix nebulosa alleni* Ridgway, Proc. U. S. Nat. Mus., vol. 3, 1880, p. 8 (Clearwater, Fla.).

Family TROCHILIDAE

ARCHILOCHUS COLUBRIS (Linnaeus): Ruby-throated Hummingbird

The first of the season was recorded at Hickory Withe on April 21. Two females were taken in Shady Valley on June 5 and 10.

Family ALCEDINIDAE

MEGACERYLE ALCYON ALCYON (Linnaeus): Eastern Belted Kingfisher

Observed at the following places: Hickory Withe, April 15; Reel-foot Lake, April 24 to May 6 and October 11 and 14; Beech Creek, 12 miles northwest of Waynesboro, May 13; Buffalo River, 4 miles east of Flat Woods, May 17; Pulaski, November 1.

Family PICIDAE

COLAPTES AURATUS AURATUS (Linnaeus): Southern Flicker

The southern race of the flicker, marked by smaller size, is found through the greater part of the State, ranging east at least as far as Crossville and in the southeast to Beans Mountain. Records of breeding birds assigned to this form (with the wing measurements given in millimeters in parentheses) are as follows: Frayser, 4 miles east of Memphis, April 8, female (148.6); Hickory Withe, April 9, female (146); 4 miles west of Hornbeak, Obion County, May 3, male (149), female (148.2); 8 miles north of Waynesboro, May 13, female (151, a little larger than the average); 7 miles southwest of Crossville, May 26, two males (148, 150.5).

The flickers of the eastern mountain section are somewhat puzzling. Those of Shady Valley are definitely the northern form *luteus*, as is shown in the following account of that form. However, an adult male taken at 5,000 feet elevation on Cosby Knob in the Great Smoky Mountains June 19, in fresh plumage with the wing not worn, measures only 149 mm. On the basis of size it is to be called *auratus* and may be either a specimen from a point where intergradation between the two birds begins or a wanderer from the nearby lowlands. In view of the strong flights made by flickers through mountain areas, the latter is possible. More specimens are needed from the Great Smoky Mountain area to determine the status of the bird in that section. A male taken on July 14 at 1,800 feet on Beans Mountain in the southeastern section of the State measures 148.5 mm. This mountain does not rise to high elevation. On the higher mass of Big Frog Mountain a little farther south and east the flicker population seems distinctly mixed, as in two females taken at 2,100 feet on July 15 the wing in one measures 149 mm, agreeing thus with *auratus*, while

in the other it is 156.5 mm, being well within the limit of *luteus*. Apparently the two forms are definitely in contact at this point, so a mixed population is present.

Specimens assigned to *auratus* taken in fall include a male from Tiptonville, October 6 (wing 150), and another from Frankewing, Lincoln County, November 3 (wing 150.2).

The male from Cosby Knob has a few red feathers in the black malar stripe near the center of the dorsal margin on either side. A male from Crossville has a few red feathers along the anterior edge of the stripe. Other males in the series secured have this mark entirely black.

COLAPTES AURATUS LUTEUS Bangs: Northern Flicker

In the material collected in 1937 the northern flicker is represented by breeding birds in specimens from the mountain area, along the eastern border of the State. Three birds from the vicinity of Shady Valley in Johnson County are definitely this form, a male taken on June 3 at 2,800 feet near the base of the Holston Mountains having a wing measurement of 154 mm and two females secured on June 5 at 2,900 feet elevation near Shady Valley post office measuring 159.5 and 154.5 mm. All three have the ends of the primaries considerably worn. Apparently it is near this point that the northern and southern birds begin to mix, as it will be recalled that one from Cosby Knob has the measurements of *auratus*. One female taken by Perrygo on Big Frog Mountain at 2,100 feet on July 15 has a wing measurement of 156.5 mm, equaling *luteus*, though another specimen secured the same day has the small size of *auratus*.

While *auratus* is indicated as the breeding bird at Hornbeak in Obion County, apparently *luteus* may extend across the northern border of the State from a short distance farther east, as a male collected by R. J. Thompson at Danville on the Tennessee River on June 29, 1892, has the wing 154 mm, and one secured by A. H. Howell at 3,400 feet elevation on Cross Mountain near the boundary of Anderson and Campbell Counties on August 15, 1908, measures 158.5 mm.

From fall to spring the northern form covers the entire State. Dates of interest in the specimens before me include a female from Hickory Withe, April 9 (155), and a female from 2,000 feet elevation in the Clinch Mountains, 3 miles west of Bean Station shot September 28 (wing 153). Possibly the latter is a representative of the breeding stock of its area. Others were obtained as follows: Reelfoot Lake, October 16; Samburg, October 11; Indian Mound, Stewart County, October 28; Pulaski, November 2; Lookout Mountain, March 24 and 25, 1882 (W. H. Fox); and Rockwood, March 15, 1885 (W. H. Fox).

COLAPTES AURATUS BOREALIS Ridgway¹³: Boreal Flicker

Though not included in the fourth edition of the A. O. U. Checklist in 1931, I can see no reason for not recognizing the boreal flicker of Ridgway, with a breeding range across the north from Labrador to Alaska and extending south from the northern limit of trees to the northern border of the United States from northern Minnesota to eastern Montana. The majority of the breeding birds from this area have wing measurements ranging from 160 to 171 mm, dimensions that are considerably more than those of *C. a. luteus* to the south. When birds of this maximum size occur in the south it is during fall, winter, and spring, when they may be assumed to be migrants from the north.

Two of these large northern birds are included in the collection from Tennessee—a male taken by W. H. Fox at Rockwood on April 1, 1885 (wing 164), and a female from Hickory Withe secured by Perrygo and Lingeback on April 12, 1937 (wing 164).

CEOPHLOEUS PILEATUS PILEATUS (Linnaeus): Southern Pileated Woodpecker

Specimens of this fine woodpecker were obtained as follows: Reelfoot Lake (Obion County), April 26; 4 miles west of Hornbeak, May 3; 8 miles north of Waynesboro, May 14; 6 miles east of Frankewing, in Lincoln County, November 3; 7 miles southwest of Crossville, May 27; Rockwood, April 12, 1884, and Roane County, April 6, 1885 (W. H. Fox); Shady Valley, June 10; 4 miles southeast of Cosby, Cocke County, at 2,700 feet in the Great Smoky Mountains, June 30; Big Frog Mountain, 8 miles southwest of Copperhill, July 10 and 12. After careful comparison of this excellent series all are identified as of the typical race *pileatus*. The wing in males ranges from 216.5 to 229 mm, except for one from Crossville that measures 236.6; in females from 213 to 225.7 mm. The large individual from Crossville is within the minimum range for *C. p. abieticola* and is a strong, robust bird. Though it stands out rather sharply from the others and appears somewhat intermediate, it is not sufficiently large in my opinion to call it the northern subspecies. It will be noted that birds from the mountains near the eastern border agree in size with *pileatus*, a male from Shady Valley (2,900 feet) having the wing 222.5 mm and a female from near Cosby (2,700 feet) in the Great Smoky Mountains measuring 223.5 mm.

The pileated woodpecker was especially common in Lake and Obion Counties in the vicinity of Reelfoot Lake. One was seen near Hickory

¹³ *Colaptes auratus borealis* Ridgway, Proc. Biol. Soc. Washington, vol. 24, Feb. 24, 1911, p. 31 (Nulato, lower Yukon River, Alaska).

Withe on April 10, but residents in Fayette and Shelby Counties considered that these woodpeckers were becoming scarce in that area. They were common on Big Frog Mountain. Young just from the nest were found near Waynesboro on May 15, and grown young were recorded on Big Frog Mountain July 10 and 13, and at 2,900 feet on Beans Mountain 2 miles northeast of Parksville on July 14.

CENTURUS CAROLINUS (Linnaeus): Red-bellied Woodpecker

This woodpecker was common in the area adjacent to the Mississippi River, especially in the general region of Reelfoot Lake, while it was less numerous but in fair numbers through the south-central section visited. Records are as follows: Frayser, April 8; Hickory Withe, April 9; Reelfoot Lake, April 26 and 27; near Phillippy, Lake County, October 7, 9, and 12; Cumberland River, 2 miles west of Indian Mound, Stewart County, October 27 and 29; 8 miles north of Waynesboro, November 13; western Lincoln County, 6 miles east of Frankewing, November 9; Rockwood, March 4, 1885 (W. H. Fox).

Measurements of this series are as follows: Males (6 specimens), wing 123.5-129.7, tail 74.5-79.5, culmen from base 28.9-31.9, tarsus 22.3-24.2 mm. Females (8 specimens), wing 124.7-130, tail 73.6-80.5, culmen from base 26-29.5, tarsus 21-22.9 mm.

**MELANERPES ERYTHROCEPHALUS ERYTHROCEPHALUS (Linnaeus):
Eastern Red-headed Woodpecker**

A female taken 3 miles west of Hickory Withe on April 15 has about half of the brown head feathers of the immature dress replaced by red. An adult male was collected at Bartlett, Shelby County, on April 13. Other birds secured in the breeding season were taken as follows: Troy and Hornbeak, Obion County, May 4; 8 miles north of Waynesboro, May 13 and 14; 5 miles east of Crossville, May 28 and 29; and Shady Valley, June 5.

In fall, red-heads were common in the vicinity of Reelfoot Lake. An immature male with red feathers beginning to appear on forehead and auricular and malar regions was secured 3 miles south of Samburg, with an adult female, on October 11. Two were seen and one was taken 2 miles west of Indian Mound on the Cumberland River in Stewart County on October 29.

Measurements of this series are as follows: Males (9 specimens), wing 130-137.7, tail 75-78.5, culmen from base 25.8-27.8, tarsus 23-24. Females (4 specimens), wing 128-134.5, tail 71-75.5, culmen from base 24-26, tarsus 22.2-23.1.

I have given a brief statement of my views on the status of the eastern and western forms in an earlier paper on birds from West Virginia.¹⁴

SPHYRAPICUS VARIUS VARIUS (Linnaeus): Yellow-bellied Sapsucker

This common winter visitor throughout the State from fall to spring was recorded as follows: Frayser, 4 miles east of Memphis, April 8; Hickory Withe, April 9 and 10; 2 miles east of Phillippy, Obion County, October 9 and 12; 4 miles south of Samburg, October 13; Indian Mound, Stewart County, October 27; 7 miles north of Dover, October 30; 10 miles east of Pulaski, November 2; 6 miles east of Frankewing, Lincoln County, November 4; Lookout Mountain, April 5, 1882 (W. H. Fox); Rockwood, April 3, 1885 (W. H. Fox); Clinch Mountains, 6 miles southwest of Bean Station, September 29.

In the breeding season it was seen on June 4 at 3,800 feet elevation in the Holston Mountains, above Shady Valley.

Two years ago, in examining yellow-bellied sapsuckers collected in West Virginia, I noted an apparent difference in size between breeding birds from the mountains and individuals supposed to be migrant from the north, but on looking up further material for comparison I learned that this same problem was under study by Dr. H. C. Oberholser, so I did nothing at that time with regard to it. Since then Oberholser¹⁵ has published on the matter, recognizing a northern and a southern race, using the subspecific name *varius* for the southern bird and *atrothorax* of Lesson for the northern one.

In study of the present collection from Tennessee I have now examined this question carefully, with results that are of interest. The following statements are based on the study of approximately 60 birds of both sexes taken when they were on their breeding grounds. Comparisons are made between the series from the southern area of the breeding range of the species in the Appalachian Mountain System and the northern region as represented by skins from Canada. Following are comparative measurements of the wing (the average being given in parentheses). The dimensions of tail, culmen, and tarsus are omitted as they show nothing of significance.

MALES

North Carolina, Virginia, West Virginia (5 specimens)	117.5-122.0 (119.3)
Maryland (2 specimens)	118.7-122.5 (120.6)
Pennsylvania (6 specimens)	119.0-124.9 (122.7)
Northern Ontario, Alberta, Athabaska, Mackenzie (15 specimens)	121.1-126.2 (124.2)

¹⁴ Proc. U. S. Nat. Mus., vol. 84, 1937, p. 411.

¹⁵ Dept. Cons. State of Louisiana Bull. 28, 1938, pp. 372-374.

FEMALES

North Carolina, Virginia, West Virginia (10 specimens)-----	117. 7-124. 7 (121. 4)
Maryland (3 specimens)-----	121. 5-127. 3 (124. 3)
Pennsylvania (3 specimens)-----	119. 2-123. 0 (121. 0)
Nova Scotia, Alberta, Athabaska, Mackenzie (15 specimens)-----	120. 8-128. 7 (125. 0)

It appears from this tabulation that there is an average difference of between 3 and 4 percent in length of wing between the northern and southern groups. A study of the specimens, however, reveals that the ends of the primaries are more worn in the birds available from the south than in those from the far north. It is evident that this wear has shortened the wings of southern birds by at least a millimeter and probably more, so that the actual difference in size is less than the average figures indicate, in other words less than 3 percent.

There is an extensive area from Pennsylvania across to North Dakota and from there north to Canada where birds vary between the two extremes. A fair number of southern birds are large, and many of the northern ones are small, so that the actual differences between the two groups are quite indefinite. Identification of fully half of the individuals off their breeding grounds, if two races are recognized, therefore necessarily must be purely arbitrary. In view of this I do not feel that two geographic races can be accepted. In my opinion the slight differences that are shown between northern and southern birds are to be considered merely an indication of the well-known fact that northern birds among the woodpeckers are larger than southern ones. In the case of the yellow-bellied sapsucker the difference has not progressed far enough to warrant systematic recognition.

In this connection, notes that I have made recently on Lesson's *Picus atrothorax*,¹⁶ which Dr. Oberholser has used for his northern race of the yellow-bellied sapsucker, may be of interest. The original description of Lesson in full is as follows:

62. Pic a plastron noir; *Picus atrothorax*. Tête brune, pictée en avant de rouge; gorge blanche; plastron noir sur le thorax; parties inférieures blanches, tachetées de brun.

Pucheran¹⁷ wrote that he had not been able to identify this species of Lesson's, but two years later¹⁸ he said that Malherbe had found in the collection at Paris a bird from Newfoundland obtained in exchange from Canivet in 1828 that he, Pucheran, considered to be the female of *Picus atrothorax* and that he identified as *Picus varius*, in other words as the yellow-bellied sapsucker. Pucheran noted that the crown in this specimen was black instead of brown. It is this specimen that Berlioz has marked as the probable type of *atrothorax*.

¹⁶ *Picus atrothorax* Lesson, *Traité d'ornithologie*, 1831, p. 229 (no locality given).

¹⁷ *Rev. Mag. Zool.*, 1853, p. 162.

¹⁸ *Rev. Mag. Zool.*, 1855, p. 22.

When at the Paris Museum recently I took occasion to examine this bird and checked the discrepancy in head color noted by Pucheran. I went through the old catalog of the bird collection to find that in addition to this bird there had been another in the museum prior to 1831, when Lesson named *atrothorax*, an individual cataloged as No. 2170, marked as taken at Philadelphia by Lesueur in 1824. This second specimen was located after some search, and was found to be an immature individual of the eastern *Sphyrapicus varius* with the crown brown, spotted with red, but without the black crescent on the breast.

The first specimen, No. 2168, female, from Newfoundland, is a mounted bird in fair condition, though a little faded from exposure to light, and has the following measurements: Wing 122.5, tail 72.8, culmen from base 22.5, tarsus 21.2 mm. To repeat, this bird has the crown deep black, with three tiny dots of red on the left side of the center, and a prominent black crescent on the breast. The second specimen, No. 2170, an immature bird with sex not marked, from Philadelphia, is also a mounted bird, complete and in fair condition, except that some of the rectrices are loose. The crown is brown with numerous spots of red, and there is no black on the breast. It measures as follows: Wing 123.7, tail 70.8, culmen from base 23.0, tarsus 19.2 mm.

It appears that Lesson must have drawn his description from these two individuals and that the type material is composite.

DRYOBATES VILLOSUS VILLOSUS (Linnaeus): Eastern Hairy
Woodpecker

The State of Tennessee includes an extensive area of intergradation between the northern and southern forms of the hairy woodpecker, races that differ mainly in smaller size coupled with some restriction of the white markings on the dorsal surface in the southern subspecies. Transition in size from north to south is gradual, without sudden break. Specimens from the vicinity of Reelfoot Lake are definitely intermediate between the two races under consideration (wing in 2 males 117 and 119 mm, in 2 females 115 and 115.8 mm), but they seem slightly nearer the northern group. The specimens seen include skins from Reelfoot Lake, April 28 and May 7; 3 miles south of Samburg, October 11; 2 miles south of Ridgley, October 15; and 7 miles north-east of Tiptonville, October 22. Their identification as *villosus* is tentative in view of the fact that the southern race has been recorded from the Mississippi bottoms in southern Indiana and southern Illinois. In the Biological Survey collection there is a male with the wing much worn, taken at Lexington by A. H. Howell on July 9, 1910, with a measurement of 115.5, that seems also intermediate but is in such a state of plumage that it is difficult to place.

A pair of birds from western Lincoln County 6 miles east of Frankewing (male, wing 119.8, female 116.8), taken November 5 and 6, in size and in the considerable extent of white on the back are of the northern type, as are two males (wing 120.3 and 119.3 mm) secured by W. H. Fox at Rockwood on March 9 and 28, 1885. A male collected at 1,900 feet elevation in the Clinch Mountains 3 miles northwest of Rutledge on October 1 (in molt so that the wing apparently is not quite grown) also belongs here, with a wing measurement of 118.5 mm. Specimens from the higher elevations in the eastern mountains are definitely of the northern race. A male (wing 120.1) was taken at Shady Valley June 7. Birds secured at elevations of 5,000 feet or more on Roan Mountain on September 20 to 23 are in molt, so that the wing is not grown but affords sufficiently large measurements to indicate that they are true *villosus*. In the Great Smoky Mountains a male (wing 118) was taken at 6,300 feet on Old Black Mountain on June 21, one (wing 122) at 2,700 feet 4 miles southeast of Cosby on June 23, and one (wing 118) at 6,500 feet on Mount Guyot on June 26.

Birds of the year, fully grown, were taken at Reelfoot Lake on May 7, at 3,000 feet elevation 7 miles north of Carter on June 7, near Cosby on June 23, at 5,700 feet elevation on Inadu Knob on June 24, and at 6,000 feet elevation on Old Black Mountain on June 24, the last three being in the Great Smoky Mountains. One of the juvenile females has the center of the crown definitely spotted with white and with elongated marks of red; another has four or five of the elongated red markings only; and in a third markings are absent.

DRYOBATES VILLOSUS AUDUBONI (Swainson): Southern Hairy
Woodpecker

The southern race of the hairy woodpecker has a range uncertainly delimited at present in the southern section of the State. A female taken at Bartlett on April 19 has a wing measurement of 112.8 mm; a juvenile female not fully grown taken on May 14, 8 miles north of Waynesboro, is identified tentatively as *auduboni*. Adult material is necessary to check this allocation. A pair secured on May 27 on Birds Creek 7 miles southwest of Crossville measure as follows: Wing, in male 111.0, in female 112 mm. The three adults just mentioned have the wings considerably worn, but after careful examination it does not appear to me that enough of the end of the wing is gone to permit their being *villosus*. I have examined with particular care the two from Crossville, since March birds from Rockwood a short distance east are the northern bird. A juvenile female with unmarked crown was taken also with the adults from near Crossville. The southern bird is also the form of Big Frog Mountain in Polk County, as indicated by two specimens secured 8 miles southwest of

Copperhill, a male taken at 2,100 feet on July 15, with the wing 112 mm, and a female secured at 1,800 feet on July 12, with the wing 114.5 mm. A juvenile male was collected here on July 15. The adults are much worn, but the same statement holds with them as that made for the Crossville specimens.

It is strange that the birds from Frankewing have the size and color of true *villosus*, in view of the fact that the bird from Crossville has the smaller size of *auduboni*. As the Frankewing specimens were taken in November, it is barely possible that they had moved into that area from the north, though it seems more probable that they were resident. Considerable further collecting will be necessary to work out the status and distribution of the southern form, particularly in the area adjacent to the Mississippi River, and in the south-east.

DRYOBATES PUBESCENS PUBESCENS (Linnaeus): Southern Downy
Woodpecker

As in the case of the hairy woodpecker, the downy woodpecker of Tennessee covers a considerable area where there is definite intergradation between the northern and the southern forms. The southern subspecies, *pubescens*, has the wing in both males and females ranging from 86 to 91 mm, while in the northern bird, *medianus*, the same dimension varies from 91 to 97 mm. It is usually supposed that the southern bird is duller white below, a character that is entirely unreliable, as any recent burn will smudge the breasts of all woodpeckers from the charcoal and ash on the bark of the trees and shrubs over which they clamber.

Birds that I have identified as typical *pubescens* come from the southern sections of Tennessee. A male collected at Hickory Withe, Fayette County, on April 10 has the wing 88 mm, and a female from the same point taken on April 9 measures 90.5 mm. In the western edge of Lincoln County, 6 miles east of the post office of Frankewing, a male measuring 88.3 mm was taken on November 3, and a female with the wing 90.5 mm on November 6. At this point there was a mixture, as larger birds measuring 93.8 and 94 mm were obtained at the same time. These are considered *medianus* and may be migrant from some mountain or northern area nearby. A male from Birds Creek, 7 miles southwest of Crossville, May 24, has the wing 89.6 mm. Mixing is evident at Rockwood also, in material collected by W. H. Fox, as two males taken on April 11, 1884, and April 15, 1885, measure 91 mm, and a female secured April 7, 1884, is 91.1 mm. Another female, taken on March 13, 1885, is 95.5 mm and represents *medianus*, and again may have come from a nearby mountain. A male taken at 2,100 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill, July 9, measures 89 mm.

DRYOBATES PUBESCENS MEDIANUS (Swainson): Northern Downy Woodpecker

In a considerable area in the northwestern part of the State intermediate specimens of the downy woodpecker occur that are barely within the size range of the northern form. Specimens of this type are represented from the region about Reelfoot Lake, as indicated in the following list where the wing measurements are enclosed in parentheses following the locality and date of the birds to which they pertain: Tiptonville, October 19 (2 males, 90 and 93.9; 2 females, 91 and 92); Samburg, October 14 (91.9); and Reelfoot Lake, April 29 (90.5). Specimens in this same category from other localities include a male from the Cumberland River, in Stewart County, 2 miles west of Indian Mound, October 27 (wing 91.5), a female from 7 miles north of Dover in the same county, October 30 (92.4), and a female from much farther south, in Wayne County, 9 miles north of Waynesboro, May 11 (wing 92 mm). Further material from this area is required to establish more certainly the form found there. For the present it is considered to be *medianus*.

As indicated in the account of *D. p. pubescens*, there seems to be some mixing in the downy-woodpecker population at a few points, due perhaps to migratory movement or to specimens taken at different altitudes. This is true in western Lincoln County 6 miles east of Frankewing, where males taken November 5 and 6 measure 93.8 and 94 mm, though others have the size of *pubescens*, and at Rockwood where one female secured by W. H. Fox, March 13, 1885, measures 95.5 mm, though others are *pubescens*.

In the mountain section in the northeast, from the Great Smoky Mountains northward, all the birds examined are definitely large and can be referred without hesitation to true *medianus*. These include the following (with the wing measurements again given in parentheses): Cross Mountain, near the line of Anderson and Campbell Counties, August 15, 1908, taken by A. H. Howell (male 95.7, female 95); Bean Station, Grainger County, October 1 (male 95); 3,800 feet elevation in the Holston Mountains, near Shady Valley, June 3 and 4 (male 95.5, female 92.7 and 93.8); 5,000 to 6,200 feet elevation on Roan Mountain, September 13 to 22 (male 94.2, females 93.9 and 96.1); 6,300 feet elevation on Old Black Mountain, Great Smoky Mountains, June 25 (male, 95.5); Inadu Knob, near Cosby, June 21 (female 92.1).

DRYOBATES BOREALIS (Vieillot): Red-cockaded Woodpecker

Perrygo recorded one of these birds near the Cumberland River, 7 miles north of Dover on October 30 but did not collect it. There are three in the National Museum taken by W. H. Fox at Rockwood, a pair on April 11, 1884, and a male on April 22, 1885.

The considerable length of the wing tip in this species is equaled among our other woodpeckers only by the sapsuckers of the genus *Sphyrapicus*, and indicates a considerable divergence from the condition found in the related hairy and downy woodpeckers.

Family TYRANNIDAE

TYRANNUS TYRANNUS TYRANNUS (Linnaeus): Eastern Kingbird

The kingbird was recorded as follows: Hickory Withe, April 10; Ellendale, April 17 (specimen); Reelfoot Lake, April 27 (specimen); Troy, May 1; Hornbeak, May 3; Samburg, May 5 and 6; Waynesboro, May 10 to 18 (specimen); Pikeville, May 21 and 29; Crossville, May 27 and 29; Rockwood, April 17, 1885 (specimen by W. H. Fox); Bearden, June 1; and Cosby, July 5. The western race of this species described by Oberholser¹⁹ is marked mainly by slightly grayer dorsal coloration, the alleged difference of larger size holding only for part of the individuals examined. The white band on the tip of the tail averages slightly wider in the western race but is subject to considerable abrasion, so that in numerous specimens from the west no difference is to be noted. Zimmer²⁰ states that he has been hesitant about recognizing two races in this species, but such action to me seems valid, though as indicated the difference between the two is slight.

MYIARCHUS CRINITUS BOREUS Bangs: Northern Crested Flycatcher

On April 27 a female crested flycatcher was taken at Reelfoot Lake, and two others were seen. Two were seen near Hornbeak on May 1, and others about the lake on May 7. They were fairly common at Waynesboro from May 10 to 14 and near Pikeville on May 31. W. H. Fox collected one at Rockwood on April 15, 1885. One was taken in the Holston Mountains above Shady Valley on June 4. One was seen on June 24 at 3,800 feet on Snake Den Mountain in the Great Smoky Mountains, and two at 3,900 feet on Big Frog Mountain, July 10.

Eight specimens from Tennessee examined all agree in color and in size of bill with the northern race.

SAYORNIS PHOEBE (Latham): Eastern Phoebe

Specimens were seen or collected as follows: Hickory Withe, Fayette County, April 12; Samburg, May 2; Phillippy, Lake County,

¹⁹ *Tyrannus tyrannus hespericola* Oberholser, Sci. Publ. Cleveland Mus. Nat. Hist., vol. 4, Sept. 19, 1932, p. 3 (mouth of Twenty Mile Creek, Warner Valley, 9 miles south of Adel, Oreg.).

²⁰ Amer. Mus. Nov., No. 962, Nov. 18, 1937, pp. 12-13.

October 23; Waynesboro, May 12 and 17; Lookout Mountain, March 21, 1882 (specimen by W. H. Fox); Birds Creek, 7 miles southwest of Crossville, May 24 and 26 (the latter a juvenile bird just from the nest); Rockwood, April 12, 1884 (specimen by W. H. Fox); 2,000 feet elevation, Clinch Mountains, 6 miles southwest of Bean Station, September 29; 2,800 feet elevation in the Holston Mountains, near Shady Valley, June 3; 2,700 feet elevation, 4 miles southeast of Cosby, June 23 and July 2.

EMPIDONAX VIRESCENS (Vieillot): Acadian Flycatcher

Specimens of the Acadian flycatcher were obtained as follows: 8 to 10 miles north of Waynesboro, May 10, 12, and 19; near Shady Valley, at 3,600 feet in the Iron Mountains, June 6, and at 2,900 feet in the Holston Mountains, June 12; at 3,000 feet 7 miles north of Carter, June 7; and at 2,700 feet, 4 miles southeast of Cosby in the Great Smoky Mountains, June 30 and July 1 and 2.

MYIOCHANES VIRENS (Linnaeus): Eastern Wood Pewee

Specimens were obtained as follows: Eads, Shelby County, April 20; Reelfoot Lake, April 27; near Hornbeak, May 3; 8 to 9 miles north of Waynesboro, May 11 and 14; 7 miles southwest of Crossville, May 25; Clinch Mountains near Bean Station, September 27 and 28; Shady Valley, June 10; Roan Mountain, at 5,000 feet elevation, September 25.

Van Rossem²¹ recently has brought up again the question of the relationship of the eastern and western groups of wood pewees by listing the western wood pewee as *Myiochanes virens richardsonii*. That the two wood pewees are so closely similar in color and form as to be distinguished at times with difficulty in museum skins is easily apparent, but that this is external resemblance without closer relationship than that of distinct species seems evident to me from knowledge of the two in life. After a familiarity of many years I am convinced that they are distinct, as indicated by entirely different voice. In this regard it is only necessary to consider the close resemblance of females of the blue-winged and cinnamon teals as a related case. With the teals the males are entirely different, so that there is no confusion. With the wood pewees the sexes are alike, so that the two are separated with difficulty.

NUTTALLORNIS BOREALIS (Swainson): Olive-sided Flycatcher

An adult male was collected at 5,000 feet elevation on Cosby Knob in the Great Smoky Mountains on June 19. Another was seen at

²¹ Birds of El Salvador. Field Mus. Nat. Hist., zool. ser., vol. 23, 1938, p. 371.

5,700 feet on Inadu Knob on June 23, and one was recorded at 6,100 feet on Roan Mountain, September 12.

In the fourth edition of the A. O. U. Check-list (1931, p. 211) the olive-sided flycatcher is listed as *Nuttallornis mesoleucus* (Lichtenstein) following Hellmayr,²² who based this on *Muscicapa mesoleuca* Lichtenstein.²³ More recently, however, Van Rossem²⁴ has located Lichtenstein's type in the Berlin Museum to find that it is a species of South American flycatcher. This circumstance allows return again to the familiar name *borealis* as the specific term for this attractive flycatcher.

The bird from Cosby Knob, an adult male in good plumage, is very small, measuring as follows: Wing 100.8, tail 65.9, culmen from base 17.5, tarsus 15.5 mm.

After examination of a large series of specimens, the contention of some that there are eastern and western forms of this flycatcher in my opinion is not upheld. It is true that the specimens with the longest wings come from the west, and those with the shortest wing measurement from the east, so that by averages a slight difference between series from the two areas is evident. The overlap in size in skins from the two areas is such, however, that the majority of individuals might be classed in either group, only a few specimens among the extremes of large and small being susceptible of separation. In these circumstances I do not consider recognition of two races warranted. The statement is made only after examination of a large number of skins.

Family ALAUDIDAE

OTOCORIS ALPESTRIS PRATICOLA Henshaw: Prairie Horned Lark

One was seen 5 miles west of Lawrenceburg, May 16.

Family HIRUNDINIDAE

IRIDOPROCNE BICOLOR (Vieillot): Tree Swallow

A male was taken at Rockwood, April 14, 1885, by W. H. Fox. Perrygo recorded this species near Eads on April 14 and found it common at the end of April in Obion and Lake Counties, recording two flocks near Tiptonville on May 1. In fall he observed it in the vicinity of Reelfoot Lake from October 5 to 21.

RIPARIA RIPARIA RIPARIA (Linnaeus): Bank Swallow

Recorded at Eads on April 16, 19, and 20 and at Reelfoot Lake on April 24.

²² Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 5, 1927, p. 189.

²³ Preis-Verzeichniss Vögel Mexico gesammelt, etc., 1830, p. 2.

²⁴ Trans. San Diego Soc. Nat. Hist., vol. 7, 1934, pp. 350-352.

Oberholser²⁵ has considered the bank swallow of North America when compared with that of Europe as separable under the name *maximiliani* of Stejneger,²⁶ stating that our bird is darker above in addition to being slightly smaller. After careful comparison of a good series in the American Museum of Natural History and the United States National Museum from England, Sweden, Germany, Austria, and Russia with a comparable set from Ontario, Quebec, New York, New Jersey, and Connecticut. I am unable to establish any line of demarcation between them. There is considerable variation individually in the shade of brown above, but light and dark specimens occur on both continents. There is also considerable range in size in this race, and there appears no difference in dimensions between Old World and New World birds. My findings, therefore, agree with those of European ornithologists who have considered this matter.

STELGIDOPTERYX RUFICOLLIS SERRIPENNIS (Audubon): Rough-winged Swallow

The specimens secured include two immature birds taken on October 6 at Reelfoot Lake, 6 miles northeast of Tiptonville, where hundreds were recorded, and a male from 3 miles north of Pikeville, on May 28. At Rockwood W. H. Fox shot a female on April 16, 1884, and a male on April 4, 1885. I saw one near Carter on June 7, 1937.

While the South American representatives of our rough-winged swallows are quite distinct in yellowish abdomen and reddish-brown throat, through Central America intergradation is complete to such an extent that I have taken specimens in the highlands of Guatemala that at first glance I thought must surely be migrants from the United States. All the forms of this widespread group are therefore to be treated as geographic races of one species.

After detailed study of the series of specimens in the U. S. National Museum, I have been unable to detect any differences in birds from the west, which have recently been described by Oberholser as a distinct subspecies *aphractus*.²⁷ In color and size specimens from the area in which *aphractus* is supposed to range to me appear identical with birds from the east. The race named by Griscom from Sonora as *psammochrous*²⁸ is, on the other hand, distinct in being paler above than *serripennis* and in averaging somewhat lighter on the breast, though this last difference is slight and in-

²⁵ Dept. Cons. State of Louisiana Bull. 28, 1938, p. 407.

²⁶ *Clivicola riparia maximiliani* Stejneger, U. S. Nat. Mus. Bull. 29, 1885, p. 378, footnote (Ipswich, Mass.).

²⁷ *Stelgidopteryx ruficollis aphractus* Oberholser, Sci. Publ. Cleveland Mus. Nat. Hist., vol. 4, Sept. 19, 1932, p. 5 (Twenty-mile Creek, 9 miles south of Adel, Oreg.).

²⁸ *Stelgidopteryx ruficollis psammochrous* Griscom, Proc. New England Zool. Club, vol. 11, Dec. 14, 1929, p. 72 (Oposura, Sonora, Mexico).

definite. As Oberholser states in his description of a supposed western race just cited, *psammochrous* enters the United States along the southwestern boundary, there being specimens in the U. S. National Museum as follows: Texas, near Laredo; Arizona, San Bernardino Ranch, Santa Cruz River west of the Patagonia Mountains, Adonde, Fort Verde, and Fort Whipple near Prescott; California, Jacumba and San Diego.

Van Rossem²⁹ at one time considered that the characters assigned to *psammochrous* were due to fading in specimens long in museum collections, but after further work he informs me that he has found that this conclusion was wrong. In my own comparisons I have had available birds of equivalent condition as regards date of collection, and as the differences are apparent in these I must conclude that *psammochrous* is valid.

HIRUNDO RUSTICA ERYTHROGASTER Boddaert³⁰: Barn Swallow

The barn swallow was seen as follows: Common near Reelfoot Lake at the end of April, seen October 8 and 16; Samburg, May 6, several; Waynesboro, May 10, four; Shady Valley, June 1 to 11, seen daily, and a pair nesting in a barn at the post office.

PROGNE SUBIS SUBIS (Linnaeus): Purple Martin

Seen as follows: Hickory Withe, April 9; Ellendale, April 16; Eads, April 23; Tiptonville, May 1; Union City, May 2; Samburg and Hornbeak, May 6; near Beech Creek, 12 miles northwest of Waynesboro, May 13; Crossville, May 26; Shady Valley, June 4, one.

Family CORVIDAE

CYANOCITTA CRISTATA CRISTATA (Linnaeus): Northern Blue Jay

As a winter visitor this form, marked by larger size, lighter, bluer dorsal coloration, and more extensive white on the tertials and secondaries, should be found throughout the State. There are only two specimens in the present collection that are placed under this race and those with some reservations. A male taken near Phillippy on October 7 (with the wing 129.3) is small but has the color and wing marking of the northern form. While intermediate it is believed to be near *cristata*. A male from the Clinch Mountains 6 miles southwest of Bean Station taken on September 30 measures 131.7. It is of the proper shade of blue above but has the white margins on the wing feathers as in *florincola*. It also appears intermediate. While these are listed here as *cristata*, it will be noted that neither is entirely

²⁹ Trans. San Diego Soc. Nat. Hist., vol. 6, Apr. 30, 1931, p. 268.

³⁰ See Wetmore, Proc. U. S. Nat. Mus., vol. 84, 1937, pp. 413-414.

typical of that form. Collections made later in fall and in winter should include migrants from the north.

CYANOCITTA CRISTATA FLORINCOLA Coues: Florida Blue Jay

From examination of an excellent series of jays taken throughout the State it appears that the breeding bird from the area represented is to be identified as the southern form. The identification is made on the basis of duller, more purplish dorsal coloration, less extent of white tipping on tertials and secondaries, and smaller size particularly as indicated in length of wing. It is true that some birds from the eastern mountain area are larger than the average of *florincola*, and so come within the lower size range of *cristata*, but in color these larger individuals resemble the others of smaller size.

The birds just mentioned from the eastern mountains are puzzling and show definite intermediate characters. Two males taken in Shady Valley on June 8 have wing measurements of 125.5 and 135.4 mm, and a female collected on June 2 measures 131.6 mm. A male taken at 4,500 feet on Snake Den Mountain in the Great Smokies on June 24 has the wing 133.8. On the basis of size three of these four specimens could be called true *cristata*, but in dorsal coloration they are distinctly darker, more purplish, and have the white wing markings restricted. They are identified at present as *florincola*. A male from 5,000 feet elevation on Roan Mountain taken on September 23 is even more intermediate. The wing measures 129.5, and the white on the tertials is reduced as in *florincola*, but the blue above is brighter and less purplish. It is possible that when more skins are available it may prove better to place the jays of the mountain region with *cristata*, though the material now available points to the allocation made here.

Other breeding birds are all definitely of the *florincola* type of coloration, and only a few approach *cristata* in size. All are small enough to come within the range of measurement assigned to *florincola*. Following is a list of specimens, with the wing measurements indicated in parentheses: Hickory Withe, April 12 and 13, 3 males (130.1, 131.7, 127); Reelfoot Lake, April 26 and 27, 2 males (127.3, 128.6); Hornbeak, May 1, male (127.7); 8 miles north of Waynesboro, May 13 and 15, 2 males (130, 131.2); Melvine, Bledsoe County, May 21 (133.5); Birds Creek, 7 miles southwest of Crossville, May 27, 2 males (126, 132.2).

Fall specimens allocated here include two from Samburg, a male taken on October 11 (124) and a female October 13 (124); Cumberland River 2 miles west of Indian Mound, October 27, female (123); and Cumberland River, 7 miles north of Dover, October 30, female (123.5).

Blue jays were found to be commoner than anticipated through the mountains of the eastern section of the State. In addition to the specimens seen they were recorded as follows: Clinch Mountains near Bean Station, September 27 to 30, several; Holston Mountains above Shady Valley, June 2 to 16, common; Roan Mountain, September 11, one, and September 23, five; Great Smoky Mountains, Low Gap near Cosby, June 19, one, Cosby Knob at 5,000 feet, June 19, one, Snake Den Mountain at 5,000 feet, July 2; Big Frog Mountain, July 13, one.

CORVUS CORAX PRINCIPALIS Ridgway: Northern Raven

The raven was recorded in the Great Smoky Mountains near Cosby on June 19, when two were seen, and at 6,600 feet on Mount Guyot on June 27, when four were observed. At 3,000 feet elevation on Big Frog Mountain one was heard on July 13 and another on the following day, but because of the trees the birds were not actually seen. During work on Roan Mountain three were seen on September 11, five on September 12, and single birds were observed regularly. They passed in the morning flying toward the north and returned at dusk traveling toward the southeast into North Carolina.

CORVUS BRACHYRHYNCHOS BRACHYRHYNCHOS Brehm: Eastern Crow

The crow population through the greater part of Tennessee is decidedly intermediate between the rather poorly differentiated northern and southern subspecies. In general the birds from the northern part of the State west of the high mountain area to the Mississippi seem to agree best, on the material at hand, with true *brachyrhynchos* when the two characters of length of wing and size of bill are considered. Several are intermediate, and a larger series of birds may cause some change in this conclusion. In a pair taken at Reelfoot Lake near Tiptonville, the male is distinctly of the *brachyrhynchos* type with the wing 323 and the culmen from base 52 mm. The female is somewhat small, with the wing 300 and the culmen from base 49.0. These two birds apparently were mated with grown young out of the nest. They are the only specimens taken in the breeding season that are identified as *brachyrhynchos*. In three males secured near Phillippy in fall, a male shot on October 7 is very large (wing 329, culmen from base 52 mm). Two others taken on October 7 and 12 measure as follows: Wing 305 and 300, culmen from base 51.7 and 50.8 mm. The wings in these two are decidedly worn, as the primaries have not yet been molted. This

accounts in part for the small wing measurement, and because of this condition and the large bill these are called *brachyrhynchos*. In two taken on the Cumberland River two miles west of Indian Mound on October 27, a male has the wing not yet fully grown, while the culmen measures 50 mm. A female has the wing 305 and the culmen from base 48.5. While intermediate these two are called *brachyrhynchos*.

The recent proposal of Dr. Wilhelm Meise³¹ and Dr. C. E. Hellmayr³² to give the American crow status as a geographic race of *Corvus corone*, the carrion crow of Europe, is one that does not to me seem proper. After a field experience gained through three journeys in western Europe, I am convinced that the resemblance between these two birds is of a generic nature and that specifically they are distinct. Their resemblance is found principally in that the two are generally similar in form, are black in plumage, are alike in size, and have more or less the same habits and ecological status. In the field, the voice of the carrion crow is more like that of a raven, quite distinct from that of our crow, so different in fact that in May 1938 in Switzerland I did not recognize the call of a carrion crow when heard for the first time in four years as that of a crow until it had been repeated several times. In flight the wing action of the carrion crow also is different, the wings having a wider sweep above and below the longitudinal axis of the body. Ordinarily, too, in the European species the tips of the primaries in flight are more widely separated, the wing appearance being that of a raven. In the hand, the outer primaries are actually narrower than in the American crow. In view of all this and of the geographic separation of the two, it appears to me that they should be considered specifically distinct.

CORVUS BRACHYRHYNCHOS PAULUS Howell: Southern Crow

A male secured near Hickory Withe on April 21 identified as *paulus* is distinctly intermediate toward the northern form, with the wing 305 and the culmen from base 50.2 mm. While this specimen is here called *paulus*, further material may demonstrate that the breeding crows throughout extreme western Tennessee are best called *brachyrhynchos*. A female from 5 miles north of Waynesboro on Green River, with the wing 300 and the culmen from base 44.5 mm, has the small bill of *paulus*. A male from 7 miles southwest of Crossville on Birds Creek is intermediate, with the wing 309 and the culmen from base 50.5 mm. It is identified as *paulus* with some reservation.

³¹ Journ. für Orn., 1928, p. 8.

³² Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 7, 1934, p. 3.

Breeding specimens from 2,900 feet elevation at Shady Valley are definitely of the *paulus* type, a male shot June 5 having the wing 290 and the culmen from base 48.8 mm, while a female taken on June 7 has the wing 295 and the culmen from base 45.3 mm. These two agree with a breeding bird from White Top Mountain, Va., a short distance away to the northeast. A female collected in Lincoln County, Tenn., 6 miles west of Fayetteville, November 1, measures as follows: Wing 297, culmen from base 46.9. It also is considered *paulus*.

Family PARIDAE

PENTHESTES ATRICAPILLUS PRACTICUS Oberholser: Appalachian Chickadee

In the higher elevations of the Great Smoky Mountains the black-capped chickadee though not common is found in fair numbers. Adult males were taken at 6,300 feet on Old Black Mountain on June 21 and 25, at 6,600 feet on Mount Guyot on June 21, and at 6,100 feet on Inadu Knob on June 24 and 26.

In commenting recently on a series of these chickadees from the mountains of West Virginia,³³ I noted the slightly darker color of those birds compared with specimens from New York, New England, and Ontario. Since then Dr. Oberholser has described these southern mountain birds as *Penthestes atricapillus practicus*.³⁴ After comparison of the series of these chickadees in the U. S. National Museum, I am prepared to recognize this as a distinct race though its characters are comparatively slight. Specimens in worn breeding dress are most distinct, as the southern birds then are darker gray above. In fall and winter plumage they appear very slightly darker than the similar stage from the north, so that individual specimens can often be separated only with difficulty. This race will include those specimens noted above from West Virginia listed previously as *Penthestes a. atricapillus*.

PENTHESTES CAROLINENSIS CAROLINENSIS (Audubon): Carolina Chickadee

The nominate race of the Carolina chickadee differs from the northern subspecies *extimus* in being darker gray on the back and rump, paler buffy brown on the sides and flanks (especially in fall and winter dress), and in averaging very slightly smaller. It is interesting to find this form spread over eastern and central Ten-

³³ Proc. U. S. Nat. Mus., vol. 84, 1937, p. 416.

³⁴ *Penthestes atricapillus practicus* Oberholser, Proc. Biol. Soc. Washington, vol. 50, Dec. 28, 1937, p. 220 (Mount Guyot, Great Smoky Mountains, N. C.)

nessee even in the lower levels of the eastern mountains. Following are records based on specimens: 9 miles north of Waynesboro, Wayne County, May 16; western Lincoln County, 6 miles east of Frankewing, November 3 and 4; 5 miles east of Crossville, May 28 and 29; Rockwood, March 4 and 13, 1885 (taken by W. H. Fox); Rogersville, May 1885 (taken by J. W. Rogan); 2,000 feet elevation in the Clinch Mountains, 3 miles west of Bean Station, September 30; Holston Mountains and Shady Valley (2,900 feet elevation), June 3, 5, and 6; 2,600 feet elevation 4 miles southeast of Cosby, June 28 (adult and immature fully grown); 1,800 to 3,000 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill (adult and grown young), July 9, 10, and 11; 2,400 feet elevation on Beans Mountain 2 miles northeast of Parksville (immature), July 13.

Specimens taken in the breeding season agree in dorsal color with a series of *carolinensis* from near Charleston, S. C., the restricted type locality. Fall birds from Bean Station and Frankewing are very faintly darker above than *extimus* but have the flanks and sides paler. Differences in size between *extimus* and *carolinensis* are not of much diagnostic value, as in dimensions the two races are very similar.

The Tennessee specimens average about the same as those from South Carolina, and their color is such as to allow no hesitation in placing them with *carolinensis*. Following are measurements from the series from Tennessee: Males (8 specimens), wing 58.4-64.0 (61.3), tail 50.5-55.2 (52.7), culmen from base 8-9.3 (8.6), tarsus 15-16.5 (15.5); females (9 specimens), wing 56.8-60.7 (58.3), tail 49.1-53 (50.8), culmen from base 7.5-9.3 (8.6), tarsus 14-16 (15) mm.

Birds from South Carolina (Kershaw County, Aiken, and the vicinity of Charleston) measure as follows: Males (8 specimens), wing 57.8-63.8 (61.0), tail 49.2-54.8³⁵ (51.6), culmen from base 7.8-9.7 (8.6), tarsus 15.3-17.2 (15.8); females (5 specimens), wing 56.7-58.8 (57.5), tail 47.2-49.6 (48.3), culmen from base 8.1-8.7 (8.5), tarsus 14.8-15.8 (15.2) mm.

Dr. Oberholser recently has named a race of this chickadee from Louisiana,³⁶ giving as the range the lower Mississippi Valley north to central Alabama and southwestern Kentucky, which includes a part of Tennessee. He states that his new form is "similar to *Penthestes carolinensis impiger* from Florida, but upper parts paler and more grayish. Like *Penthestes carolinensis carolinensis* but decidedly smaller.

³⁵ Seven specimens.

³⁶ *Penthestes carolinensis guilloti* Oberholser, Dept. Cons. State of Louisiana Bull. 28, 1938, p. 425 (Belair, La.).

"*Measurements.*—Adult male: wing, 57–61 (average, 58.9) mm.; tail, 48–54.3 (50.5); exposed culmen, 6.8–7.5 (7.1); tarsus, 16; middle toe without claw, 9.5–11 (9.9). Adult female: wing, 53–59 (56.6); tail, 46.5–52 (48.5); exposed culmen, 6.5–7.5 (7.2); tarsus, 15–16.5 (15.6); middle toe without claw, 9–10 (9.7)."

Without going into the question of the validity of *guilloti* in the southern part of its assigned range, I consider the Carolina chickadees from Tennessee to be identified subspecifically as *carolinensis* and *extimus* according to the data presented under the present and the following headings.

PENTHSTES CAROLINENSIS EXTIMUS Todd and Sutton: Northern
Carolina Chickadee

In western Tennessee the northern race of this chickadee extends across the State from north to south as indicated by the following records based on specimens: Hickory Withe, April 10 and 16; Reelfoot Lake, April 29; Samburg, Obion County, October 11; Cumberland River 2 miles west of Indian Mound, October 27; and Cumberland River 7 miles north of Dover, October 30.

These skins are identical in every way with specimens typical of *extimus* from West Virginia and elsewhere in the range of this race. Measurements of the Tennessee series are as follows: Males (6 specimens), wing 59.7–64.3 (62.4), tail 51.5–56.7 (53.9), culmen from base 8.3–9.1 (8.7), tarsus 15.1–16.5 (16.0); females (2 specimens) wing 56.2–59.4 (57.8), tail 51.5, culmen from base 8–8.5 (8.2), tarsus 15–16.2 (15.6) mm.

BAEOLOPHUS BICOLOR (Linnaeus): Tufted Titmouse

This species is common throughout Tennessee except in the higher elevations of the mountains along the eastern border. Records in the collection are as follows: Hickory Withe, April 9 and 10; Reelfoot Lake, April 28; Waynesboro, May 11 and 12; Pulaski, November 1 and 2; Chattanooga, March 13, 1882 (W. H. Fox); Lookout Mountain, March 24, 1882 (W. H. Fox); Crossville, May 26; Rockwood, April 8 and 19, 1884, and March 24, 1885 (W. H. Fox); 2,000 feet elevation in the Clinch Mountains, 3 miles west of Bean Station, September 30; 2,900 to 3,300 feet in the Holston Mountains, and Shady Valley, June 2, 5, and 12; 5,000 feet elevation on Roan Mountain, September 23; 1,800 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill, July 12.

In examining this Tennessee material I have made careful comparison again of the series in the National Museum to find that in fall and winter birds from South Carolina (Kershaw County and Charleston and vicinity) the brownish wash on the back is slightly duller

than in birds from the north, while in the breeding season the back is very slightly darker gray. Specimens from Florida are less definitely marked. In skins from West Virginia and Kentucky northward the dorsal wash in fall is very slightly brighter brown, and the gray of the back in summer barely perceptibly paler. The differences appear to me too slight to be worth separation.

Family SITTIDAE

SITTA CAROLINENSIS CAROLINENSIS Latham: White-breasted Nuthatch

While the white-breasted nuthatches that I have seen from eastern Tennessee are not wholly typical of the northern bird, it appears to me that they are decidedly nearer to the northern form than to the southern one. The dorsal color is very slightly darker than in the bird of the north but is distinctly paler than in *atkinsi*. The size is slightly intermediate, some having the somewhat larger dimensions of *carolinensis* and some being a little smaller. Specimens allocated here as *carolinensis* include the following: Rockwood, March 2, 13, 21, 30, and 31, 1885 (taken by W. H. Fox); Shady Valley, June 4; and 3,800 feet elevation in the Holston Mountains above Shady Valley, June 9. Dr. Oberholser⁸⁷ has listed the Rockwood specimens as the southern form, but with more material for comparison they seem to me to fit better in the northern group. They are definitely paler than *atkinsi*, and the single female shows a wash of gray over part of the black of the crown and nape. Measurements are as follows: Males (4 specimens), wings 85.8, 89.1, 89.4, 92, tail 46.7, 47.2, 47.4, 48.7, culmen from base 16.9, 18.3, 18.5, 18.5, tarsus 17.8, 18.2, 18.5, 19.4; female (1 specimen), wing 87.6, tail 46, culmen from base 17, tarsus 17 mm.

SITTA CAROLINENSIS ATKINSI Scott: Florida Nuthatch

Birds from the following localities are identified as this southern race: Reelfoot Lake, April 27; 8 miles north of Indian Mound, October 28; near Waynesboro, May 15 and 17; 7 miles southwest of Crossville, May 26. In color and in size these specimens are similar to skins from Florida and South Carolina. They are definitely darker gray on the back than *carolinensis* and average small in size. Females from Indian Mound and Crossville have the crown and hindneck black without gray overwash. The size is definitely small as indicated by the following: Males (5 specimens), wing 85.4, 87.3, 88, 88.3, 89.5, tail 45, 46.2, 47, 47.5, 47.5, culmen from base 17, 17.5, 17.6, 17.7, 18.3, tarsus 18, 18, 18.9, 18.9, 19; females (2 specimens), wing 85.6, 86.4, tail 45.7, 48.3, culmen from base 17, 17.5, tarsus 17.7, 18.5 mm. Crossville,

⁸⁷ Auk, 1917, p. 185.

where birds identified as *atkinsi* were taken, and Rockwood, where specimens called *carolinensis* were found, are not far distant, but the two series appear definitely different, though as indicated the Rockwood birds are intermediate.

The Florida nuthatch ranges well north and skins from as far north as Kershaw County, in the north-central section of South Carolina, belong to this race.

SITTA CANADENSIS (Linnaeus): Red-breasted Nuthatch

At the higher elevations on Roan Mountain these nuthatches were very common from September 13 to 23. One immature male secured on September 16 still has most of the juvenile plumage, though three others have nearly completed the molt. These birds were common also in the higher areas of the Great Smoky Mountains, where specimens were obtained at 5,000 feet on Cosby Knob, June 19, at 6,300 feet on Old Black Mountain, June 21, at 6,600 feet on Mount Guyot, June 21, 24, and 25, and at 4,700 feet on Snake Den Mountain, June 29. These are all in worn plumage, with the breast feathers so abraded that most of the reddish brown color has been lost.

Family CERTHIIDAE

CERTHIA FAMILIARIS AMERICANA Bonaparte: Brown Creeper

The following records pertain to this migrant form: Samburg, October 11; Ridgely, October 15; Rockwood, April 3, 1884, March 25 and 30 and April 15, 1885 (W. H. Fox); Lookout Mountain, March 30, 1882 (W. H. Fox).

CERTHIA FAMILIARIS NIGRESCENS Burleigh:⁸⁸ Southern Creeper

Marked by darker color above, particularly on the crown and anterior part of the body, this form is known at present in Tennessee only from the Great Smoky Mountains, where it breeds in the high elevations. Specimens were taken as follows: 6,300 to 6,600 feet elevation on Mount Guyot, June 21, 24, and 25; at 5,500 feet elevation on Inadu Knob, June 29. These are in fair plumage though somewhat worn and are decidedly darker than the migrants taken elsewhere. The birds were found on large spruces.

Family TROGLODYTIDAE

TROGLODYTES AËDON BALDWINI Oberholser: Ohio House Wren

The only house wren secured is an immature male collected 2 miles east of Phillippy, Lake County, on October 23. This is an

⁸⁸ *Certhia familiaris nigrescens* Burleigh, Proc. Biol. Soc. Washington, vol. 48, May 3, 1935, p. 62 (Mount Mitchell, N. C.).

example of this recently described race,³⁹ being apparently the first identification of this bird for Tennessee, though it is probable that part of the records of the western house wren (*T. a. parkmanii*) for the western part of the State refer to this form. The specimen is in a somewhat grayish phase.

NANNUS TROGLODYTES HIEMALIS (Vieillot): Eastern Winter Wren

The migrant form of the winter wren is recorded in the collection at the following points: Hickory Withe, April 10; western Lincoln County, 6 miles east of Frankewing, November 4 and 6; Rockwood, March 21, 1885, and April 3, 1884 (W. H. Fox).

While the A. O. U. Check-list has included the American wrens of this group as specifically distinct from those of the Old World, it appears that the resemblances between them are so close that they are best considered as of one species. In view of this opinion I have listed the winter wrens here under the specific name *troglodytes* instead of *hiemalis*.

NANNUS TROGLODYTES PULLUS Burleigh: Southern Winter Wren

Two winter wrens were taken at 6,200 feet elevation on Roan Mountain, a male on September 13 and one marked questionably as a female on September 20. The bird has been recorded as nesting there by A. F. Ganier,⁴⁰ but specimens were not available to Burleigh when he named this southern race. In the Great Smoky Mountains on Inadu Knob an adult male was collected at 5,400 feet on June 23, and a juvenile recently from the nest at 5,600 feet on June 28. Another juvenile comes from 6,600 feet on Mount Guyot, June 24; another from 4,500 feet on Snake Den Mountain, June 28; and an adult female from 6,300 feet on Old Black Mountain, June 29. One was observed on Snake Den Mountain at the low level of 3,600 feet on June 25.

THRYOMANES BEWICKII BEWICKII (Audubon): Bewick's Wren

An adult male was taken near Hornbeak on May 6, and three were seen near the Mississippi in the vicinity of Tiptonville on October 19. One was recorded 12 miles northwest of Waynesboro on May 13, and several were observed near Crossville, where a male was taken on May 27. Others were noted at Melvine and Pikeville on May 31 and 10 miles east of Pulaski on November 2. Immature birds recently from the nest were taken at 3,300 feet elevation on Cross Mountain, 3 miles south of Shady Valley post office, June 7.

³⁹ *Troglodytes domesticus baldicini* Oberholser, Ohio Journ. Sci., vol. 34, Mar. 1934, p. 90 (Gates Mills, Ohio).

⁴⁰ Migrant, 1936, p. 85.

THRUYOTHORUS LUDOVICIANUS LUDOVICIANUS (Latham): Carolina Wren

This is one of the common species throughout the State, except in the higher mountains. Specimens were taken as follows: Frayser, 4 miles east of Memphis, April 8; Hickory Withe, April 9 and 10; Reelfoot Lake, April 28; Hornbeak, May 3; Ridgely, October 15; near Tiptonville, October 16; Dover, October 26; Indian Mound, October 29; Waynesboro, May 18; Pulaski, November 1; near Frankewing, November 3; Lookout Mountain, March 25 and 30, 1882 (W. H. Fox); Rockwood, March 16 and 30 and April 14, 1885 (W. H. Fox); 2,000 feet elevation in the Clinch Mountains 5 miles southwest of Bean Station, September 27; 2,900 feet in Shady Valley, June 7 (juvenile just from the nest); and 2,700 feet elevation in the Great Smoky Mountains near Cosby, June 30. This excellent series shows the usual variation in amount of reddish brown on the lower surface, birds taken in fall being much more richly colored than those in spring and summer.

CISTOTHORUS STELLARIS (Naumann): Short-billed Marsh Wren

One was seen at Reelfoot Lake on April 30.

Family MIMIDAE

MIMUS POLYGLOTTOS POLYGLOTTOS (Linnaeus): Eastern Mockingbird

The mockingbird, of State-wide distribution except in the high mountains, was collected as follows: Hickory Withe, April 10 and 12; Hornbeak, May 4; Tiptonville, October 18 and 22; Waynesboro, May 17; Pulaski, November 3; Pikeville, May 31. Mockingbirds were seen in Shady Valley on June 3 and 11.

DUMETELLA CAROLINENSIS (Linnaeus): Catbird

A common species of which specimens were obtained as follows: Eads, Shelby County, April 20; Reelfoot Lake, April 27; Waynesboro, May 10; Crossville, May 25; Rockwood, April 19, 1884 (W. H. Fox); Shady Valley, June 3; 4,200 feet elevation on Roan Mountain, September 20 and 22; 6,000 feet elevation on Inadu Knob, Great Smoky Mountains, June 26; Beans Mountain, 2 miles northeast of Parksville, July 14.

TOXOSTOMA RUFUM RUFUM (Linnaeus): Eastern Brown Thrasher

This widely distributed bird was collected at the following places: Frayser, 4 miles east of Memphis, April 8; Hickory Withe, April 8;

Hornbeak, Obion County, May 4; Reelfoot Lake, 2 miles east of Phillippy, October 9; Crossville, May 26; Rockwood, April 7; and Roane County, April 20, 1885 (W. H. Fox); Shady Valley, June 9 and 10; 4,100 feet elevation on Roan Mountain, September 20; 2,700 feet elevation 4 miles southeast of Crosby, June 23; 3,000 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill, July 10; and Beans Mountain, 2 miles northeast of Parksville, July 13 and 14.

TOXOSTOMA RUFUM LONGICAUDA (Baird): Western Brown Thrasher

An adult male taken on the Buffalo River 4 miles east of Flat Woods, Wayne County, on May 17 has the maximum size of the western race of the brown thrasher and is identified as that form. It measures as follows: Wing 110.0, tail 133.0, culmen from base 26.9, tarsus 34.2 mm. It is of necessity a migrant bird whose presence at this late date here may arouse some speculation. Possibly it had been injured in some way, though it may have been merely a belated migrant, since in the extreme northern part of the range the first arrivals do not reach the breeding grounds until May 10 or 12, and some come still later.

The western race of the brown thrasher was described originally by Baird.⁴¹ Ridgway⁴² discussed it but did not recognize it, partly because of unsatisfactory material and partly through some confusion in the allocation of some of the specimens available. Oberholser⁴³ has separated the western form again, and after survey of a considerable series I agree with him that it is valid. Its principal character is found in its definitely larger size. The alleged difference of paler color appears to me inconclusive, since while western birds in worn dress are lighter on the dorsal surface I can see no difference between the few specimens available in fresh fall plumage and skins in similar stage from the East. The lighter color found in the breeding series possibly is due to wear and fading through the influence of the more intense light and the drier atmosphere in which the western birds are found; in other words, to actual bleaching. Measurements of skins taken in the breeding season of the two forms are as follows:

Toxostoma rufum rufum: Males (43 specimens), wing 97.3–106.2 (102.6), tail 112.3–129.0 (121.0), culmen from base 23.1–29.2 (25.9), tarsus 31.3–36.1 (34.1) mm. Females (27 specimens), wing 96.3–103.8

⁴¹ *Harporhynchus longicauda* Baird, Reports of explorations and surveys . . . for a railroad from the Mississippi River to the Pacific Ocean . . . Birds, vol. 9, 1858, p. 353 (Republican River, western Kansas).

⁴² U. S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 188.

⁴³ Dept. Cons. State of Louisiana Bull. 28, 1938, pp. 479–460.

(100.4), tail 111.1–126.0 (118.9), culmen from base 22.1–27.2 (25.3), tarsus 32.4–35.4 (34.0) mm. These are the birds that breed from Louisiana through eastern Kansas northward and eastward.

Toxostoma rufum longicauda: Males (18 specimens), wing 104.1–116.7 (109.5), tail 120.8–135.7 (127.5), culmen from base 24.2–29.5 (26.8), tarsus 32.7–35.8 (34.6) mm. Females (9 specimens), wing 104.4–116.6 (108.5), tail 122.0–136.7 (126.6), culmen from base 24.7–27.5 (26.0), tarsus 33.2–37.0 (34.4) mm. The specimens seen come from the Great Plains area from western Kansas and eastern Colorado (near Denver) north to Alberta and Saskatchewan. Winter and migrant birds have been examined from Texas, Mississippi, and Tennessee.

Family TURDIDAE

TURDUS MIGRATORIUS MIGRATORIUS Linnaeus: Eastern Robin

From material available it appears that this race breeds in the higher altitudes of the mountains of the eastern part of Tennessee and that it is found at other seasons through the State. Individuals off their breeding grounds were taken at Ellendale, April 17 (female, wing 129.4); Frankewing, November 6 (male, wing 130; female, wing 126.7); and Rockwood, March 3, 1885 (dark, richly colored male, wing 128.7, taken by W. H. Fox).

Four males secured in the Holston Mountains, bordering Shady Valley, on June 3, 4, 8, and 9, are large and dark colored (wings 125.9, 128.1, 129.6, and 132 mm). They were taken from the base of the mountains at 2,800 feet to 3,800 feet elevation. An immature female in spotted dress was shot at 6,200 feet on Roan Mountain, September 23. In a pair taken on June 21 on Inadu Knob in the Great Smoky Mountains, the male has the wing 132.4 mm, while in the female it measures 124.7. Both birds are dark above and are richly colored below.

TURDUS MIGRATORIUS ACHRUSTERUS (Batchelder): Southern Robin

The collection includes only a few specimens of robins from the lowlands that belong to this race, which is presumed to be the breeding form throughout most of the lowland area of the State. A female taken at Ellendale on April 17 (wing 124.7) has the pale color of the southern form. The wings are somewhat worn, and it is believed to be the breeding bird of the area. A male from Union City, May 6 (wing 125.4), is decidedly dark above but a little paler below than the average of the northern bird. It is called *achrusterus* but is considered intermediate toward *migratorius*. A female from Rockwood, with the wing 118.3 mm and the color very light above

and below, taken April 12, 1884, by W. H. Fox, is definitely the southern bird. Two females, collected along Beaverdam Creek at Shady Valley (2,900 feet elevation) on June 5 and 11, have the wing 119 and 121.4 mm, respectively, and are light in color. They appear typical of *achrusterus*, an interesting fact since specimens from the slopes of the Holston Mountains bordering the valley, and only a few miles distant, are the northern subspecies. An immature female in juvenal dress that is barely grown, taken at 2,700 feet elevation 4 miles southeast of Cosby on July 2, is referred to the southern form, as the brown of sides and flanks is pale. No adults were obtained at this point. An immature male in fall plumage taken at 6,200 feet on Roan Mountain, September 25, which represents *achrusterus*, is a fall wanderer from low elevations, since the breeding bird of this mountain is *migratorius*.

HYLOCICHLA MUSTELINA (Gmelin): Wood Thrush

Specimens were obtained as follows: Reelfoot Lake, April 29; Melvine, May 29; Rockwood, April 23, 1885 (W. H. Fox); Shady Valley, June 7 and 14; 5,100 feet elevation at White Rock, Great Smoky Mountains, July 1; 2,700 feet elevation, near Cosby, in the Great Smoky Mountains, July 2. The bird from White Rock is a juvenile only recently from the nest.

HYLOCICHLA GUTTATA FAXONI Bangs and Penard: Eastern Hermit Thrush

Found in migration as follows: Hickory Withe, April 9, 12, and 14; Reelfoot Lake 2 miles east of Phillippy, October 12; Indian Mound, October 28; Lookout Mountain, April 3, 1882 (W. H. Fox); Rockwood, March 3, 4, and 16, 1884, and April 5 and 11, 1885 (W. H. Fox).

HYLOCICHLA USTULATA SWAINSONI (Tschudi): Olive-backed Thrush

In the vicinity of Reelfoot Lake these thrushes were fairly common in spring, specimens being taken at the lake on April 27 and 28 and near Hornbeak on May 1. Numbers were seen near Waynesboro from May 11 (when one was taken) to May 17. In fall three were secured at 5,000 feet elevation on Roan Mountain, September 20 and 22.

HYLOCICHLA MINIMA ALICIAE (Baird): Gray-cheeked Thrush

Eight specimens were taken at the following localities: Reelfoot Lake, April 24 and 29; Hornbeak, May 1 and 3; near Waynesboro, May 15 and 18; and at 6,100 feet elevation on Roan Mountain, September 20.

HYLOCICHLA FUSCESCENS FUSCESCENS (Stephens): Veery

Migrants were taken 9 miles north of Waynesboro on May 11. Several were seen on Roan Mountain from September 13 to 20, one being taken on September 18. In the Great Smoky Mountains two were taken at 5,500 and 5,700 feet elevation on Inadu Knob on June 24 and 29, and two at 6,000 feet in Yellow Creek Gap on June 25.

SIALIA SIALIS SIALIS (Linnaeus): Eastern Bluebird

Except in the forested areas of the mountains bluebirds were recorded throughout the State. Specimens were obtained as follows: Hickory Withe, April 13; Hornbeak, May 4; Waynesboro, May 10 and 15; Lincoln County, 6 miles east of Frankewing, November 4, 8, and 9; Pikeville, May 31, Crossville, May 26; Shady Valley, June 5 (immature recently from nest) and June 11.

Family SYLVIIDAE

POLIOPTILA CAERULEA CAERULEA (Linnaeus): Blue-gray Gnatcatcher

This interesting species was collected as follows: Hickory Withe, April 9; Hornbeak, May 1 and 4; Waynesboro, May 10; Melvine, Bledsoe County, May 21; Lookout Mountain, March 27, 1882 (W. H. Fox); Rockwood, April 4 and 5, 1884 (W. H. Fox). Most records for this bird are made early in the season; it is seldom seen after nesting when it ceases to sing, as it is small and keeps in the cover of leaves.

REGULUS SATRAPA SATRAPA Lichtenstein: Eastern Golden-crowned Kinglet

In migration specimens come from Reelfoot Lake near Tiptonville, October 18; from Chattanooga, March 13, 1882; from Lookout Mountain, March 22, 1884; and from Rockwood March 20, 1885 (the last three taken by W. H. Fox). Possibly this kinglet is more numerous in the higher mountains as a breeding bird than has been supposed. On Roan Mountain from September 12 to 16 it was fairly common. As the specimens taken include one secured September 16 with crown still in full juvenile plumage with no trace of yellow, there can be no question that the birds nest in that region. This bird has the wings and tail just grown, while the soft immature dress still clothes the anterior part of the body. In the Great Smoky Mountains these kinglets were common in June at several localities in the high altitudes. Specimens were taken on June 24 and 26 at 6,400 to 6,600 feet elevation on Mount Guyot, and on June 21 at 6,300 feet on Old Black Mountain. One taken on June 21 is only recently from the nest and is in full juvenal plumage. Several were seen on Inadu Knob on June 24.

Breeding birds are almost imperceptibly darker in color above when compared with birds from the north, but they do not seem to differ sufficiently to warrant separation.

Regulus satrapa and its races differ from *Regulus regulus* and its forms of the Old World definitely and strikingly in the well-marked white superciliary line of the former. The only approach in the Palearctic group to this character is found in *Regulus regulus japonicus*, in which the whole side of the head is lighter but in which there is no definite superciliary stripe. In fact, to my eye *satrapa* resembles *Regulus ignicapillus* as much as it does *R. regulus*. I may add that the song of the goldcrest (*Regulus r. regulus*), familiar to me in the field from work in the Sierra Cantabrica of northern Spain, is quite distinct in form and phrase from that of our golden-crown. I can see no basis for the action of Hartert,⁴⁴ Hellmayr,⁴⁵ and others in listing the North American *satrapa* as a geographic race of *regulus*. In my opinion the two should be treated in our Check-list as distinct.

CORTHYLIO CALENDULA CALENDULA (Linnaeus): Eastern Ruby-crowned Kinglet

Obtained in migration as follows: Frayser, April 8; Hickory Withe, April 14; Samburg, October 14; Ridgely, October 15; Pulaski, November 2; Rockwood, April 3, 1884 (W. H. Fox); 2,000 feet elevation in the Clinch Mountains, 3 miles west of Bean Station, September 28 and 30; Roan Mountain at 6,200 feet elevation, September 15 and 18, and at 4,900 feet, September 20.

Family MOTACILLIDAE

ANTHUS SPINOLETTA RUBESCENS (Tunstall): American Pipit

On March 23 and 24, 1885, W. H. Fox secured specimens of the pipit at Rockwood.

Family BOMBYCILLIDAE

BOMBYCILLA CEDRORUM Vieillot: Cedar Waxwing

Cedar waxwings were taken at Hickory Withe, April 15, and at Reelfoot Lake, April 27. Birds were seen at Waynesboro, May 11; near Frankewing, November 7; and on Cross Mountain near Shady Valley, June 13. One was collected at 6,100 feet elevation on Old Black Mountain in the Great Smoky Mountains on June 29.

⁴⁴ Die Vögel der paläarktischen Fauna, vol. 1, 1910, p. 394.

⁴⁵ Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 7, 1934, p. 510.

the proposal of Bangs and Penard⁴⁶ to call the red-eyed vireo *Vireo virescens* on the grounds that the name *Motacilla olivacea* Linnaeus in use for it could not properly be applied to this species, but they did not find sufficient reason for discarding the current name. The same question has been revived recently by Hellmayr.⁴⁷

Family COMPSOTHYLPIIDAE

MNIOTILTA VARIA (Linnaeus): Black and White Warbler

The present species was fairly common during summer in the eastern two-thirds of Tennessee, as shown by the following records: 10 miles north of Waynesboro, May 12; 7 miles southwest of Crossville, May 24 and 25; Lookout Mountain, March 24, 1882 (W. H. Fox); Rockwood, March 31, 1885, and April 5 and 11, 1884 (W. H. Fox); Shady Valley, June 7 and 8; 6,000 feet elevation on Roan Mountain, September 20; 5,000 feet elevation on Inadu Knob, Great Smoky Mountains, June 26; 2,700 feet elevation, 4 miles southeast of Cosby, June 30 and July 2; 2,100 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill, July 9 and 15 (including immature birds not quite grown on both dates).

PROTONOTARIA CITREA (Boddaert): Prothonotary Warbler

The brilliant prothonotary warbler was seen at Hickory Withe on April 10. At Reelfoot Lake, where three specimens were taken on April 27 and 29 and May 7, these birds were common, particularly on Green and Caney Islands. One was seen near Tiptonville on May 1.

LIMNOTHYLPIS SWAINSONII (Audubon): Swainson's Warbler

On June 8 an adult male was taken at 3,000 feet elevation in the Holston Mountains, 3 miles northeast of Shady Valley, in a swampy area shaded heavily with hemlock and rhododendron. Two others were recorded at 2,600 feet elevation 5 miles north of Shady Valley, near Beaverdam Creek.

HELMITHEROS VERMIVORUS (Gmelin): Worm-eating Warbler

The first one observed was found 8 miles north of Waynesboro on May 16. W. H. Fox secured a male at Rockwood April 24, 1884, and Perrygo and Lingeback obtained one at 3,000 feet elevation on Big Frog Mountain 8 miles southwest of Copperhill on July 10.

⁴⁶ Bull. Mus. Comp. Zool., vol. 67, 1925, p. 206.

⁴⁷ Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 8, Sept. 16, 1935, p. 130.

VERMIVORA PEREGRINA (Wilson): Tennessee Warbler

A common migrant that was obtained in spring at Reelfoot Lake on April 27 and 30, and in fall in this general area, near Samburg on October 11, and near Tiptonville on October 16 and 18. One was seen 8 miles north of Waynesboro on May 19. Two were collected at 6,200 feet elevation on Roan Mountain on September 13.

VERMIVORA CELATA CELATA (Say): Orange-crowned Warbler

An immature male was secured along the Cumberland River on October 26 near Dover.

COMPSOTHTYPIS AMERICANA AMERICANA (Linnaeus): Southern Parula Warbler

A male taken at Rockwood on April 24, 1884, by W. H. Fox has the paler upper surface and less heavily banded breast of the southern race. It has the following measurements: Wing 59.4, tail 42.8, culmen from base 11.7, and tarsus 15.5 mm. Whether this individual is a wanderer or whether the southern form has a definite range in the State is something to be ascertained only through further collecting. All others taken belong to the subspecies *pusilla*.

COMPSOTHTYPIS AMERICANA PUSILLA (Wilson): Northern Parula Warbler

Birds from the following localities are identified as this race: Reelfoot Lake, April 24; about 4 miles west of Hornbeak, May 3; Birds Creek, 7 miles southwest of Crossville, May 24, 25, and 27; and Shady Valley, June 10. All are heavily banded with black and brown across the chest and are darker above than the southern form.

DENDROICA AESTIVA AESTIVA (Gmelin): Eastern Yellow Warbler

A female was taken at Reelfoot Lake on April 27. Others were seen near Hornbeak on May 4 and at Shady Valley on June 3.

DENDROICA MAGNOLIA (Wilson): Magnolia Warbler

Two were collected, an adult male 10 miles north of Waynesboro on May 12, and a female in the Clinch Mountains, 3 miles west of Bean Station, on September 28.

DENDROICA TIGRINA (Gmelin): Cape May Warbler

There is one specimen of this warbler in the National Museum collections taken at Rogersville, Tenn., in May 1885, by James Rogan.

the proposal of Bangs and Penard⁴⁶ to call the red-eyed vireo *Vireo vireescens* on the grounds that the name *Motacilla olivacea* Linnaeus in use for it could not properly be applied to this species, but they did not find sufficient reason for discarding the current name. The same question has been revived recently by Hellmayr.⁴⁷

Family COMPSOTHTLYPIDAE

MNIOTILTA VARIA (Linnaeus): Black and White Warbler

The present species was fairly common during summer in the eastern two-thirds of Tennessee, as shown by the following records: 10 miles north of Waynesboro, May 12; 7 miles southwest of Crossville, May 24 and 25; Lookout Mountain, March 24, 1882 (W. H. Fox); Rockwood, March 31, 1885, and April 5 and 11, 1884 (W. H. Fox); Shady Valley, June 7 and 8; 6,000 feet elevation on Roan Mountain, September 20; 5,000 feet elevation on Inadu Knob, Great Smoky Mountains, June 26; 2,700 feet elevation, 4 miles southeast of Cosby, June 30 and July 2; 2,100 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill, July 9 and 15 (including immature birds not quite grown on both dates).

MNIOTILTA VARIA (Linnaeus): Black and White Warbler

The brilliant prothonotary warbler was seen at Hickory Withe on April 10. At Reelfoot Lake, where three specimens were taken on April 27 and 29 and May 7, these birds were common, particularly on Green and Caney Islands. One was seen near Tiptonville on May 1.

LIMNOTHTLYPIS SWAINSONII (Audubon): Swainson's Warbler

On June 8 an adult male was taken at 3,000 feet elevation in the Holston Mountains, 3 miles northeast of Shady Valley, in a swampy area shaded heavily with hemlock and rhododendron. Two others were recorded at 2,600 feet elevation 5 miles north of Shady Valley, near Beaverdam Creek.

HELMITHEROS VERMIVORUS (Gmelin): Worm-eating Warbler

The first one observed was found 8 miles north of Waynesboro on May 16. W. H. Fox secured a male at Rockwood April 24, 1884, and Perrygo and Lingeback obtained one at 3,000 feet elevation on Big Frog Mountain 8 miles southwest of Copperhill on July 10.

⁴⁶ Bull. Mus. Comp. Zool., vol. 67, 1925, p. 206.

⁴⁷ Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 8, Sept. 16, 1935, p. 130.

VERMIVORA PEREGRINA (Wilson): Tennessee Warbler

A common migrant that was obtained in spring at Reelfoot Lake on April 27 and 30, and in fall in this general area, near Samburg on October 11, and near Tiptonville on October 16 and 18. One was seen 8 miles north of Waynesboro on May 19. Two were collected at 6,200 feet elevation on Roan Mountain on September 13.

VERMIVORA CELATA CELATA (Say): Orange-crowned Warbler

An immature male was secured along the Cumberland River on October 26 near Dover.

COMPSOTHTYPIS AMERICANA AMERICANA (Linnaeus): Southern Parula Warbler

A male taken at Rockwood on April 24, 1884, by W. H. Fox has the paler upper surface and less heavily banded breast of the southern race. It has the following measurements: Wing 59.4, tail 42.8, culmen from base 11.7, and tarsus 15.5 mm. Whether this individual is a wanderer or whether the southern form has a definite range in the State is something to be ascertained only through further collecting. All others taken belong to the subspecies *pusilla*.

COMPSOTHTYPIS AMERICANA PUSILLA (Wilson): Northern Parula Warbler

Birds from the following localities are identified as this race: Reelfoot Lake, April 24; about 4 miles west of Hornbeak, May 3; Birds Creek, 7 miles southwest of Crossville, May 24, 25, and 27; and Shady Valley, June 10. All are heavily banded with black and brown across the chest and are darker above than the southern form.

DENDROICA AESTIVA AESTIVA (Gmelin): Eastern Yellow Warbler

A female was taken at Reelfoot Lake on April 27. Others were seen near Hornbeak on May 4 and at Shady Valley on June 3.

DENDROICA MAGNOLIA (Wilson): Magnolia Warbler

Two were collected, an adult male 10 miles north of Waynesboro on May 12, and a female in the Clinch Mountains, 3 miles west of Bean Station, on September 28.

DENDROICA TIGRINA (Gmelin): Cape May Warbler

There is one specimen of this warbler in the National Museum collections taken at Rogersville, Tenn., in May 1885, by James Rogan.

DENDROICA CAERULESCENS CAERULESCENS (Gmelin): Black-throated Blue Warbler

On September 13 Perrygo noted hundreds of these warblers passing over Roan Mountain during a heavy fog. This was the period of migration from the north, and several specimens of this northern race were taken here at elevations varying from 4,700 to 6,200 feet between September 13 and 20. These are the only certain records for true *caerulescens* in the collection.

DENDROICA CAERULESCENS CAIRNSI Coues: Cairns's Warbler

In June in the Holston Mountains bordering Shady Valley these birds were common, specimens being taken on June 4 and 9. I saw several in the Iron Mountains on June 6 and one on Cross Mountain south of Shady Valley on June 7. On Roan Mountain, among the host of migrant black-throated blue warblers, a male of this race was taken at 6,200 feet on September 13 and another at 5,000 feet on September 23. In the Great Smoky Mountains Cairns's warbler was common, being collected in Low Gap 6 miles southeast of Cosby on June 19, when an adult male and a young bird recently from the nest were taken, and on Inadu Knob June 21, 24, and 26. Two were seen at 3,700 feet on Big Frog Mountain on July 10. The males have the blue dark in color, and most of them show a heavy suffusion of black in the back. The females are darker and duller than those of the northern form. The young bird secured is decidedly different from the only juvenile of the black-throated blue warbler available, a bird just from the nest taken at Upton, Maine, on August 11, 1873, by William Brewster (U. S. N. M. no. 233447), the specimen of Cairns's warbler being much darker colored on the back, and decidedly greenish instead of brown. The difference is striking.

DENDROICA CORONATA CORONATA (Linnaeus): Myrtle Warbler

This species, abundant at the proper seasons, was taken as follows: Hickory Withe, April 15 and 16; Reelfoot Lake, April 27 and October 13 (4 miles south of Samburg); 7 miles northeast of Tiptonville, October 22; Cumberland River near Indian Mound October 27 (hundreds seen here on the following day); 10 miles east of Pulaski, November 2; Lookout Mountain, March 29, 1882 (W. H. Fox); and Rockwood, March 3, 1885 (W. H. Fox).

As I have stated elsewhere, I consider the western race of this bird valid, though it is not recognized in the latest edition of the A. O. U. Check-list.

DENDROICA VIRENS VIRENS (Gmelin): Black-throated Green Warbler

Specimens at hand come from the following localities: Hornbeak, May 1; Samburg, October 19; Rockwood, April 3 and 7, 1884 (W. H. Fox); 3,400 feet elevation on Cross Mountain (near Briceville), August 15, 1908 (A. H. Howell); Clinch Mountains near Bean Station, September 28 and 29; 5,700 feet elevation on Roan Mountain, September 16; 3,200 to 3,400 feet altitude near Cosby, June 30 and July 1; 3,800 feet elevation on Snake Den Mountain, July 2; 2,100 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill, July 9. Apparently these birds are commoner as nesting birds in the State than has been supposed. The specimens from Cross Mountain probably were summer residents. In the Great Smoky Mountains two were seen on Mount Guyot at 6,600 feet in addition to those listed. On Big Frog Mountain black-throated green warblers were common, as 15 were noted one day. Those taken there include young birds recently from the nest.

From the few specimens that I have seen, the southern race of this species, *Dendroica virens waynei*, is distinguished only by its somewhat smaller and slenderer bill. To me color differences that have been alleged are not apparent. The breeding birds from Tennessee resemble birds from the north and are to be placed with the typical race.

DENDROICA CERULEA (Wilson): Cerulean Warbler

A male was taken 8 miles north of Waynesboro on May 19. One was recorded 7 miles southwest of Crossville on May 25.

DENDROICA FUSCA (Müller): Blackburnian Warbler

The first one observed was taken at Reelfoot Lake, April 24, followed by others 4 miles west of Hornbeak, May 4, and 9 miles north of Waynesboro, May 11. A female was secured on June 4, at 3,800 feet in the Holston Mountains above Shady Valley, and on June 6 I found Blackburnian warblers common along the summit of the Iron Mountains 2 miles east of Shady Valley, where I secured a pair. We saw at least a dozen at an elevation of 4,000 feet in deciduous forest, where they ranged both through the higher trees and in the undergrowth. Subsequently Perrygo found them on Inadu Knob in the Great Smoky Mountains, at elevations of 5,700 to 5,900 feet on June 23, 24, and 26.

Female birds taken in June appear less yellowish above than those from the north, the white markings being clearer and the general tone grayer and darker. There is much individual variation in this

species, however, and it seems probable that the difference apparent is due to this. One breeding male is similar to skins from the north.

DENDROICA DOMINICA ALBILORA Ridgway: Sycamore Warbler

Specimens were obtained near Hickory Withe on April 10, 12, and 16 and at Reelfoot Lake on April 29. Others were observed in the latter region on May 1 and 7.

DENDROICA PENNSYLVANICA (Linnaeus): Chestnut-sided Warbler

Recorded as follows: 4 miles west of Hornbeak, May 4; Cross Mountain, 3 miles south of Shady Valley, June 7; and near Cosby, in the Great Smoky Mountains, June 21 and July 1.

DENDROICA CASTANEA (Wilson): Bay-breasted Warbler

This migrant species was taken near Hornbeak on May 1 and at Reelfoot Lake on May 7. In fall it was fairly common in this area, specimens coming from near the lake, 2 miles east of Phillippy, October 9 and 12, and from 4 miles below Samburg, October 13. A number were seen near Samburg on October 19. North of Waynesboro specimens were secured on May 10 and 11, and one was seen on May 12. In the Clinch Mountains one was taken 5 miles southwest of Bean Station, September 27, and one 3 miles northwest of Rutledge, October 1. One was collected at 5,200 feet elevation on Roan Mountain on September 23.

DENDROICA STRIATA (Forster): Black-poll Warbler

About Reelfoot Lake this species was collected on April 27 and 28. Others were seen near Bluebank on May 3 and Hornbeak on May 4, while on May 7 they were very common on Green and Caney Islands in Reelfoot Lake. A few were recorded near Waynesboro on May 11 and 12.

Hellmayr⁴⁸ has listed this species under the name *Dendroica brevilinguis* (Spix) on the ground that "*Muscicapa striata* Forster seems to be barred by *Motacilla striata* Pallas (in Vroeg, Cat. Rais. d'Ois., Adumbr., p. 3, 1764) now referred to the genus *Muscicapa*."

While this is true under the International Code, which recognizes secondary synonyms, it does not hold under the A. O. U. code as at present constituted, as this does not recognize secondary allocation of names as preoccupation unless in current usage they come within the limits of the same genus. If the A. O. U. code is followed, the name

⁴⁸Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 8, 1935, p. 403.

of this warbler will remain *striata*. If the International Code is accepted, then the name will change to *breviunguis*.

DENDROICA PINUS PINUS (Wilson): Northern Pine Warbler

W. H. Fox collected pine warblers at Rockwood on March 13 and 26, 1885. Perrygo secured one in the Clinch Mountains 6 miles southwest of Bean Station on September 29 and one at 6,200 feet elevation on Roan Mountain on September 22. On Big Frog Mountain young recently from the nest were taken on July 9 at 2,100 feet elevation, 8 miles southwest of Copperhill. Another young bird molting into first fall plumage was secured on July 14.

DENDROICA DISCOLOR DISCOLOR (Linnaeus): Northern Prairie Warbler

Near Waynesboro these birds were common from May 10 to 15. Specimens were taken also near Crossville, May 24, 25, and 26, and there are two in the National Museum taken by W. H. Fox near Rockwood, April 15, 1885, and April 16, 1884.

DENDROICA PALMARUM PALMARUM (Gmelin): Western Palm Warbler

Fairly common in the general vicinity of Reelfoot Lake from April 26 to May 7. Specimens were taken at Reelfoot Lake on April 26 and near Hornbeak on May 4.

SEIURUS AUROCAPILLUS (Linnaeus): Oven-bird

Records for this common bird are as follows: 4 miles west of Hornbeak, May 3; 5 miles east of Crossville, May 29; Rockwood, May 15, 1884 (W. H. Fox); Clinch Mountains, 3 miles west of Bean Station, September 30; Shady Valley, June 2 and 4 (common in the Holston and Iron Mountains); Carter, June 7; Low Gap in the Great Smoky Mountains near Cosby, June 19; 3,000 to 3,200 feet elevation on Big Frog Mountain 8 miles southwest of Copperhill, July 10 (one immature bird); 2,900 to 3,000 feet elevation on Beans Mountain 2 miles northeast of Parksville, July 13 and 14 (the latter an immature individual).

SEIURUS MOTACILLA (Vieillot): Louisiana Water-thrush

A small series taken during the spring months includes specimens from the following localities: Hickory Withe, April 9 and 16; Reelfoot Lake, April 28; 7 miles southwest of Crossville, May 25; Melvine, May 29 and 31; Rockwood, April 12, 1884 (W. H. Fox); Holston Mountains near Shady Valley, June 3 (including a young bird just

from the nest); 3,600 feet elevation in the Iron Mountains above Shady Valley, June 6 (others seen at Shady Valley post office and on Cross Mountain, June 7); at 2,900 feet elevation near Cosby in the Great Smoky Mountains, June 29; 2,000 feet elevation on Big Frog Mountain near Copperhill, July 8 (one juvenile).

OPORORNIS FORMOSUS (Wilson): Kentucky Warbler

Found at Hickory Withe, April 16; Eads, April 20; Reelfoot Lake, April 28; Hornbeak, May 1 and 3; Waynesboro, May 10 to 19; Crossville, May 25 to 28; Shady Valley, June 11; Low Gap in the Great Smoky Mountains near Cosby, June 19; 3,500 feet elevation 4 miles southeast of Cosby, June 29.

GEOTHLYPIS TRICHAS BRACHIDACTYLA (Swainson): Northern Yellow-throat

Specimens were secured as follows: Eads, April 20; Ellendale, April 17 and 21; Hickory Withe, April 20; Reelfoot Lake, April 28 and 30; Waynesboro, May 17; Crossville, May 26; Rockwood, April 23, 1885 (W. H. Fox); Shady Valley, June 5 and 11; and at 6,100 feet elevation on Inadu Knob, in the Great Smoky Mountains, June 26. Males from Shady Valley are very slightly larger than others. All have the yellow on the lower surface extensive.

ICTERIA VIRENS VIRENS (Linnaeus): Yellow-breasted Chat

Specimens were taken at Reelfoot Lake, April 30; 10 miles north of Waynesboro, May 12; near Crossville, May 26, 27, and 28; Rockwood, April 23, 1885 (W. H. Fox); Shady Valley, June 16; at 2,700 and 2,800 feet elevation near Cosby, in the Great Smoky Mountains, June 23 and 29; at 3,000 feet on Big Frog Mountain 8 miles southwest of Copperhill, July 10; and at 1,800 feet on Beans Mountain, 2 miles northeast of Parksville, July 14.

Birds from near Reelfoot Lake have slightly more white on the malar region than those from the eastern part of the State but in no other way show approach to the western form.

WILSONIA CITRINA (Boddaert): Hooded Warbler

Records for this species are as follows: Hickory Withe, April 14; Hornbeak, May 1; 10 miles north of Waynesboro, May 12; 7 miles southeast of Crossville, May 25; Rockwood, May 19, 1884 (W. H. Fox); Shady Valley, June 7 and 10; Low Gap, June 19, and 3,700 feet elevation on Snake Den Mountain, June 24, in the Great Smoky Mountains (seen near Cosby June 19); Big Frog Mountain, 8 miles southwest of Copperhill, July 14 and 15; Beans Mountain, 2 miles northeast of Parksville, July 14 (including one young just from nest).

WILSONIA CANADENSIS (Linnaeus): Canada Warbler

Taken only in the Great Smoky Mountains, where specimens were secured at 5,000 feet on Cosby Knob, June 19, on Inadu Knob, June 21, and at 4,200 feet on Snake Den Mountain, June 26.

Breeding specimens from the mountains of North Carolina (Mount Mitchell, Graybeard, and Roan Mountain), Tennessee (Great Smoky Mountains), southwestern Virginia (White Top and Mount Rogers), and West Virginia (Middle Mountain, Yokum Knob, and Cranberry Glades) are very faintly darker gray above, with slightly less greenish yellow wash, than those from the northern United States and southern Canada. The difference is barely perceptible on close comparison and is not one that in my opinion merits a name.

SETOPHAGA RUTICILLA (Linnaeus): Redstart

The following specimens were taken: Eads, April 20; Hornbeak, May 3; 10 miles north of Waynesboro, May 12; 7 miles southwest of Crossville, May 25; Rockwood, April 15, 1885 (W. H. Fox); Roan Mountain, September 16 and 23.

Family PLOCEIDAE

PASSER DOMESTICUS DOMESTICUS (Linnaeus): English Sparrow

A female was taken at Indian Mound on October 29, and a male was collected at Rockwood on March 24, 1885 (by W. H. Fox).

Family ICTERIDAE

DOLICHONYX ORYZIVORUS (Linnaeus): Bobolink

Seen 2 miles north of Waynesboro on May 17 and 18.

STURNELLA MAGNA ARGUTULA Bangs: Southern Meadowlark

Study of the meadowlarks available from Tennessee has brought to light an interesting condition in that while all I have seen are to be identified as the southern form *argutula*, those from the eastern section of the State are intermediate toward the northern bird.

Specimens from the following localities are considered typical of the southern race: Ellendale, April 17; 7 miles northeast of Tiptonville, October 22; Union City, May 4 and 6; 4 miles east of Waynesboro, May 17; Fayetteville, November 3; Pikeville, May 31. Measurements of birds in this series are as follows: Males, wing 111.8-121.0, tail, 71.6-78.3, culmen from base 31.5-36; tarsus 39.6-44; females, wing 103.5-106.6, tail 62.8-72.1, culmen from base 28.6-31.5, tarsus 36.7-39.3 mm.

In specimens from farther east the color of the breast is distinctly paler yellow as in *magna*, while the size remains small and the dorsal coloration is dark as in *argutula*. These are considered intermediate but as nearer to *argutula*. This series includes the following birds: Rockwood, April 15, 17, and 23, 1885 (W. H. Fox); Shady Valley, June 11. The specimens measure as follows: One male (from Shady Valley), wing 115.6, tail 70.3, culmen from base 33.2, tarsus 41.4; four females, wing 101–108, tail 62.8–70.1, culmen from base 27.8–32.1, tarsus 35.6–38.3 mm. These all seem to be breeding birds and may indicate that *S. m. magna* is found in Tennessee only as a winter migrant.

A bird that I collected in the Elk Gardens at 4,000 feet elevation on White Top Mountain, Va., on September 28, 1935, agrees in dark dorsal coloration with the birds from Shady Valley, Tenn., though as it is in molt comparative measurements are not available.

AGELAIUS PHOENICEUS PHOENICEUS (Linnaeus): Eastern Red-wing

Specimens of this common bird were secured as follows: Ellendale, April 21; Hickory Withe, April 20; Tiptonville, October 8; Phillipy, October 23; Reelfoot Lake, May 7; Indian Mound, October 29; Rockwood, March 13 and April 17, 1885 (W. H. Fox); Shady Valley, June 11, 12, and 14.

AGELAIUS PHOENICEUS ARCTOLEGUS Oberholser: Giant Red-wing

In the small series of red-wings obtained there are two females that are migrants of this large northern race. One taken at Ellendale, Shelby County, April 17, with the wing 101.4 mm, is noticeable for the wide, heavy, black streaks on the under surface and the dark coloration above. Another secured 7 miles northeast of Tiptonville on October 20 is larger, having the wing 104 mm. It also is heavily marked below and is especially noticeable for its dark color above.

ICTERUS SPURIUS (Linnaeus): Orchard Oriole

Specimens were taken at Eads, April 22; Hickory Withe, April 22; and Reelfoot Lake, April 26. The bird was observed near Waynesboro, May 11 to 18, and in the vicinity of Pikeville, May 21 to 29.

ICTERUS GALBULA (Linnaeus): Baltimore Oriole

Several were seen and two were taken at Reelfoot Lake on April 30. Others were seen near Hornbeak on May 3 and 4 and on Caney Island in Reelfoot Lake on May 7.

EUPHAGUS CAROLINUS (Müller): Rusty Blackbird

One was taken from a flock of three along the Cumberland River near Dover on October 26. There is also a female in the collection from Rockwood taken on April 18, 1885, by W. H. Fox.

QUISCALUS VERSICOLOR Vieillot: Bronzed Grackle

This form of grackle has the back and rump metallic bronze without concealed purplish bars, except at the point of junction of the head color with that of the back. It is represented in the collection by birds typical in every way that are supposed to have been breeding, taken at Hickory Withe, April 15, and at Union City, May 4. A female from Hickory Withe has not molted properly and is in such worn plumage that practically all metallic sheen has disappeared except on the head and upper breast. In fall, specimens were obtained at Reelfoot Lake, 3 miles south of Samburg, October 11, on the Cumberland River, 7 miles north of Dover, October 30, and near Pulaski in Giles County, November 1.

I have indicated beyond that this bird is probably best treated as a species distinct from the purple and Florida grackles of the east and south, and now it is with much regret that I have to record that the long-familiar name of *aeneas* proposed by Ridgway⁴⁹ for this grackle has to be replaced by *versicolor* of Vieillot,⁵⁰ a name at one time used for the purple grackle. Hellmayr⁵¹ has listed *Quiscalus versicolor* Vieillot as a synonym of *Quiscalus quiscula quiscula*, saying that it is a "new name for *Gracula quiscula* Latham (Ind. Orn., 1, p. 191, 1790) = *Gracula quiscula* Linnaeus." There is, however, in the Museum d'Histoire Naturelle in Paris a specimen that is marked definitely as Vieillot's type of *versicolor* and that is a typical bronzed grackle, so that this name must be used for the western bird. In May 1938, in company with A. J. van Rossem, I examined this specimen to find that there is no question as to its identification as indicated, and there seems to be no doubt that it is the basis of Vieillot's description. Hellmayr's supposition that *versicolor* is merely a substitute name for *Gracula quiscula* Latham is not borne out by examination of Vieillot's account, which is not a transliteration of Latham's statement but is written anew, evidently from the specimen cited. The type is labeled as from "États-Unis."

The name for the bronzed grackle, therefore, becomes *Quiscalus versicolor* Vieillot if it is considered a distinct species, or *Quiscalus*

⁴⁹ Proc. Acad. Nat. Sci. Philadelphia, 1869, p. 134.

⁵⁰ *Quiscalus versicolor* Vieillot, Nouv. Dict. Hist. Nat., vol. 28, 1819, p. 488, pl. P. 3, fig. 1 (no locality given).

⁵¹ Field Mus. Nat. Hist., zool. ser., vol. 13, pt. 10, 1937, p. 75.

versicolor versicolor if the belief is held that it is conspecific with the eastern and southern grackles of this group.

QUISCALUS QUISCULA STONEI Chapman: Purple Grackle

The subspecific names applied herein to this grackle and its relative "*ridgwayi*" are used in accordance with the treatment of Dr. Frank M. Chapman in his detailed studies of these interesting birds.⁵² In the identification of the specimens available from Tennessee I have had the benefit of Dr. Chapman's advice from his personal examination of the material.

In my opinion the nomenclatural status of these grackles is subject to some adjustment from the currently accepted view as expressed at present in the A. O. U. Check-list of one species divided into several subspecies. As knowledge of the ranges of the phases in which these birds occur has grown, it has appeared to me that we have here two specific groups, one of bronzed grackles (not divided into subspecies) and the other of purple grackles (with two geographic races, the Florida grackle and the purple grackle), with hybrids (*ridgwayi*) occurring in abundance when the ranges of the two overlap. If this view is accepted, the case would then be like that of the red-shafted and the yellow-shafted flickers.

Four birds assigned to the purple grackle now known as *Quiscalus q. stonei* were secured by W. H. Fox near Rockwood, Tenn., on March 26 and 30 and April 11 and 16, 1885. These show the purplish to greenish head, the bronzy purplish blue back and sides, and the more or less concealed iridescent bars on the back, especially on the rump, that mark the race here under discussion. The April specimens are presumably breeding birds. Those collected in March may have been migrants, or they may have been taken on their breeding grounds.

QUISCALUS QUISCULA RIDGWAYI Oberholser: Ridgway's Grackle

As used by Dr. Chapman, birds to which this name may be applied have the back and sides brassy green, and the rump bronze without evident or concealed iridescent bars. The group to which this name is applied is one that is definitely variable, and as indicated above it seems probable that it represents a series of hybrids between birds of the purple grackle complex and the bronzed grackle. Among specimens taken by W. H. Fox at Rockwood is a male, secured on March 26, 1885, that is entirely typical of this supposed form. The back is brassy green with evident iridescent bluish bars and the rump plain bronze, without markings. A female secured on April 11, 1885,

⁵² Auk, 1935, pp. 21-29; 1936, pp. 405-416.

has a bare indication of bars on the rump and so approaches *stonei*, though another male taken on April 20, 1885, in somewhat worn breeding dress, shows somewhat more of an approach toward the bronzed grackle in the more greenish cast of the dorsal surface, though this appearance may be due to feather wear. Other birds of the *ridgwayi* type were secured by Perrygo at Shady Valley, Johnson County, on June 11 and 14, 1937. A male and two females are typical in color of the birds placed under this name. A third female shows a little more approach to *stonei*.

These birds are segregated under the name *ridgwayi* as a matter of convenience, but I believe they are hybrids and therefore are to be doubtfully considered as a separate subspecific group.

MOLOTHRUS ATER ATER (Boddaert): Eastern Cowbird

In Lake and Obion Counties the cowbird was fairly common from April 24 to May 7, specimens being taken at Reelfoot Lake on April 26 and 4 miles west of Hornbeak on May 3. Others were collected in the vicinity of Waynesboro on May 17 (4 miles east of Flat Woods) and May 19 (8 miles north). One was collected at Rockwood on April 17, 1885, by W. H. Fox. Perrygo recorded cowbirds at Crossville, May 29, 4 miles east of Knoxville, June 1, and Shady Valley, June 9, 10, and 11.

Family THRAUPIDAE

PIRANGA ERYTHROMELAS Vieillot: Scarlet Tanager

Specimens were obtained at the following localities: Reelfoot Lake, April 29; 10 miles north of Waynesboro, May 10; Melvine, May 21; 7 miles southwest of Crossville, May 24; Rockwood, April 19, 1884 (W. H. Fox); Shady Valley, June 3 and 15; Great Smoky Mountains, Low Gap, near Cosby, June 19, and 3,700 feet elevation on Snake Den Mountain, June 24; and 2,100 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill, July 15. Two males in the nine taken have red markings in the middle wing coverts. Two others (the last two listed) have only partially attained adult color, the red being dull, with considerable mixture of greenish.

PIRANGA RUBRA RUBRA (Linnaeus): Summer Tanager

While all the records of this tanager are for spring, it is probable that the birds noted were on their nesting grounds. Specimens were collected at Hickory Withe, April 15 and 16; Reelfoot Lake, April 28; near Waynesboro, May 11 and 12.

Family FRINGILLIDAE

RICHMONDENA CARDINALIS CARDINALIS (Linnaeus): Eastern Cardinal

This abundant resident was recorded throughout the State except in the higher elevations of the eastern mountains. Cardinals were common in Shady Valley and were found to at least 3,300 feet in the Holston Mountains. In the Great Smoky Mountains they were seen near Cosby at 2,700 feet, and they were found on Big Frog and Beans Mountains.

Specimens were obtained at the following localities: Frayser, April 8; Hickory Withe, April 12; Reelfoot Lake, April 26; Philippy, October 7; Samburg, October 13; Dover, October 25; Indian Mound, October 27; Waynesboro, May 11 and 17; Frankewing, November 3 and 4; Lookout Mountain, March 24, 1882 (W. H. Fox); Crossville, May 25; Rockwood, April 16, 1884, and Roane County, April 6, 1885 (W. H. Fox); Bean Station, October 2; Shady Valley, June 10 and 12; near Cosby in the Great Smoky Mountains, July 3.

HEDYMELES LUDOVICIANUS (Linnaeus): Rose-breasted Grosbeak

While these birds were noted at Eads, April 20, Hornbeak, May 1 and 4, and Samburg, May 7, the only one collected in the western section of the State was a female secured 7 miles northeast of Tiptonville on October 19. Near Shady Valley I saw one at 4,000 feet in the Iron Mountains on June 6, and Perrygo observed a pair at 3,800 feet in the Holston Mountains on June 10. In the Great Smoky Mountains several were seen on Inadu Knob, in Low Gap, and on White Rock, between June 19 and July 2, and an adult male was taken on the latter date at 5,000 feet on Inadu Knob. The most interesting specimen is an adult female secured on July 10 at 3,700 feet elevation on Big Frog Mountain, 8 miles southwest of Copperhill. This bird has the lower throat, the upper breast, and an indefinite line down the center of the breast antimony yellow, a marking that I have not observed in any other specimen. From September 20 to 23 rose-breasted grosbeaks were common at 4,000 to 5,000 feet on Roan Mountain, when several were taken. It is probable that part of these were migrants.

PASSERINA CYANEA (Linnaeus): Indigo Bunting

This handsome bunting is State-wide in its distribution, having been noted everywhere except in the higher altitudes. Specimens were taken as follows: Reelfoot Lake, May 4 and October 7; near Hornbeak, May 3 and 4; 7 miles northeast of Tiptonville, October

22; Waynesboro, May 17; Pikeville, May 31; Bean Station, October 2; Shady Valley, June 4 and 10; near Cosby in the Great Smoky Mountains, June 23 and 30; 2,000 to 2,300 feet on Big Frog Mountain, 8 miles southwest of Copperhill, July 8, 10, and 15.

SPIZA AMERICANA (Gmelin): Dickcissel

In the vicinity of Reelfoot Lake from April 30 to May 7 these interesting birds were common. Three were taken 4 miles west of Hornbeak on May 1 and 3, and they were seen at Samburg, Ridgely, and Union City. One was observed 6 miles west of Waynesboro on May 9.

CARPODACUS PURPUREUS PURPUREUS (Gmelin): Eastern Purple Finch

Found only in spring migration in the western part of the State, where specimens were taken at Frayser, April 8, and near Hickory Withe, April 9 and 14. There is an old specimen in the collection taken at Rockwood, March 28, 1885, by W. H. Fox.

SPINUS PINUS PINUS (Wilson): Northern Pine Siskin

One of the surprises in the present collection is a pine siskin taken on July 2 at 2,700 feet elevation, 4 miles southeast of Cosby in the Great Smoky Mountains. The bird is a young female barely grown and must have been reared at some nearby point. Several were found mixed with goldfinches on July 2 and 3. As this report was going to the printer, Ganier and Clebsch⁵³ reported the siskin from Clingmans Dome in June 1938.

SPINUS TRISTIS TRISTIS (Linnaeus): Eastern Goldfinch

Recorded as follows: Hickory Withe, April 15; Reelfoot Lake, April 27; Waynesboro, May 17; Rockwood, March 14, 1885, and April 19, 1884 (W. H. Fox); Shady Valley, June 11; Great Smoky Mountains, near Cosby, June 19, and at White Rock (5,000 feet elevation), July 1.

PIPILO ERYTHROPHthalmus ERYTHROPHthalmus (Linnaeus): Red-eyed Towhee

The distribution of the towhees of Tennessee is somewhat involved, as two forms are concerned with specimens from certain localities that are definitely intermediate between the two. After prolonged study of the series at hand it appears that true *erythrophthalmus* may range in the breeding season in the western part of the State west of

⁵³ Migrant, 1938, p. 42.

Wayne County, and from there across the north. Migrants of this race occur all through Tennessee.

Specimens taken at Frayser, April 8, and near Hickory Withe, April 12 and 15, are representatives of the northern bird and are assumed to be breeding individuals. A series of five from the Holston Mountains adjacent to Shady Valley, secured on June 2, 3, and 12, all have the darker sides and large white area on the outer rectrix characteristic of the northern race. The elevations at which these birds were collected range from 2,800 to 3,300 feet. Two birds from the center of the valley, however, are *canaster*. A series secured by W. H. Fox near Rockwood is somewhat confusing, since birds that may be assigned to both races are included. Five taken on March 16 and April 7, 8, 14, and 15 are referable to true *erythrophthalmus*. They may come from a different elevation than one other that I consider *canaster*. Though part may be migrants, it seems probable that part are breeding birds. This may be an area of intergradation.

Other specimens, taken in fall where they may have been migrant from the north, include birds from the following localities: Tiptonville, October 20; Samburg, October 14; Dover, October 25; Pulaski, November 1 and 2; and Frankewing, November 4.

PIPILO ERYTHROPTHALMUS CANASTER Howell: Alabama Towhee

As indicated above, the ranges of the two forms of towhee found in Tennessee can be determined only in general from the material at hand. It appears that the Alabama towhee, *P. e. canaster*, is found from Wayne County eastward throughout the southern section of the State, its area increasing to the northward as the eastern border is approached. Two males taken on May 10 and 15 at points 8 and 10 miles north of Waynesboro fall within the limits of *canaster* in color of sides and in the extent of the white on the outer rectrix, this measuring 33.0 and 34.5 mm (the latter bird tending to be intermediate but nearer *erythrophthalmus*). Another taken 8 miles north of Waynesboro on May 15, with the tail spot 32.9 mm, has the sides appreciably darker than the other two and is more definitely an intermediate individual. An immature male shot 6 miles east of Pulaski on November 4 is typical of the Alabama form. (Two specimens of *erythrophthalmus* from this same region taken in November may be northern migrants.) A male from 9 miles southeast of Spencer in Van Buren County, May 21, is *canaster*, as are three from Birds Creek 7 miles southwest of Crossville. A male taken by W. H. Fox near Rockwood on April 1, 1885, has the tail spot only 28.6 mm long and is considered intermediate because of the darker color of the sides. Three others from near this same point seem typical of *erythrophthalmus*, indicating that the line of intergradation is near.

A male and a female shot near Beaverdam Creek in the valley bottom at Shady Valley on June 5 and 10 are *canaster*, though birds from low in the Holston Mountains a few miles west are referred to *erythrophthalmus*. This is the farthest north and east that *canaster* is recorded. An immature female taken on September 18 at 5,900 feet elevation on Roan Mountain has the tail spot only 27.2 mm, though the flanks are dark. It is considered intermediate but nearer *canaster*. This may be an area of intergradation. Two from the Great Smoky Mountains, a male taken on June 19 at 5,000 feet on Cosby Knob and a female on June 29 at 6,100 feet on Old Black Mountain, are both *canaster*. These two indicate that the southern form extends through these mountains and on to the south.

PASSERCULUS SANDWICHENSIS SAVANNA (Wilson): Eastern Savannah Sparrow

Two eastern Savannah sparrows were taken at Bartlett on April 19, at the same time as one of the paler Churchill form. At Rockwood W. H. Fox secured specimens on March 18, 21, and 31 and April 7, 1885. These are all dark in general appearance, with the lighter edgings of the dorsal feathers distinctly brownish.

PASSERCULUS SANDWICHENSIS OBLITUS Peters and Griscom:⁵⁴ Churchill Savannah Sparrow

Two females collected by Perrygo and Lingeback, at Ellendale on April 17 and near Bartlett on April 19, are marked by the pale gray margins and heavy black centers of the dorsal feathers, gray and black being the predominant colors, with little or no buff or brown. They are considered migrants of this race, which is recorded in the original description⁵⁵ from the Great Smoky Mountain region. The form is well marked and easily distinguished. The abundance of this subspecies and of the true Savannah sparrow in Tennessee has still to be ascertained.

In the paper containing the description of this new form, a treatment of geographical variation in the Savannah sparrow, the authors⁵⁶ list the Ipswich sparrow as *Passerculus sandwichensis princeps*, saying that "there is no *absolute* difference of any kind between this form and one or more races of *P. sandwichensis*. In size it is not only no larger than *P. s. sandwichensis*, but the smallest specimens are smaller than the largest specimens of *P. s. savanna*. The pallor of its coloration is not very marked when compared with *P. s. nevadensis*, and is exceeded by certain races of the *rostratus*

⁵⁴ *Passerculus sandwichensis oblitus* Peters and Griscom, Bull. Mus. Comp. Zool., vol. 80, Jan. 1938, p. 454 (Fort Churchill, Manitoba).

⁵⁵ *Ibid.*, pp. 456, 458.

⁵⁶ *Ibid.*, pp. 447-448.

group in Lower California." That *Passerculus princeps* is closely related to the Savannah sparrows is easily evident. It is also evident that it is very distinct from those forms of the Savannah sparrow *labradorius* and *savanna* with which it may associate (*oblitus* possibly included on rare occasions on the southeastern coast). If we concede *princeps* position as a subspecies of *Passerculus sandwichensis* by linkage through forms now and probably for all past time geographically remote, then we arrive at a difficult situation.

It is common in a genus of birds for certain characters of pattern or color to be repeated in different racial groups. Thus a spotted shoulder is common among pigeons of the *Columba* group (using this name in a broad sense), or a patch pattern, where black and white, or their combination, gray, occurs in varying arrangements, is found in the stilts of the genus *Himantopus*. To me it does not appear proper to consider such resemblances in groups of individuals geographically remote from one another, where there is no definite indication of earlier direct connection through which intergradation might occur, as denoting subspecific relationship. Such resemblances are of a generic rather than of a subspecific nature.

It appears to me therefore that *Passerculus princeps* should be retained as a species distinct from *sandwichensis* and its races and that resemblances between it and far distant races of *sandwichensis* are to be ascribed to convergence, and not to that closer genetic relation that must be held to exist between nearly allied subspecies. The range and ecological preference of *princeps* are so restricted as to give definite support to its separation as a distinct group. If we are to accept the other line of reasoning proposed, then we might be under necessity of recognizing with similar nomenclatural treatment far more remotely connected forms through relationships in remote ages; and if we were to follow such a line of reasoning far enough we might be brought to the situation of treating all existing birds as geographic races of one species through relationship in time and space! The problem tends to become complicated and to assume a highly hypothetical aspect.

AMMODRAMUS SAVANNARUM AUSTRALIS Maynard: Eastern
Grasshopper Sparrow

Near Pikeville several were seen and three were taken on May 29 and 31. In Shady Valley they were fairly common, two being taken on June 9 and 15. At Rockwood W. H. Fox secured one on March 24 and another on April 18, 1885.

These birds all have the darker coloration of the eastern bird, though they are of the maximum size for that race. The western form may occur in migration in the western part of the State.

Measurements of the Tennessee specimens are as follows: Males (5 specimens), wing 60.0, 60.2, 61.8, 62.2, 63.7, tail 40.8, 41.3, 41.8, 45.4, 46.6, culmen from base 11.8, 12.6, 12.8, 13.0 (one imperfect), tarsus 19.2, 19.3, 19.6, 20.7, 20.8; females (2 specimens), wing 57.9, 58.9, tail 40.0, 43.8, culmen from base 12.6, 12.7, tarsus 19.1, 20.0 mm.

POOECETES GRAMINEUS GRAMINEUS (Gmelin): Eastern Vesper Sparrow

As a breeding bird the vesper sparrow was fairly common in Shady Valley from June 5 to 15, a male being taken on June 12. It is probable that birds collected at 5,500 feet elevation on Roan Mountain on September 13, 16, and 17 were local birds also. A male, assumed to be in migration, was taken 7 miles northeast of Tiptonville, October 20. Other specimens in the National Museum were collected by W. H. Fox at Chattanooga on March 13, 1882, Lookout Mountain on March 23, 1882, and Rockwood on March 6, 1885.

AIMOPHILA AESTIVALIS BACHMANII (Audubon): Bachman's Sparrow

The only specimens are a small series collected by W. H. Fox, including birds from Lookout Mountain, April 4, 1882, and from Rockwood, April 3, 1884, and April 14, 15, 17, 22, and 25, 1885.

That there are three geographic races of *Aimophila aestivalis* instead of the two currently recognized in the A. O. U. Check-list is evident on examination of the material in the U. S. National Museum. *A. a. aestivalis*, very dark brown above, with the feathers margined broadly with gray and streaked heavily with blackish, is restricted to southeastern Georgia and Florida. Birds from southwestern Indiana and southern Illinois to southern Mississippi and eastern Texas are much lighter, more rufescent-brown above, with black streakings usually entirely absent and where present much reduced. These are to be known as *Aimophila aestivalis illinoensis* (Ridgway).⁵⁷ As these lines were written Sutton⁵⁸ has identified as *illinoensis* specimens from McCurtain County, Okla., and Oberholser⁵⁹ has listed under this name birds from Louisiana.

A. a. bachmanii stands midway between these two, differing from *A. a. aestivalis* in being brighter, more rufescent, with the gray margins of the feathers less evident, and from *illinoensis* in being darker brown, with prominent blackish streaks on the back.

The birds from Tennessee, as might be expected, are definitely intermediate between *bachmanii* and *illinoensis*. One or two are closely

⁵⁷ *Peucaea illinoensis* Ridgway, Bull. Nuttall Orn. Club, 1879, p. 219 (Wabash County, Ill.).

⁵⁸ Auk, 1933, p. 508.

⁵⁹ Dept. Cons. State of Louisiana Bull. 28, 1933, p. 661.

similar to the latter, but the series averages slightly darker brown above and is marked by definite blackish streakings above (though these are much reduced in two specimens). They are identified as intermediate, but nearer to *bachmani*. True *illinoensis* should occur in western Tennessee at least in migration.

JUNCO HYEMALIS HYEMALIS (Linnaeus): Slate-colored Junco

Represented by specimens as follows: Hickory Withe, April 15; Tiptonville, October 22; Dover, October 25; Frankewing, November 9; Lookout Mountain, March 20, 1882 (W. H. Fox); Rockwood, March 2, 13, and 21, 1885, and April 7, 1884 (W. H. Fox).

JUNCO HYEMALIS CAROLINENSIS Brewster: Carolina Junco

Juncos were fairly common in the mountains bordering Shady Valley, specimens being taken at 3,800 to 4,000 feet in the Iron Mountains on June 6 and 14 (the latter a bird in juvenal plumage) and at 3,800 feet in the Holston Mountains on June 4. On Roan Mountain skins were secured at 6,200 feet on September 22. One is partially albinistic on the throat. In the Great Smoky Mountains the Carolina junco was very common. Specimens were taken at 5,000 feet on Cosby Knob June 19, at 6,300 feet on Old Black Mountain on June 21, and at 6,600 feet on Mount Guyot on June 21 and 24. Others were seen at 5,000 feet and above on Inadu Knob, Camels Hump, and White Rock. On July 10 a junco was recorded at 4,100 feet on Big Frog Mountain.

SPIZELLA PASSERINA PASSERINA (Bechstein): Eastern Chipping Sparrow

The familiar chipping sparrow is common in Tennessee, being represented as follows: Hickory Withe, April 15; Dover, October 25; Waynesboro, May 11 and 14; Melvine, May 21; Pikeville, May 31; Crossville, May 27; Rockwood, March 9 and April 1, 1885 (W. H. Fox); Shady Valley, June 10 and 11; and at 2,700 feet elevation near Cosby in the Great Smoky Mountains, June 20 and 29.

SPIZELLA PUSILLA PUSILLA (Wilson): Eastern Field Sparrow

A common sparrow that as a breeding bird covers the State except in the extreme western portion. Records attributed to true *pusilla* are as follows: 4 miles west of Hornbeak, May 3; 10 miles east of Pulaski, November 2 and 3; Chattanooga, March 15, 1882 (W. H. Fox); Rockwood, March 4, 18, and 28, 1885, April 3, 6, and 8, 1884 (W. H. Fox); Shady Valley, June 3; 2,700 feet elevation, 4 miles southeast of Cosby, Great Smoky Mountains, June 30. A bird from

Waynesboro taken on May 14 is somewhat intermediate toward *arenacea* but is decidedly nearer to *pusilla*.

SPIZELLA PUSILLA ARENACEA Chadbourne: Western Field Sparrow

There are three specimens in the collection that may be ascribed to this race, a female taken at Hickory Withe, April 15, and two immature birds, male and female, from 7 miles northeast of Tiptonville taken on October 22. The two last are probably migrants, as a male taken near Hornbeak on May 3 is the eastern form. It will be recalled that a female from near Waynesboro while identified as the eastern form is somewhat intermediate.

The identification of these western Tennessee specimens has come as the result of speculation and study as to the identity of the western field sparrow that began more than 30 years ago with skins that I obtained in southeastern Kansas. In brief summary, *Spizella pusilla arenacea* is marked by the very pale brown of the markings of the upper surface, gray predominating, with little or no bright chestnut, the restriction of the brown on the crown which usually has a gray median band, the light margins on the secondaries, the narrowed black lines on the back, and the grayish white on the lower surface, which has a suffusion of buffy brown on the breast in fall and winter only. This type of coloration finds its highest expression in the Great Plains area in birds from such widely separated localities as Medora, N. Dak., Fort Pierre, S. Dak., and San Angelo, Tex., in which the crown in summer is largely or almost wholly gray. These Great Plains specimens have the wing, tail, and tarsus actually, as well as on the average, very slightly longer than specimens from the East. Measurements are as follows: Males (10 specimens), wing 67-70, tail 65-72, tarsus 17.5-21.1; females (2 specimens), wing 60.5-64.0, tail 62.2-63.0, tarsus 17.7-17.8 mm.

Spizella pusilla pusilla is extensively brown above, with bright brown predominating in the coloration of the upper surface, the black streakings of the back broad and heavy, the lighter areas on rump and shoulder darker in tone, ordinarily brownish gray, the margins on the secondaries darker, more rufescent, and a suffusion of pinkish buff on the breast that is indicated even in worn breeding plumage. Measurements are as follows: Males, wing 59.7-65, tail 58-65, tarsus 17.2-18.5; females, wing 59.4-62.7, tail 54.3-62.2, tarsus 17.2-18.2 mm. (These measurements are in part those made for Mr. Ridgway and in part from specimens measured recently for or by me.) Birds of this type of coloration and with these dimensions are found from southern Quebec to the Carolinas and west to Ohio, West Virginia, central Tennessee, and Mississippi.

There remains between the two ranges indicated an area of considerable extent, reaching in general from the region near the Mississippi River to eastern Texas, eastern Kansas, and northward (I do not have material at hand from the section north of Kansas), in which the field sparrows have the slightly smaller size found in typical *pusilla* of the East but are definitely paler and grayer than that bird. Some are almost as gray above and below as typical *arenacea*. The majority are somewhat browner, the brown being dull, however, with gray predominating, the black streakings reduced, and the light margins on the secondaries paler. They are distinctly intermediate between the two races and are variable between the two in their color characters. In the eastern section of this area of intergradation individual birds may verge toward the paler group, or they may be reddish like true *pusilla*. This condition is found in two skins from Waterloo, Mich., in which a male taken on April 30 is definitely reddish brown, and a female collected on April 16 is distinctly grayer, though of the *pusilla* type. Specimens from Mount Carmel, Ill., Wheatland, Ind., and western Kentucky are of the true *pusilla* type, verging only slightly toward the grayer tone of birds of farther west.

After somewhat prolonged consideration it appears to me, and to some others who have examined the problem with me, that we have here the ideal condition as regards the concept of subspecific groups in a species of considerable range. The two races of *Spizella pusilla* occupy definite geographic areas with a region of intergradation as they approach. To put the majority of the intergrades with the western form is to place greater emphasis on color than on size, which seems proper, as the size differences separating *arenacea* from *pusilla* are minor and the color differences considerable. Color, therefore, is more important than size. To give the series of intermediates a separate name would serve in my opinion only to complicate the picture, with no useful result because of the definitely mixed character of the population concerned.

ZONOTRICHIA LEUCOPHRYS LEUCOPHRYS (Forster): White-crowned Sparrow

Specimens were collected near Hornbeak, April 28; near Reelfoot Lake 7 miles northeast of Tiptonville, October 22; and on the Cumberland River near Indian Mound, October 27.

ZONOTRICHIA ALBICOLLIS (Gmelin): White-throated Sparrow

An abundant bird at all localities worked at the proper seasons. Records are as follows: Hickory Withe, April 9, 10, and 13; Reelfoot Lake, April 24 and 26; Hornbeak, May 4; Reelfoot Lake, 4 miles south of Samburg, October 13; Dover, October 25 and 26; Waynesboro, May

10 and 11; Pulaski, November 1 and 3; Frankewing, November 4; Rockwood, March 20 and April 1, 1884, and April 16, 1885 (by W. H. Fox). The first noted in fall by Perrygo were seen near Reelfoot Lake, 2 miles east of Phillippy, on October 12.

PASSERELLA ILIACA ILIACA (Merrem): Eastern Fox Sparrow

The fox sparrow was taken at Reelfoot Lake near Tiptonville, October 18, and on the Cumberland River, 2 miles west of Indian Mound, October 27. There is one in the collection taken at Rockwood, March 18, 1885, by W. H. Fox.

MELOSPIZA LINCOLNII LINCOLNII (Audubon): Lincoln's Sparrow

This shy migrant was collected at Reelfoot Lake, April 29 and 30 and October 23; near Hornbeak, May 3; on the Cumberland River 7 miles north of Dover, October 30; and near Waynesboro, May 13 and 17.

MELOSPIZA GEORGIANA (Latham): Swamp Sparrow

A common visitor recorded as follows: Hickory Withe, April 10 and 16; near Tiptonville, October 16; near Reelfoot Lake, 2 miles east of Phillippy, October 12 and 23; on the Cumberland River, near Dover, October 26; near Pulaski, November 4; near Frankewing, November 4; Rockwood, March 19, 20, and 23, 1885 (W. H. Fox).

MELOSPIZA MELODIA MELODIA (Wilson): Eastern Song Sparrow

Present in the State as a migrant, apparently in small numbers. Perrygo obtained his first specimen ascribed to this race on Clinch River, 6 miles northwest of Bean Station, on October 2. Two others were taken on the Cumberland River near Dover, on October 26, and another 6 miles east of Pulaski on November 4. These four are distinctly lighter, and have less distinct dark dorsal markings than *M. m. euphonia* obtained at the same season of the year, but are slightly grayer than the average of typical *M. m. melodia*. They are, however, to be ascribed to *melodia*.

MELOSPIZA MELODIA EUPHONIA Wetmore: Mississippi Song Sparrow

This is the common form of song sparrow of Tennessee according to present information. In Shady Valley, along Beaverdam Creek, it was a common breeding bird from June 2 to 15, specimens taken being typical in dark coloration and heavy black dorsal streaks. I collected a set of five nearly fresh eggs here on June 7, the nest being a cup of grasses and other herbaceous material placed on the

ground in a clump of grass. The ground color is pale greenish white, marked heavily with russet, which occurs in small dots or patches and large blotches, in the main obscuring the lighter background. One egg is broken. The other four measure as follows: 19.4 by 15.5, 19.4 by 15.6, 19.4 by 15.7, and 19.6 by 15.3 mm.

Several song sparrows were seen in the valley near Carter on June 7, and Perrygo observed one on June 19 and another on June 22 about 4 miles southeast of Cosby in the Great Smoky Mountains. On Roan Mountain at 5,900 to 6,200 feet song sparrows were fairly common from September 11 to 18. The five taken are all immature birds, one being mainly in juvenal plumage, two in heavy molt from this dress, and two in nearly complete fall dress. These are believed to be resident birds in this area.

Birds taken in migration season include the following: 7 miles northeast of Tiptonville, October 22; Reelfoot Lake, 2 miles east of Phillippy, October 23; Cumberland River near Dover, October 26; and 10 miles east of Pulaski, November 4. There are also in the Museum skins taken by W. H. Fox at Lookout Mountain, March 21, 1882, Chattanooga, March 13, 1882, and Rockwood, March 4, 13, and 23, 1885.