

the mammary glands of mammals. When prolactin is discharged into the blood of pigeons of either sex, not only does the crop-gland develop to a functioning state, but parental brooding and self-denying care of eggs and young will then characterize the pigeon's behavior. (RIDDLE, OSCAR, AND BRAUCHER, P. F. 'Control of the special secretion of the crop-gland in pigeons by an anterior pituitary hormone.' *Amer. Jour. Physiol.*, 37: 617-625, 1931. RIDDLE, O.; BATES, R. W.; AND DYKSHORN, S. W. 'The preparation, identification and assay of prolactin.' *Ibid.*, 105: 191-216, 1933. RIDDLE, O. 'Prolactin.' *Sci. Monthly*, 47: 97-113, 1938. Also a personal communication for which the author is greatly indebted.)

If Cotton Mather had known the results of these latest hormone studies, would he have written his 'Christian Philosopher' to show the impotence of mechanism? Presumably he would reflect that the hypophysis is an appendage of the brain, and that the production and release of prolactin may not be as mechanical as an experimental injection. As Professor Whitman has said, "the birds certainly seem to understand what is going on." They may not be altogether predestined Calvinist birds. Since a mechanism is available for causing both parents to suckle their young, or for assigning that duty to either sex alone, there may be wisdom and purpose in the existing order in mammals and mankind. "Chance cannot govern it."

The Rev. Cotton Mather's observations are imperfect and antiquated, yet it is no small achievement to have anticipated John Hunter, while providing the best colonial account of the Passenger Pigeon, and suggesting a possible clue to its amazing abundance.

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## NOTES ON THE RACES OF THE WHITE-BREASTED NUTHATCH

BY JOHN W. ALDRICH

IN the course of identifying White-breasted Nuthatches (*Sitta carolinensis*) from the state of Washington, in connection with the Fish and Wildlife Service's investigations on the birds of that area, the writer has reviewed the geographical variation of this species over its entire range. Since some of the facts revealed by this study do not appear to have been made clear previously in the literature, it would seem worth while to present them here.

Through the courtesy of A. J. van Rossem, an excellent series of

typical *Sitta carolinensis tenuissima* from central-eastern California and southern Nevada was made available for study. The type and a large series of topotypes of *nelsoni* from the Huachuca Mountains of Arizona were on hand in the U. S. National Museum, and through the kindness of R. M. de Schauensee the type specimens of *Sitta aculeata*, in the collection of The Academy of Natural Sciences of Philadelphia, was sent to me for study. Dr. Josselyn Van Tyne sent me a topotypical series of *oberholseri* from the Chisos Mountains of Texas, W. E. C. Todd made available the type series of *uintaensis* from the Uinta Mountains, Utah, and S. G. Jewett provided additional material from a critical area in Oregon and Washington. Major E. A. Goldman supplied much information from unpublished notes made by himself and the late Dr. E. W. Nelson, on the distribution and habitat of White-breasted Nuthatches in Mexico. Dr. Alden H. Miller has read the entire manuscript and favored me with numerous helpful criticisms, although he is in no way responsible for any of the conclusions reached herein. To all these individuals and institutions I wish to express my thanks.

With these specimens, in conjunction with a large amount of material from North America available to me in the U. S. National Museum, including the Biological Survey collection, it was possible to work out the characters of the least understood races which, up to the present time, are those of the western United States.

#### GEOGRAPHICAL VARIATION

In the first place, there are exhibited by these nuthatches several clines, an understanding of which aids materially in racial differentiation. These are in size, proportions of bill, color of under parts, and general shade of upper parts. Generally speaking, there is a darkening of coloration of upper parts in progressing toward the Rocky Mountains from both coasts. Progressing from north to south there is also a deepening of coloration. This is extended to the under parts in Mexico, where specimens assume a brownish wash on the breast. The peak of intensity in coloration is reached on the high tableland of central Mexico. Southward from that point there is a slight paling again. The palest-backed populations are in the north-eastern and Pacific coastal sections of the country. The latter birds, however, tend to have a little more of the brownish wash below than other North American populations, thus showing a reappearance of the character that reaches its maximum expression in Mexico.

The clines pertaining to size are less consistent than those of color. In the east there is a fairly even progressive change in going from

larger size in the north to smaller dimensions in the south. In the west, however, the trend is just the reverse and is complicated by a superimposed west-east trend of increasing size. As is the case with intensity of coloration, the maximum wing size is reached on the tableland of central Mexico. There is a rapid decrease in this character in progressing both southward and northeastward. Northwestward, however, the decrease is much more gradual.

Variation in bill length is not correlated with wing length. The longest culmens are found among populations of the desert mountains of Nevada and eastern California, giving these birds an extremely slender-billed appearance. All populations west of the Rocky Mountains are relatively slender-billed. In this character there is a definite cline progressing eastward toward the Atlantic coast, in which region the stoutest-billed populations are to be found. Going southward in Mexico the trend is also toward stouter bills.

Other than these mentioned, all characters, some of which have been mentioned in separating races, such as upward curve of bill, size and position of white and black areas in wing and tail, breadth of tail feathers, and the like, are highly variable individually but have no geographical significance. They would seem, therefore, to have no value as racial characters.

#### RACES

On the basis of various combinations of the above-mentioned geographically variable characters, the following easily recognizable races may be defined:

*SITTA CAROLINENSIS ACULEATA* Cassin. Slender-billed Nuthatch.

*Sitta aculeata* CASSIN (1857, p. 254); California [= Monterey; see Grinnell (1932, p. 290)].

SUBSPECIFIC CHARACTERS.—A relatively small, pale-backed nuthatch with a relatively slender bill and a slight brownish wash below, which is more pronounced in females. Compared with *tenuissima*, the only other race with which it comes in contact, *aculeata* is smaller and paler above, less purely white (more brownish) below, with a lighter shade of chestnut on thighs and under tail-coverts.

MEASUREMENTS.—Adult male (20 specimens from western California and Oregon): wing, 83–87.5 (84.8) mm.; exposed culmen, 16–19 (17.8). Adult female (10 specimens from western California, Oregon, and Washington): wing, 80.5–86 (83.75); exposed culmen, 16–18 (17.05).

DISTRIBUTION.—Permanent resident in oak and pine woodlands, Upper Sonoran and Transition Life Zones, west of the Cascade and

Sierra Nevada ranges (exclusive of the more humid coastal strip of Oregon and Washington), from Puget Sound south to the Tehachapi Mountains in southwestern California. Specimens from Tejon Pass in these mountains are intermediate between *aculeata* and *tenuissima*. A specimen from southern Nevada, considered by van Rossem (1936, p. 37) to be a migrant of *aculeata*, seems to me to be closer to *tenuissima*.

The locality written on the type specimen of *Sitta carolinensis aculeata* is merely "California." Since there are two subspecies of the White-breasted Nuthatch in California, it has been necessary to further restrict the type locality of *aculeata*. Grinnell (1932, p. 290) suggests for such a restricted type locality—I believe rightly—the vicinity of Monterey, California, a region in which William Gambel (1848, p. 47), the collector of the type specimen of *aculeata*, was known to have collected birds. Specimens taken in regions surrounding Monterey were compared by me directly with the type and found to be indistinguishable from it. Therefore, in every way, this seems to be a satisfactory choice for a restricted type locality.

SITTA CAROLINENSIS TENUISSIMA Grinnell. Inyo Nuthatch.

*Sitta carolinensis tenuissima* GRINNELL (1918, p. 88); Hanaupah Canyon, 8700 feet altitude, Panamint Mountains, Inyo County, California.

*Sitta carolinensis alexandrae* GRINNELL (1926, p. 405); near Arroyo La Encantada, 7200 feet altitude, 3 miles north of La Grulla, Sierra San Pedro Martir, Lower California, Mexico.

SUBSPECIFIC CHARACTERS.—A relatively long-winged and long, slender-billed, dark-backed and whitish-breasted race. Compared with *aculeata*, *tenuissima* is long of wing and bill, has much purer white under parts, darker back, and darker chestnut thighs and under tail-coverts. In contrast to *nelsoni* it has a relatively longer and a more slender bill and more whitish under parts, with flanks less washed with gray.

MEASUREMENTS.—Adult male (22 specimens from central-eastern California and western and southern Nevada): wing, 88–94 (90.5) mm.; exposed culmen, 19–22.5 (20.9). Adult female (14 specimens from central-eastern California and central-western and southern Nevada): wing, 87–93 (88.95); exposed culmen, 18.5–23.5 (19.8).

DISTRIBUTION.—Chiefly in the pine forests of the Western Mountain Transition Life Zone, but to a lesser degree in the Spruce-Fir Subalpine Forests of the Canadian Life Zone, and the Piñon-Juniper Woodlands of the Upper Sonoran Life Zone; from south-central British Columbia

southward, east of the Cascade and Sierra Nevada ranges to northern Lower California, eastward to southeastern and southeast-central Nevada, and the western slopes of the Rocky Mountains in extreme western Wyoming and Montana.

Four topotypes of *Sitta carolinensis alexandrae* from the San Pedro Martir Mountains, and three specimens from slightly farther north in the Hanson Laguna Mountains of northern Lower California, examined in the present study, are slightly darker than specimens of typical *tenuissima* from the White Mountains of California, but in size, proportions of bill, and other characters they are indistinguishable. As for the alleged characters of broad rectrices and greater amount of white on wing and tail feathers, I fail to detect any difference in these respects among these and numerous other populations, all of which show great individual variation in these characters. Grinnell (1926, p. 409), himself, noted the similarity between *alexandrae* and *tenuissima*, but was impressed by what he considered too great a gap in their ranges for them to be genetically related. Indeed, he considered that they were further separated by a third race intervening in southern California. However, a series of specimens from San Diego County, California, seems to the present writer definitely nearer *tenuissima* than *aculeata*, the race to which birds from this region previously have been referred by Grinnell (1928, p. 219) and others. Thus the genetic gap between *tenuissima* and the northern Lower California populations is not so great as it was formerly thought to be. Southwestern California specimens, although intermediate, are darker above and paler below than *aculeata*, and are distinctly larger; seven males from Laguna in San Diego County average 88.1 mm. in wing measurements, and 19.1 mm. in exposed culmen. It would seem best to interpret the slightly darker coloration of the northern Lower California birds as a condition of intermediacy, unworthy of a distinct name, between *tenuissima* and the smaller and darker *lagunae* inhabiting the southern end of the peninsula of Lower California.

From southern Oregon northward, specimens of *Sitta carolinensis tenuissima* tend to become smaller. Culmination in this trend is reached in populations in central-northern Washington, where White-breasted Nuthatches, although indistinguishable in color and measurement from typical *tenuissima*, are about three per cent shorter of wing and eight per cent shorter of bill. In size these are about midway between *tenuissima* and *aculeata*, which probably accounts for the conclusion of Bowles (1911, p. 177) that these birds should be referred to the small coastal race. These specimens are certainly

far removed from *nelsoni* in both size and proportion, and on the basis of average characters are closest to *tenuissima*. The fact that the difference is merely one of size, which in itself is intermediate between that of two well-marked races, militates against recognition of the population as a distinct subspecies, even though the area populated by birds showing this variation is a relatively large one. An added deterrent is the fact that specimens from western Wyoming and western Montana seem to be quite indistinguishable from *tenuissima*.

The range of *tenuissima*, as here delineated, is vastly more extensive than ever previously described, and greatly changes the concept of that race as set forth by Grinnell (1918, p. 88) and Miller (1941, p. 266).

*SITTA CAROLINENSIS NELSONI* Mearns. Rocky Mountain Nuthatch.

*Sitta carolinensis nelsoni* MEARNS (1902, p. 923); Huachuca Mountains, Arizona.

*Sitta carolinensis uintaensis* TWOMEY (1942, p. 422); Green Lake, 40 miles north of Vernal, Uinta Mountains (altitude 8,000 feet), Utah.

**SUBSPECIFIC CHARACTERS.**—A relatively large, dark-backed nuthatch with bill of medium stoutness. Compared with *tenuissima* the bill is relatively shorter and stouter and the under parts, particularly in the female, are darker. In contrast to *cookei*, its nearest neighbor to the east, *nelsoni* is much darker and less contrastingly marked with black and gray on the wing feathers; also, the shape of its bill is more slender.

**MEASUREMENTS.**—Adult male (23 specimens from Arizona and New Mexico): wing, 89.5–94 (91.4) mm.; exposed culmen, 17.5–21 (19.0). Adult female (16 specimens from Arizona and New Mexico): wing, 86–93.5 (89.8); exposed culmen, 17–19.5 (18.4).

**DISTRIBUTION.**—Chiefly in the Rocky Mountain Montane Forest of the Transition Life Zone, but to a lesser degree in the Piñon-Juniper Association of the Upper Sonoran Life Zone and the Rocky Mountain Subalpine Forest of the Canadian Life Zone, from southeastern and west-central Montana south to central-northern Sonora and the Davis and Guadalupe Mountains in central-western Texas. Westward this race intergrades with *tenuissima* in western Montana, western Wyoming, northern Utah, and eastern Nevada. It breeds eastward to the limits of the montane forest in the foothills of the Rockies and wanders farther east in winter to northwestern Oklahoma and southwestern Kansas.

As pointed out by van Rossem (1936, p. 37), it also apparently wanders into the mountains of southern Nevada. The extension of the breeding range of *nelsoni* into extreme eastern Nevada is entirely

on the authority of Linsdale (1936, p. 89), who based his conclusions on specimens which I have not personally examined. Actual geographical intergradation with *cookei* to the east has not been evidenced by specimens in the present study. Presumably, however, this does take place in the Aspen Parkland region of the Prairie Provinces in Canada. Field identified records from Alberta that may possibly be referable to this race are: one observed by Preble (1908, p. 484) in the autumn of 1903, near Swift Current Rapid; and one noted by Soper (1918, p. 148) in 1906, at Edmonton.

The type series of *Sitta carolinensis uintaensis*, described by Twomey (1942, p. 422) from the Uinta Mountains, Utah, was examined in the present study, and, although somewhat more whitish on the under parts than typical *nelsoni*, indicating a tendency toward intergradation with *tenuissima*, the specimens are in other respects identical with *nelsoni*, to which race they are here referred.

*SITTA CAROLINENSIS LAGUNAE* Brewster. San Lucas Nuthatch.

*Sitta carolinensis lagunae* BREWSTER (1891, p. 149); Sierra de la Laguna, Lower California, Mexico.

SUBSPECIFIC CHARACTERS.—A relatively small, dark-colored nuthatch with a slender bill. From its nearest neighbor to the north, *tenuissima*, it is distinguished by smaller size and darker coloration above and below. From all the other Mexican races it can be separated by virtue of its relatively slender bill. From all of these, except *oberholseri* and *kinneari*, it is distinguishable also on the basis of smaller size.

MEASUREMENTS.—Adult male (5 specimens from the Victoria Mountains, Lower California): wing, 86.5–88 (87.1) mm.; exposed culmen, 18–19 (18.5). Adult female (6 specimens from the Victoria Mountains, Lower California): wing, 84–86 (84.9); exposed culmen, 17–18 (17.7).

DISTRIBUTION.—Confined, as far as we know, to the southern tip of the peninsula of Lower California, where it dwells in the pine forests of the Victoria Mountains. A single immature male in the Biological Survey collection from San Jose Island, somewhat farther north in the Gulf of California, probably was a wanderer from the higher mountainous country of the peninsula proper.

*SITTA CAROLINENSIS UMBROSA* van Rossem. Sierra Madre Nuthatch.

*Sitta carolinensis umbrosa* VAN ROSSEM (1939, p. 4); Sierra Madre, near Guadalupe y Calvo, southern Chihuahua, Mexico.

SUBSPECIFIC CHARACTERS.—The largest and darkest above of all White-breasted Nuthatches. It is larger and much darker, particularly below, than *nelsoni*, and larger and darker above than *mexicana*.

MEASUREMENTS.—Adult male (9 specimens from Chihuahua, Tepic, Durango, and Zacatecas, Mexico): wing, 89–96 (92.9) mm.; exposed culmen, 16–19 (17.5). Adult female (5 specimens from Chihuahua, Tepic, Durango, and Zacatecas, Mexico): wing, 90–91.5 (90.6); exposed culmen, 15–18 (16.5).

DISTRIBUTION.—The Transition Life Zone pine forests of the high Sierra Madre Plateau of northwestern Mexico from central Sonora and northwestern Chihuahua south to northern Jalisco and central Zacatecas.

*SITTA CAROLINENSIS OBERHOLSERI* Brandt. Chisos Nuthatch.

*Sitta carolinensis oberholseri* BRANDT (1938, p. 269); Boot Canyon, altitude 7,000 feet, Chisos Mountains, Brewster County, Texas.

SUBSPECIFIC CHARACTERS.—A medium-sized, dark-backed nuthatch. Below, *oberholseri* is somewhat darker than *nelsoni*, particularly in the shade of the brownish coloration on the posterior under parts of the female, and with a much more whitish and grayish (less brownish) cast to the entire under parts than either *mexicana* or *umbrosa*. Above, *oberholseri* is darker than *nelsoni*, particularly the female, which sex is more purely gray, less brownish or olivaceous, than either *mexicana* or *umbrosa*. From *umbrosa* it differs further in averaging smaller. The size difference of *oberholseri* from *mexicana* and *nelsoni* is less distinct and of little value in identifying specimens.

MEASUREMENTS.—Adult male (6 specimens from the Chisos Mountains, Brewster County, Texas): wing, 86–92 (88.8) mm.; exposed culmen, 17.5–19 (18.2). Adult female (3 specimens from the Chisos Mountains, Brewster County, Texas): wing, 83.5–87 (85.5); exposed culmen, 17–17.5 (17.3).

DISTRIBUTION.—The Pine communities of the Transition Life Zone and the oaks of the Upper Sonoran Life Zone in the Chisos Mountains of central–western Texas, south through the mountains of Coahuila, Mexico, to the Sierra Guadalupe in the southeastern part of that state.

*SITTA CAROLINENSIS MEXICANA* Nelson and Palmer. Mexican Nuthatch.

*Sitta carolinensis mexicana* NELSON AND PALMER (1894, p. 45); Mount Orizaba, Puebla, Mexico.

SUBSPECIFIC CHARACTERS.—A medium-sized, relatively stout-billed nuthatch, dark above and below. It is smaller and somewhat paler above than *umbrosa*, darker and more brownish below, and more brownish above than *oberholseri*, and darker and larger than *kinneari*.



MEASUREMENTS.—Adult male (9 specimens from Hidalgo, Puebla, and Jalisco, Mexico): wing, 87.5–93.5 (90.3) mm.; exposed culmen, 15.5–17.5 (16.6). Adult female (2 specimens from Jalisco, Mexico): wing, 86–89 (87.5); exposed culmen, 15.5.

DISTRIBUTION.—Chiefly in the predominantly pine montane forest of the Transition Life Zone in the mountains of eastern and southern Mexico, from central-western Tamaulipas and extreme southeastern Coahuila (Sierra Encarnacion), south to central-eastern Puebla and Morelos, and westward (south of central Zacatecas and northern Jalisco) to central-western Jalisco.

SITTA CAROLINENSIS KINNEARI van Rossem.

Southern White-breasted Nuthatch

*Sitta carolinensis kinneari* VAN ROSSEM (1939, p. 3); Amula (Tixtla), Guerrero, Mexico.

SUBSPECIFIC CHARACTERS.—A small, pale-backed, dark-breasted nuthatch, with about the same length of wing as *aculeata*, but with much shorter and stouter bill than that race. From its nearest neighbor, *mexicana*, it differs in being smaller and paler above.

MEASUREMENTS [adopted from van Rossem (1939, p. 4) since my own series was insufficient].—Adult male (9 specimens): wing, 82–88 (84) mm.; exposed culmen, 14.6–16 (15.3). Adult female (5 specimens): wing, 82–84 (83); exposed culmen, 14.7–15 (14.8).

DISTRIBUTION.—Chiefly in the predominantly oak forest of the Upper Sonoran Life Zone in the mountains of extreme southern Mexico in the states of Guerrero and Oaxaca.

SITTA CAROLINENSIS COOKEI Oberholser.

Eastern White-breasted Nuthatch

*Sitta carolinensis cookei* OBERHOLSER (1917, p. 182); Washington, D. C.

SUBSPECIFIC CHARACTERS.—A medium-sized, stout-billed, light-colored nuthatch with the palest back of any race. The lightness of the inner secondaries causes the more intense black pattern to stand out in sharp contrast as compared to western and Mexican races.

MEASUREMENTS.—Adult male (22 specimens from northeastern United States): wing, 87–93.5 (90.0) mm. (a specimen with a wing of 97 mm. was excluded from the measurements as being out of all proportion to other specimens); exposed culmen, 16.5–19.5 (18) mm. Adult female (20 specimens from northeastern United States): wing, 86–92.5 (88.25); exposed culmen, 16.5–19 (17.5) mm.

**DISTRIBUTION.**—Chiefly in climax and subclimax deciduous forest communities of eastern North America in the Upper Austral and Transition Life Zones; north to Prince Edward Island, northern Maine, southwestern Quebec, southeastern Ontario, northern Michigan, central Minnesota, and south-central Manitoba; west to the western edge of the Deciduous Forest Biome on the Great Plains from central Texas to central North Dakota, and possibly farther west in the Aspen Parkland corridor, where it probably intergrades with *nelsoni* in the vicinity of the eastern foothills of the Rocky Mountains. As pointed out by Oberholser (1917, p. 184) and Wetmore (1940, p. 547; and 1941, p. 505), *cookei* intergrades with *carolinensis* over a rather broad area in North Carolina, Kentucky, southern Missouri, Arkansas, and eastern Texas.

*SITTA CAROLINENSIS CAROLINENSIS* Latham. White-breasted Nuthatch

[*Sitta*] *carolinensis* LATHAM (1790, p. 262); America, Jamaica [= mouth of Savannah River in South Carolina (see Oberholser, 1917, p. 183)].

*Sitta carolinensis atkinsi* SCOTT (1890, p. 118); Tarpon Springs, Florida.

*Sitta atkinsi litorea* MAYNARD (1916, p. 5); New River, North Carolina.

**SUBSPECIFIC CHARACTERS.**—Smaller and darker above than its nearest neighbor, *cookei*. Differs from all western races by the relatively stout bill and contrastingly black and gray pattern of the wing. From all Mexican races it may be easily distinguished by the light breast, not washed with brown.

**MEASUREMENTS.**—Adult male (19 specimens from southeastern United States): wing, 83.5–90 (87) mm.; exposed culmen, 16–19 (17.4). Adult female (11 specimens from southeastern United States): wing, 82–87.5 (85.6); exposed culmen, 15.5–18 (17).

**DISTRIBUTION.**—Chiefly in the southeastern pine region of the Lower Austral Life Zone, although extending into the Eastern Deciduous Forest Biome in the Mississippi Valley region, from midway on the peninsula of Florida and the Gulf Coast to southeastern Louisiana, north to North Carolina, Tennessee, and southern Missouri, where it intergrades with *cookei* over a broad area.

Oberholser (1917: 183) seems to have been the first investigator to apply correctly the name *Sitta carolinensis* Latham with respect to the division of populations into northeastern and southeastern subspecies. Present investigations show that southern South Carolina specimens, on which *Sitta carolinensis* was based, are indistinguishable

subspecifically from peninsular Florida birds, which were the basis for *Sitta carolinensis atkinsi* Scott. On the other hand, the South Carolina and Florida nuthatches together are easily distinguishable from specimens taken at Washington, D. C., and northward, on which *Sitta carolinensis cookei* Oberholser was based. Although the type of



TEXT-FIGURE 1.—Distribution of races of *Sitta carolinensis* with indications of the trends in the variations of the major characters.

*Note.*—The boundary lines on this map are designed to show the limits of certain combinations of racial characters and should not be confused with the limits of occurrence of White-breasted Nuthatches. There are large areas included within the boundaries of some of the races where no nuthatches occur at all, or if they do, it is in relatively small isolated islands of favorable habitat. This is particularly true of the regions in which forest communities intergrade with grassland or sagebrush.

*Sitta atkinsi litorea* Maynard has not been seen in the present study, both its measurements and locality of collection fall within the limits of *carolinensis* as herein worked out.

It should be pointed out here that Bangs (1930: 353) came to the opposite conclusion, and the American Ornithologists' Union Committee on Nomenclature (1931: 237) apparently was guided by his opinion, since in the latest edition of the Check-List, *carolinensis* continued to appear as the name for the northern race, and *atkinsi* for

the southern. Strangely enough, however, the range of *atkinsi* was extended far beyond peninsular Florida, as defined by Bangs, thus automatically destroying any strength that his proposal might have had.

Wetmore (1939: 210) and (1941: 505) has recognized the true racial alignment of the northern and southern populations by placing the area of intergradation well to the north of southern South Carolina, even though by retaining the names used in the Check-List he failed to indicate the facts nomenclaturally. It seems perfectly obvious then that, unless careful study based on more adequate material than is at present housed in the U. S. National Museum collections shows that Bangs was correct in his conclusions, the name *carolinensis* must be used for the southeastern White-breasted Nuthatch and *cookei* for the northeastern form.

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## CHIMNEY SWIFT'S WINTER HOME DISCOVERED

BY FREDERICK C. LINCOLN

AMONG the few unsolved distribution mysteries regarding North American birds, probably none has excited such widespread interest as the winter range of the Chimney Swift (*Chaetura pelagica*). Although abundant throughout most of its breeding range, its disappearance during the winter season has been so nearly complete that even serious-minded Elliott Coues was inclined to give some credence to the hibernation belief of the Middle Ages ('Birds of the Colorado Valley': 377, 1878). The fall concentrations of these birds, that are noted each year in the southeastern part of the country, are truly