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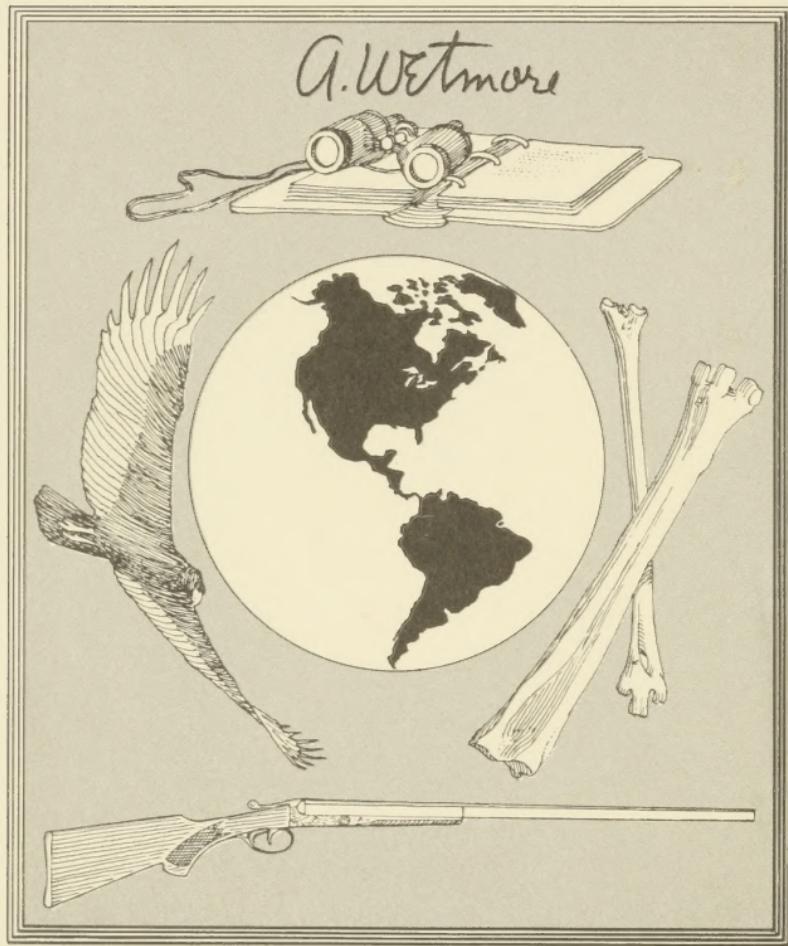
URALIST'S  
MANUAL.



BY OLIVER DAVIE



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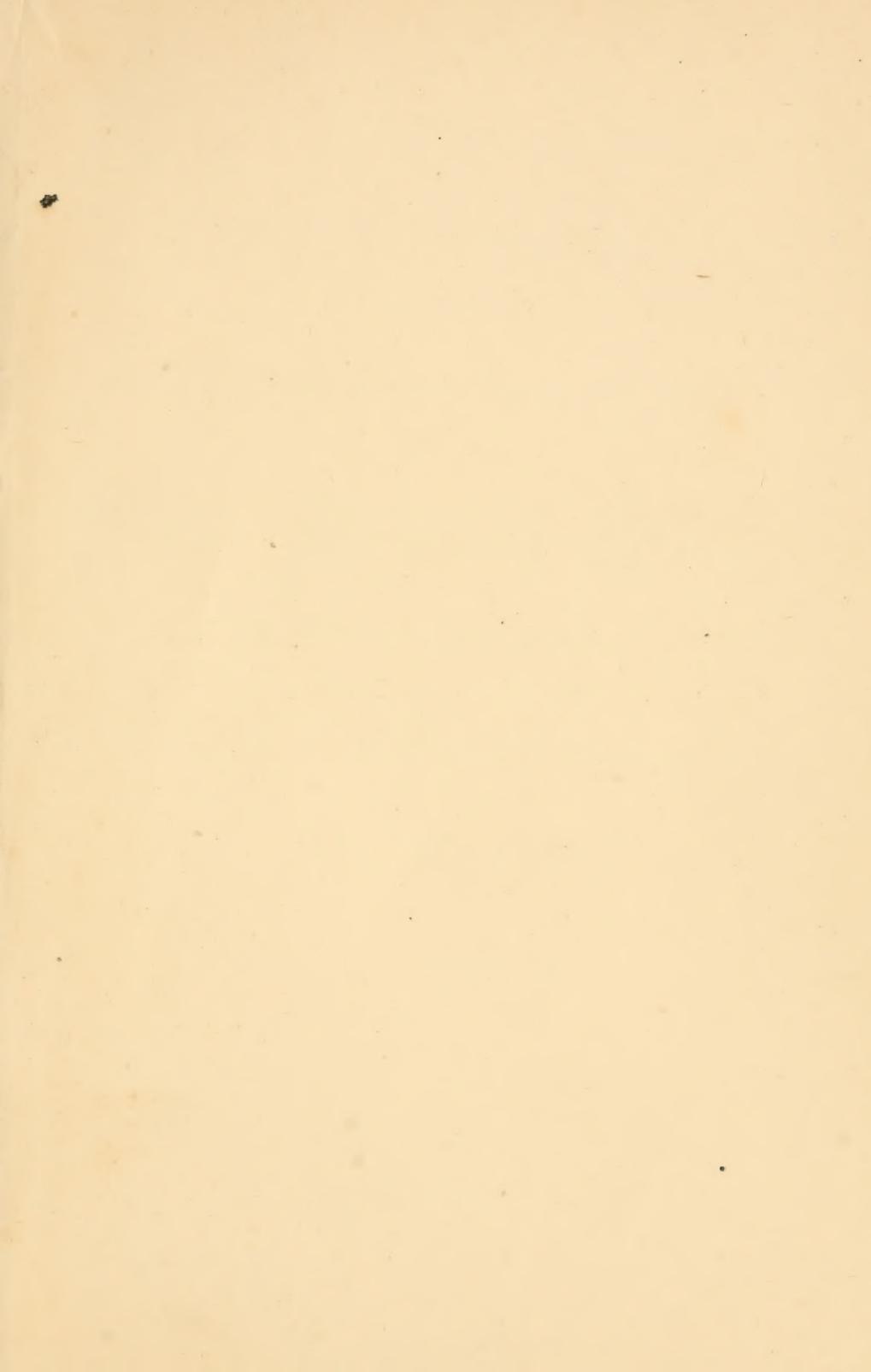


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Birds

THE

NATURALIST'S MANUAL,

CONTAINING

DESCRIPTIONS OF THE NESTS AND EGGS

OF

NORTH AMERICAN BIRDS.

(TURDIDÆ—TANAGRIDÆ.)

ALSO,

INSTRUCTIONS FOR COLLECTING AND PRESERVING

BIRDS, NESTS, EGGS & INSECTS,

BY

OLIVER DAVIE.

COLUMBUS, OHIO:  
THE COLUMBUS PRINTING WORKS.  
1882.



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TO  
*THEODORE JASPER,*  
MY EARLY INSTRUCTOR IN TAXIDERMY,  
THIS BOOK IS GRATEFULLY DEDICATED.  
THE AUTHOR.

## PREFACE.

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THIS work is intended to instruct the young naturalist in collecting and preserving birds, nests, eggs, and insects. For the benefit of the oologist, I have compiled from such works as I have at hand, descriptions of the nests and eggs of North American birds from family Turdidae to Tanagridæ inclusive—giving at the same time original notes on those species that are familiar to me.

In this connection I have received valuable notes from reliable collectors in different parts of the country, for which due credit is given in the following pages.

Asterisks (\*\*) are placed after the names of those species concerning whose nests and eggs I have obtained no reliable information.

It is hoped that the new methods in mounting birds will be of value to the experienced taxidermist as well as to the beginner.

The instructions for collecting insects are chiefly those which I have learned from experience.

In presenting this little volume to my readers, I trust they will find herein some hints that will be of aid to them in collecting and preserving their own specimens.

O. D.



NESTS AND EGGS  
—OF—  
**North American Birds.**

TURDIDÆ—TANAGRIDÆ.

[Classified according to the Nomenclature of North American Birds by  
Robert Ridgway.<sup>†</sup>]

**FAMILY Turdidae—Thrushes.**

I HYLOCICHLA MUSTELINA.

**WOOD THRUSH.**

**W**HE favorite haunts of this beautiful bird are dark thickets and low marshy places shaded by trees of thick foliage. The nest is usually built on a horizontal branch of a small forest-tree, six to eight feet from the ground. On one occasion I found the nest in the crotch of a large oak, at the height of fifteen

<sup>†</sup> Nomenclature of North American Birds chiefly contained in the United States National Museum. By Robert Ridgway. Bull. U. S. Nat. Mus., No. 21. Published under the direction of the Smithsonian Institution. Washington: Government Printing Office, 1881. 8 vols. pp. 1—94.

feet, and again, in the fork of a low bush. The nest, generally strong and compact, is composed of dry leaves intermingled with small twigs, often held together with mud. It is lined with small roots and fine dry grasses.

The eggs of the Wood Thrush are usually four in number, sometimes five, and of a uniform deep-blue tint. They average 1.00 by .75 inch.

The Wood Thrush, without being anywhere a very abundant species, is common throughout nearly every portion of the United States, between the Mississippi river and the Atlantic. It breeds in every portion of the same area, at least as far as Georgia on the south and Massachusetts on the north. Beyond the last named State, it rarely, if ever, breeds on the coast.

#### 2. HYLOCICHLA FUSCESCENS.

#### WILSON'S THRUSH.

This timid and retiring bird arrives from the South, in the States east of the Mississippi river, between the 1st and 20th of May. It frequents the edges of deep woods and thickets, and often chooses the shelter of shady ravines for its place of abode, where it can dwell unmolested. The nest is usually placed in a low shrub or tangled clump of briars, and occasionally on the ground, and it is generally very secluded. It is composed of grass, leaves, and the bark of the grapevine, and of various trees. It is generally lined with soft skeleton leaves, fine roots and hair. The nest measures about 3 inches in height, 4½ in diameter, with a cavity from 1½ to 2 deep and 3 in width.

I have examined a number of these nests, and have found them as a rule, very frail—hardly capable of being handled without coming apart. The eggs are of a bluish-green color, not so deep as the eggs of the Cat bird. They average 94 by .64.

#### 3. HYLOCICHLA ALICIAE.

#### GRAY-CHEEKED THRUSH.

This bird "was first met with in Illinois. Since then numerous specimens have been obtained from the District of Columbia, from Labrador and the lower Makenzie River. In the latter regions it

was found breeding abundantly. It was also found in large numbers on the Anderson River, but was rare on the Yukon, as well as at Great Slave Lake, occurring there only as a bird of passage to or from more northern breeding grounds. \* \* \*

This thrush is a regular visitant to Massachusetts, both in its spring and in its fall migration. It arrives from about the first to the middle of May, and apparently remains about a week. \* \* \* The nests measure about 4 inches in diameter and  $2\frac{3}{4}$  in height. The cavity is 2 inches deep, and its diameter  $2\frac{1}{2}$  inches. They are usually compact for the nest of a thrush, and are composed chiefly of an elaborate interweaving of fine sedges, leaves, stems of the more delicate *Equisetaceæ*, dry grasses, strips of fine bark and decayed leaves, the whole intermingled with the paniculated inflorescence of grasses. There is little or no lining other than these materials. These nests were all found, with but few exceptions, on the branches of low trees, from two to seven feet from the ground. In a few exceptional cases the nests were built on the ground.

Occasionally nests of this species are found constructed with the base and sides of solid mud, as with the common Robin. In these, as also in some other cases, their nests are usually found on or near the ground. \* \* \* The eggs were usually four in number. Their color is either a deep green tint, or green slightly tinged with blue; and they are marked with spots of russet and yellowish-brown, varying both in size and frequency. Their mean length is .92 of an inch, and the mean breadth .64."—BAIRD, BREWER AND RIDGWAY's N. A. BIRDS, vol. 1, pp. 12, 13.

#### 4. HYLOCICHLA USTULATA.

#### RUSSET-BACKED THRUSH.

"So far as we are aware, this thrush has a very limited distribution, being mainly restricted to the Pacific coast region from California to Alaska, in the breeding season, though migrating southward in winter to Guatemala. \* \* \* Dr. Cooper found its nests with eggs about the middle of June. These were most usually built on a small horizontal branch, and were very strongly constructed of twigs, grasses, roots and leaves, usually covered on the outside entirely with the bright green *Hypnum* mosses peculiar to

that region, which in the damp climate near the coast continue to grow in that position, and form large masses.

The number of eggs is usually five. \*\*\* The eggs vary in size and shape, ranging from .77 to .94 in length and from .65 to .69 in breadth. They also vary in their ground color and in the tints of the spots and markings. The ground color is light green or light blue, and the markings are variously yellowish-brown and lilac, or a dark brown and slate."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 17, 18.

4a. HYLOCICHLA USTULATA SWAINSONI.

**OLIVE-BACKED THRUSH.**

This bird is an inhabitant of Eastern North America; westward as far as Nevada; north to Great Slave Lake and south to South America.

It is known to breed abundantly among the Wahsatch Mountains. The nests of this bird are about four inches in diameter and two in depth. "The eggs, numbering four or five, measure about seven-eighths of an inch in length by five-eighths in breadth; but much variation, both in size and shape, has been observed. They are light greenish-blue in color, fully speckled with reddish-brown and other shades.

Any thrush's eggs like this found in a nest above the ground, described by early authors, were almost certainly those of the Olive-backed Thrush, to whatever species they may have been accredited."†

"Their nests in Nova Scotia, wherever observed, were among the thick woods on horizontal branches of a forest-tree, usually about five feet from the ground. Those observed in the Arctic regions by Mr. Kennicott were frequently not more than two feet from the ground. \* \* \* They are more elaborately and neatly constructed than those of any other of our thrushes, except, perhaps, of *T. ustulatus*, (Russet-backed Thrush.) "Conspicuous among the materials are the *Hypnum* mosses, which by their dark fibrous masses give a very distinctive character to these nests, and distinguish them from all except those of the *T. ustulatus*, which they resemble. Besides these materials are found fine sedges,

† U. S. GEOLOGICAL SURVEY OF THE TERRITORIES, Part First, entitled "Birds of the Colorado Valley," by Elliott Coues, (p. 38.)

leaves, stems of equisetaceous plants, red, glossy, vegetable fibres, the flowering stems of the *Cladonia* mosses, lichens, fine strips of bark, etc."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 15 16.

5. HYLOCICHLA UNALASCÆ,  
**DWARF THRUSH.**

This bird, according to Dr. Coues, is an inhabitant of the "Western Province of North America, eastward from Kodiak to Cape St. Lucas, Arizona." At Santa Cruz, on the first of June, Dr. Cooper met with several of their nests, which, though probably erroneously, he supposed to belong to the Dwarf Hermit Thrush. They were all built in thickets under the shade of cottonwood trees. Each nest was about five feet from the ground, and all contained eggs, from two to four in number, in differing stages of incubation.

The nests were built of dry leaves, roots, fibres, grasses and bark without any mud, and were lined with decayed leaves. Their height and external diameter measured 4 inches. The diameter of the cavity was  $2\frac{1}{2}$  inches and the depth  $2\frac{1}{4}$ .

The eggs measured .90 by .70 of an inch. They are of a pale bluish-green, speckled with cinnamon-brown, chiefly at the larger end."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 20.

The writer intimates that there is doubt regarding the identity of the nests and eggs discovered by Dr. Cooper; stating that they correspond so closely to those of the Russet-backed Thrush "that it is extremely probable that they really belong to that species." From this, we would infer, having found no later descriptions, that a reliable and positive description of the nest and eggs of this bird has not yet been given.

5a. HYLOCICHLA UNALASCÆ AUDUBONI.  
**ROCKY MOUNTAIN HERMIT THRUSH. \*\***

5b. HYLOCICHLA UNALASCÆ PALLASI.  
**HERMIT THRUSH.**

"The present species is found throughout Eastern North America to the Mississippi, and breeds from Massachusetts to high Arctic regions. \*\*\* It is a very abundant bird throughout Maine,

where it begins to breed during the last week of May, and where it also probably has two broods in a season. \*\*\*

The nest of this thrush is always built on the ground, most generally either under low bushes or in the open ground, rarely, if ever, among thick trees, and for the most part in low swampy places. Both nest and eggs closely resemble those of Wilson's Thrush (*T. fuscescens.*) The nests are 3 inches in height and 5 in diameter, with a cavity  $3\frac{1}{4}$  inches wide by  $1\frac{3}{4}$  deep. They are composed of decayed deciduous leaves, remnants of dried plants, sedges and grasses, intermingled with twigs, and lined with finer grasses, sedges, and strips of bark.

The eggs are of a uniform bluish-green color, and range in length from .88 to .94, with an average of .63 of an inch."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 19.

#### 6. TURDUS ILIACUS.

#### RED-WING THRUSH.

"The Red-wing can probably only claim a place in the fauna of North America as an occasional visitant. \*\*\* This species during its breeding season, is found only in the more northern portions of Europe; only occasionally, and very rarely, breeding as far south as England. \*\*\*

The eggs measure 1.06 inches in length by .81 in breadth. The ground color is a light green with a bluish tinge thickly covered with russet or reddish-brown spots, confluent at the larger end."—BAIRD, BREWER AND RIDGEWAY'S N. A. BIRDS, vol. I, pp. 23, 24.

#### 7. MERULA MIGRATORIA.

#### AMERICAN ROBIN.

The Robin is an abundant species throughout the entire United States, breeding in almost every locality.

Their nest is a large coarse structure made of twigs, roots, stems, grasses, dry leaves, often with an intermixture of hair and wool. It is strengthened by a neatly made cup of mud or clay, which is surrounded by these materials. The whole is lined with fine dry grasses and small twigs. Their nest can be looked for in trees of almost any kind, but their favorite place is the branch of an apple tree about ten feet from the ground.

The eggs of the Robin are usually five, sometimes six in number and of a bright greenish-blue color. Their average measurement is 1.18 by .81.

7a. *MERULA MIGRATORIA PROPINQUA.*

**WESTERN ROBIN. \*\***

8. *MERULA CONFINIS.*

**SAINT LUCAS ROBIN. \*\***

9. *HESPEROCICHLA NÆVIA.*

**VARIED ROBIN.**

"We are indebted to Mr. W. H. Dall for our first authentic knowledge of its nest and eggs. The former measures 6 inches in diameter with a depth of  $2\frac{1}{2}$  inches. It has but a very slight depression, apparently not more than half an inch in depth. The original shape of the nest had, however, been somewhat flattened in transportation. The materials of which it was composed were fine dry mosses and lichens impacted together, intermingled with fragments of dry stems of grasses.

A nest of this thrush obtained by Dr. Minor, in Alaska, is a much more finished structure. Its base and periphery are composed of an elaborate basket-work of slender twigs. Within these is an inner nest consisting of an interweaving of fine dry grasses and long gray lichens. The eggs in size, shape, ground color, and markings are not distinguishable from those of *Turdus musicus* of Europe. They measure 1.13 inches in length by .80 in breadth. are of a light blue with a greenish shading, almost exactly similar to the ground color of the *T. migratorius*. They are very distinctly marked and spotted with a dark umber-brown approaching almost to blackness. Mr. Dall informs us that the nest found by him was built in a willow bush, about two feet from the ground, and upon the top of a large mass of rubbish lodged there by some previous inundation. Other nests of the same species were met with in several places between Fort Yukon and Nulato, always on or near a river bank and in low secluded localities."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 30.

IO. *Oreoscopetes montanus.***SAGE THRUSH.**

"The nests of this bird, so far as I have seen them, are all flat, shallow structures, with very slight depression, and loosely and rudely constructed of an intermingling of strips of bark with rootlets and the finer stems of herbaceous plants.

Their eggs, usually four in number, do not vary essentially in size, shape, or marking. They measure 1 inch in length, and from .73 to .75 in breadth. Their ground color is a bright greenish-blue, marked with deep, olive-brown spots, intermingled with blotches of a light lilac. There are slight variations in the proportion of green in the shade of the ground color, and also in the number and size of the spots, but these variations are unimportant."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. 1, p. 33.

II. *Mimus polyglottus.***MOCKING BIRD.**

"In Texas and Florida the Mocking Bird nests early in March, young birds appearing early in April. In Georgia and the Carolinas they are two weeks later. In Pennsylvania they nest about the 10th of May, and in New York and New England not until the second week of June. They select various situations for the nest; solitary thorn-bushes, an almost impenetrable thicket of brambles, an orange-tree, or a holly-bush, appear to be favorite localities. They often build near the farm-houses, and the nest is rarely more than seven feet from the ground. The base of the nest is usually a rudely constructed platform of coarse sticks, often armed with formidable thorns surrounding the nest with a barricade. The height is usually 5 inches, with a diameter of 8. The cavity is 3 inches deep and 5 wide. Within the external barricade is an inner nest constructed of soft fine roots.

The eggs, from four to six in number, vary in length from .94 to 1.06 inches, with a mean length of .99. Their breadth varies from .81 to .69 of an inch, mean breadth .75. They also exhibit great variations in the combinations of markings and tints. The ground color is usually light greenish-blue, varying in the depth of its shade from a very light tint to a distinct blue, with a slight greenish tinge. The markings consist of a yellowish-brown and purple, chocolate-

brown, russet, and a very dark brown."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 51.

**I2. GALEOSCOPTES CAROLINENSIS.**

**CAT BIRD.**

This well-known bird builds its nest on low bushes or clusters of vines and generally in retired places. It is scarcely ever placed more than ten feet from the ground. The materials are dry leaves, twigs and fine dry grass. It is lined with fine, black fibrous roots and dry grasses. Their nests average 4 inches in height by 5 in diameter. The width and depth are about  $3\frac{1}{2}$  inches.

The eggs, four sometimes five in number, are of a bluish-green and measure .97 in length by .69 of an inch in breadth.

**I3. HARPORHYNCHUS RUFUS.**

**BROWN THRASHER.**

The nest of this thrush is a bulky structure made of twigs, sticks, strips of bark and withered leaves, strongly put together. It contains an inner nest composed of dry leaves, strips of bark and black fibrous roots, and is lined with horse-hair and a few feathers. It is usually built in low bushes or clusters of briars, occasionally in a heap of brush-wood.

The eggs are from four to six in number, with the ground color of a greenish-white, marked with innumerable reddish-brown dots, usually more numerous at or around the larger end. Their average measurements are, 1.05 inches by .81 of an inch.

This thrush is a common species from the Rocky Mountains to the Atlantic, and from the Red River country, in British America, to the Rio Grande.

**I3a. HARPORHYNCHUS RUFUS LONGIROSTRIS.**

**MEXICAN BROWN THRASHER.**

"The eggs of this species are hardly distinguishable from the common Brown Thrasher (*H. rufus*) of the Atlantic States. The color of their ground is a greenish-white, which is thickly, and usually completely, covered with fine markings of a yellowish-brown. They have an average length of 1 13 inches, by .79 in breadth. So far as I have had an opportunity of observing, they do not vary from these measurements more than two per cent in length or one per cent

in breadth. Their nests are usually a mere platform of small or coarse stems, with a little or no depression or rim, and are placed in low bushes, usually above the upper branches."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 40.

#### 14. HARPORHYNCHUS CINEREUS.

#### SAINT LUCAS THRASHER.

"So far as is at present known in regard to this species it appears to be confined exclusively to the peninsula of Lower California. It has, at least, been met with nowhere else. Mr. Xantus found it quite numerous in the vicinity of Cape St. Lucas, in a region which, as he describes it, was singularly unpropitious. This was a sandy shore, extending about a quarter of a mile inland, whence a cactus desert stretched about six miles up to a high range of mountains. Throughout this tract the ground is covered with a saline efflorescence. There is no fresh water within twenty-eight miles.

Mr. Xantus speaks of the habits of this bird as being similar to those of *Oreoscoptes Montanus*." (Sage Thrasher). "It was a very abundant species at this Cape, where he found it breeding among the cactus plants in large numbers. He mentions that as early as the date of his arrival at that place, April 4, he found them already with full-fledged young, and states that they continued to breed until the middle of July.

He was of the impression that the eggs of this species more nearly resembled those of the common Mocking-Bird than any others of this genus. The aggravatingly brief notes that accompanied his collections show that the general position of the nest of this species was on low trees, shrubs, and most usually, cactus plants, and in no instance at a greater elevation from the ground than four feet. Their nests were flat structures, having only a very slight depression in or near their center. They were about 5 inches in diameter, and were very little more than a mere platform. The eggs vary somewhat in their ground color, but exhibit only slight variations in size or shape. Their greatest length is 1.13 inches, and their average 1.12 inches. Their mean breadth is .77 inch and their maximum .79 inch. The ground color is a greenish-white, profusely marked with spots of mingled purple and brown. In

others the ground color is a bluish-green. In some specimens the spots are of a yellowish-brown, and in some the markings are much lighter.”—BAIRD, BREWER AND RIDGWAY’S N. A. BIRDS, vol. I, p. 41.

**14a, HARPORHYNCHUS CINEREUS BENDIREI.**

**BENDIRE’S THRASHER. \*\***

**15. HARPORHYNCHUS CURVIROSTRIS.**

**CURVE-BILLED THRASHER.**

“This interesting species appears to be common in Western Texas, the valley of the Rio Grande, and Western Mexico. \*\*\* Their nest is generally very nearly flat, measuring nearly six inches in circumference, and scarcely more than an inch in its greatest thickness. It has hardly any distinct cavity, and hollows but very slightly from the rim to the centre, the greatest depression having barely the depth of half an inch. The nests are composed of long coarse fibrous roots, rudely but somewhat compactly interwoven. The inner frame-work is constructed of the same materials intermingled with the finer stems of grasses.

Mr. H. E. Dresser states that in the vicinity of Matamoras these birds are fond of frequenting small villages, and that he frequently found their nests within the gardens and court-yards of houses, and near the roads.

The eggs of this thrush vary considerably in size, ranging from 1.20 to 1.03 inches in length, and from .84 to .77 of an inch in breadth. Their mean length is 1.12 inches, and their average breadth .80. They have a light green ground-color, generally, though not thickly covered with fine brown spots.”—BAIRD, BREWER AND RIDGWAY’S N. A. BIRDS, vol. I, p. 43.

**15a. HARPORHYNCHUS CURVIROSTRIS PALMERI.**

**PALMER’S THRASHER.**

“This very curious race seems to unite the character of *curvirostris*,” (Curved-billed Thrasher,) “and *lecontei*,” (Leconte’s Thrasher;) in fact, it is so exactly intermediate between the two, that we are almost in doubt as to which it is most nearly related. Having the stout form and larger size, as well as the spots on the abdomen, of the former, it has also the uniform colors and general appear-

ance of *lecontei*. Were it not that the nests and eggs, with the parent accompanying, had been received from Dr. Palmer we might be tempted to consider it a hybrid between these two species, its habitat being exactly between them, too. We have great pleasure in dedicating this curious form to Dr. Edward Palmer, who has added very much to our knowledge of the Natural History of the interesting region where the present bird is found.

*Description of nest and eggs*—(13, 311, Camp Grant, Arizona; Dr. E. Palmer.)

Nest very bulky,—9 inches in height by 6 in width. Very elaborately constructed. The true nest of symmetrical form, and composed of thin grass-stalks and flax-like fibres, is enclosed in an outer case of thorny sticks, thinly but strongly put together. This inner nest has a deep cavity measuring 4 inches in diameter by 3 in depth.

Eggs (two in number) measure 1.16 by .85; in shape exactly like those of *C. curvirostris*; pale blue (deeper than in *curvirostris*) rather thinly sprinkled with minute but distinct dots of pale sepia-brown. Markings more distinct than those of *curvirostris*, R. R. Nest was situated in a cactus-bush, four and a half feet above the ground.

Dr. Palmer remembers nothing special concerning its habits, except that the bird was very shy, and kept much on the ground, where it was seen running beneath the bushes.”—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 43, 44.

#### 16. HARPORHYNCHUS REDIVIVUS. CALIFORNIAN THRASHER.

“The Californian Thrasher appears to have a somewhat restricted distribution, being confined to the coast of California, where, however, it is quite abundant. \*\*\* A nest of this bird found by Dr. Heerman was composed of coarse twigs, and lined with slender roots, and not very carefully constructed. Mr. Hepburn writes that a nest found by him was in a thick bush about five feet from the ground. It was a very untidy affair, a mere platform of sticks, almost as carelessly put together as that of the pigeon, in which, though not in the centre, was a shallow depression about 4 inches in diameter, lined with fine roots and grass. It contained

two eggs with a blue ground thickly covered with soot-colored spots confluent at the larger end, and in coloring not unlike those of the *Turdus ustulatus*" (Russet-backed Thrush). "The eggs measured 1.19 inches by .81 of an inch. Dr. Cooper gives their measurement as 1.10 of an inch by .85. Two eggs belonging to the Smithsonian Institution (2,040, *a* and *b*) measure, one 1.19 by .81, the other 1.14 by .93. The former has a bluish-green ground sparsely spotted with olive brown markings; the other has a ground of a light yellowish-green, with numerous spots of a russet-brown.

The general character of their nest is, as described, a coarse, rudely-constructed platform of sticks and coarse grass and mosses, with but a very slight depression. Occasionally, however, nests of this bird are more carefully and elaborately made. One (13,072) obtained near Monterey, by Dr. Canfield, has a diameter of 6 inches, a height of 3, with an oblong-oval cavity 2 inches in depth. Its outside was an interweaving of leaves, stems and mosses, and its lining fine, long, fibrous roots.

These birds are chiefly found frequenting the dense chaparral that lines the hillsides of the California valleys, forming thickets, composed of an almost impenetrable growth of thorny shrubs, and affording an inviting shelter.

In such places they reside throughout the year, feeding upon insects, for the procuring of which their long curved bills are admirably adapted, as also upon the berries which generally abound in these places. Their nests usually contain three eggs."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. 1, pp. 46, 47.

16a. HARPORHYNCHUS REDIVIVUS LECONTEI.

**LECONTE'S THRASHER. \*\***

17. HARPORHYNCHUS CRISSALIS.

**RUFUS-VENTED THRASHER.**

"Dr. Cooper found this species quite common at Fort Mojave, but so very shy that he only succeeded in shooting one, after much watching for it. Their song, general habits, and nest he speaks of as being in every way similar to those of *H. redivivus*" (Californian Thrasher).

The eggs remained unknown until Dr. E. Palmer had the good fortune to find them at St. George, Southern Utah, June 8, 1870.

The nest was an oblong flat structure, containing only a very slight depression. It was very rudely constructed externally of coarse sticks quite loosely put together; the inner nest is made of finer materials of the same. The base of this nest was 12 inches long, and 7 in breadth; the inner nest is circular, with a diameter of 4½ inches.

The eggs are of an oblong-oval shape, one end being a little less obtuse than the other. In length they vary from 1.15 to 1.12 inches, and in breadth from .84 to .82 of an inch. They are of a uniform blue color, similar to the eggs of the common Robin (*Turdus Migratorius*) only a little paler or of a lighter tint. In the total absence of markings they differ remarkably from those of all other species of the genus."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 48.

18. *HARPORHYNCHUS GRAYSONI.*  
**SOCORRO THRASHER.** \*\*

**FAMILY Cinclidæ.—Dippers.**

19. *CINCLUS MEXICANUS.*  
**AMERICAN WATER OUZEL.**

"This interesting bird inhabits exclusively the mountainous portions of North America west of the Mississippi from Alaska south to Guatemala. \*\*\* In the British Possessions specimens have been procured on Frazer's River, at Fort Halkett, and at Colville. At the latter place Mr. J. K. Lord states that a few remain and pass the winter. They are found among the mountain streams of Vera Cruz, and probably throughout Mexico, and no doubt may be met with in all the highlands between these extreme points." "This bird," adds Dr. Cooper, "combines the form of a sandpiper, the song of a canary, and the aquatic habits of a duck. Its food consists almost entirely of aquatic insects, and these it pursues under water, walking and flying with perfect ease beneath a depth of several feet of water. \*\*\* Its song is described as remarkably sweet and lively, in modulation resembling somewhat that of the *Harporhynchus rufus*, but much less powerful, though sweeter in effect. \*\*\*

A nest of this bird obtained by Mr. J. Stevenson, of Hayden's Expedition, in Berthoud's Pass, Colorado, is a hemisphere of very

uniform contour built on a rock, on the edge of a stream. Externally it was composed of green moss, in a living state; within is a strong, compactly built apartment, arched over, and supported by twigs, with a cup-like depression at the bottom, hemispherical and composed of roots and twigs firmly bound together. The structure is 7 inches in height externally, and has a diameter of  $10\frac{1}{2}$  inches at the base. Within, the cavity has a depth of 6 inches; the entrance, which is on one side, is  $3\frac{1}{2}$  in breadth by  $2\frac{1}{2}$  in height. The eggs were three in number, uniform, dull white, and unspotted. They measure 1.04 inches by .70. They have an elongated oval shape, and are much pointed at one end."—[BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 57, 58.

### FAMILY Luscinidæ.—Nightingales.

#### 20. CYANECULA SUECICA.

#### **BLUE-THROATED WARBLER.\*\***

### FAMILY Saxicolidæ.—Stone Chats.—Bluebirds.

#### 21. SAXICOLA OENANTHE.

#### **STONE CHAT.**

"The well-known Wheat-ear"—as it is also called—"is entitled to a place in our fauna, not only as an accidental visitor, but also as an occasional resident. Dr. H. R. Storer, of Boston, found them breeding in Labrador in the summer of 1848, and procured specimens of the young birds which were fully identified by Dr. Samuel Cabot as belonging to this species. \*\*\* Mr. Dall states that several large flocks of this species were seen at Nulato, May 23 and 24, 1868, and a number of specimens obtained. They were said to be abundant on the dry stony hill-tops, but were rare along the river. \*\*\* It breeds throughout the British Islands as well as in the whole of Northern Europe and Asia.

The Wheat-ear begins to make its nest in April, usually concealing it in some deep recess beneath a huge stone, and often far beyond the reach of the arm. Sometimes it is placed in old walls, and is usually large and rudely constructed, made of dried bents, scraps of shreds, feathers, and rubbish collected about the huts,

generally containing four pale blue eggs, uniform in color, and without spots, which measure .81 of an inch in length by .69 in breadth."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 60, 61.

22. *SIALIA SIALIS.*

**BLUEBIRD.**

This bird, which is so familiar to every ordinary observer, is one of the earliest and most welcome visitors of the Eastern States, arriving as early as the first of March. It breeds in almost every part of the eastern portion of North America, from Georgia and Louisiana to the Arctic regions. The site chosen for its nest is usually a hollow in the decayed trunk of a tree, a deserted wood-pecker's excavation, or a box prepared for its use. The nest is composed of fine twigs, grasses, roots, feathers, leaves and hair, carelessly woven together, but leaving quite a depression. The eggs are five, sometimes six, in number, and of a uniform pale blue, measuring about .81 of an inch in length by .62 in breadth. This bird rears two and sometimes three broods in a season.

23. *SIALIA MEXICANA.*

**CALIFORNIAN BLUEBIRD.**

"This Bluebird belongs to western North America, its proper domain being between the Rocky Mountains and Pacific, from Mexico to Washington Territory. Mr. Nuttall first met with this species among the small rocky prairies of the Columbia. He speaks of its habits as exactly similar to those of the common bluebird. \*\*\* The eggs, usually four in number, are of a uniform pale blue of a slightly deeper shade than that of the *S. sialis*. They measure .87 of an inch in length by .69 in breadth."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 65, 66.

24. *SIALIA ARCTICA.*

**ROCKY MOUNTAIN BLUEBIRD.**

"This Bluebird belongs to the Central fauna, and occupies a place in the Eastern only by its appearance on its borders. It was first procured by Sir John Richardson, at Fort Franklin, in July, 1825. It is abundant throughout the central table-lands of North America between the Pacific and the mouth of the Yellowstone, from Great Bear Lake to the lower portions of California. In the

latter State it is not common. \*\*\* The eggs are of a very light blue, paler than those of the other species. They measure .89 of an inch in length by .66 in breadth.

Mr. Ridgway states that he found the Rocky Mountain Bluebird nesting in Virginia City in June. Its nests were built about the old buildings, and occasionally in the unused excavations about the mines. At Austin he also found it common in July, in similar localities. On the East Humboldt Mountains it was very numerous, especially on the more elevated portions where it nested among the rocks and, though more rarely, in the deserted excavations of woodpeckers in the stunted piñon and cedar trees. He describes it as generally very shy and difficult to obtain, seldom permitting a very near approach. In its habits it is much less arboreal than either *S. mexicana* or *S. sialis*, always preferring the open mountain portions in the higher ranges of the Great Basin."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 67, 68.

### FAMILY Ptilogonatidæ.—Flycatching Thrushes.

#### 25. MYIADESTES TOWNSENDI.

#### TOWNSEND'S SOLITAIRE.

"In July, 1876, while rambling with my brother over the mountains of Summit County, Colorado, it was my good fortune to find, at an altitude of about ten thousand feet, the nest of Townsend's Flycatcher (*Myiadestes townsendi*), and as no description of its eggs has as yet appeared, perhaps the following may not be uninteresting: † The nest was very loosely, and, externally, shabbily built of long dry grasses, straggling two feet or more below it. It was placed in the upper bank of a miner's ditch (running from the Bear River, above Breckenridge, to the Gold Run and Buffalo Flat diggings,) and was partly concealed by overhanging roots; yet it was rendered so conspicuous by the loose swaying material of which it was composed, as well as by that which had become attached to the overhanging roots during its construction, as to attract the eye of an experienced collector when yet some rods away. \*\*\* The nest contained four eggs, very closely resembling those of the Shrikes.

† WILBUR F. LAMB in Bulletin of the Nuttall Ornithological Club, a Quarterly Journal of Ornithology; Cambridge, Mass., July, 1877, pp. 77, 78.

The ground-color is dull-white or bluish, thickly blotched or freckled with reddish-brown. The measurements of the three specimens preserved are 1.01 by .66, .94 by .68, and .88 by .66. Incubation had been going on for about ten days, and unfortunately one egg was destroyed in cleaning."

26. PHAINOPEPLA NITENS.

**BLACK-CRESTED FLYCATCHER.**

A nest containing a complement of three eggs of this species, collected in California by B. W. Evermann, is now in my possession.

"So far as known, this bird occurs in the mountainous portions of the United States, from Fort Tejon, Cal., to Mexico, and from the Rio Grande to San Diego. \*\*\* This species was first detected within the United States by Colonel McCall, who obtained it in California in 1852. Its habits, as he observed them, partook of those of the true Flycatcher. \*\*\* A nest of this bird, obtained by Dr. Cooper, on the 27th of April, was built on a horizontal branch of the mezquite (*Algarobia*), twelve feet from the ground. It was found near Fort Mohave, on the Colorado River. The nest is a very flat structure, four inches in diameter, and less than two in height. The cavity is less than an inch in depth. The nest is made almost entirely of hempen or flax-like fibers of plants, interwoven with fine grasses, stems of plants, and stalks of a larger size. It is lined with a soft downy substance of a vegetable character.

The eggs, two in number, are of an oblong-oval shape, nearly equal at either end, and with a ground-color of a light slate, tinged with a yellowish-green: They are marked and blotched equally over the entire egg, with spots and blotches of various lines, from a light, faint, obscure purple to deeper tints of purplish-brown, even to black. It is a very marked egg, and unique in its appearance. They measure .90 by .60 of an inch."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 406, 407.

**FAMILY Sylviidæ.—Sylvias.**27. *POLIOPTILA CÆRULEA.***BLUE-GRAY GNATCATCHER.**

As a work of beauty and ingenious architectural design, the nest of this bird must stand at the head of all others in this country. If not, it certainly has few equals. It is rather a frail structure, usually built in the small forks of a tree at heights ranging from ten to fifty feet. The nest is composed of soft and downy materials, fine dry grasses, stems of old leaves, the soft, cotton-like substance of withered blossoms, and the silky down of the milkweed are chiefly the materials used. The entire outside is covered with a beautiful gray lichen. It is lined with fine grasses and horse hair, with an occasional feather from the breast of the bird. The nest measures about three inches in diameter at the base, two at the top, and three in height. In proportion to the size of the nest, the cavity is comparatively deep, measuring one and a half inches, and ranging from one to one and a half inches at the rim. The nest is so beautifully and artistically made that it can be easily recognized at sight. In Ohio where this bird breeds abundantly, I have observed that they prefer the elm and willow to all other trees.

The eggs, usually five in number, measure .55 by .45. They are of a short oval shape, their ground-color is a greenish-white and dotted with small blotches and spots of a reddish-brown, lilac and slate.

28. *POLIOPTILA PLUMBEA.***PLUMBEOUS GNATCATCHER.\*\***29. *POLIOPTILA CALIFORNICA.***BLACK-TAILED GNATCATCHER.\*\***30. *REGULUS CALENDULA.***RUBY-CROWNED KINGLET.**

"The Kinglets offer a remarkable illustration of the fact that a bird may be very common, and yet its eggs remain for years among the greatest desiderata of oölogists. So far as I am aware, but four

nests of the Ruby-crown have been found up to the present time and all were found in Colorado. A fifth nest was found by me on the 18th of June at an elevation of 7,700 feet. It was in a fir tree, about eighteen feet from the ground, and placed directly against the trunk, supported by a single branch beneath, and by several twigs to which the sides were firmly attached. It is large for the size of the bird, measuring externally 3 by 4, internally  $1\frac{1}{2}$  by  $1\frac{1}{2}$  inches. It is a very neat, well-made structure with soft thick walls. With the exception of the lining, which consists of feathers of the Richardson's Grouse well woven into the sides and bottom, the whole nest is composed of delicate strips of bark, small pieces of green moss and fibres of weeds, with a few feathers, spiders' webs and fragments of a wasp's nest, the whole forming a somewhat globular mass of soft materials. Of the eggs, which were eight in number, one had apparently just been laid; the others were somewhat advanced in incubation, but in varying degrees, showing that the female had begun to sit soon after laying the first egg. Dissection of the female showed that this was the full complement of eggs. They average .55 by .43, with scarcely any variation in size, though some are much more pointed at the smaller end than others. It is not easy to give an accurate idea of the color of these eggs by any description. At first sight they appear to be of a uniform dirty cream-color, but a close examination shows that in most of the specimens this color is deeper at the larger end and there forms a faint ring. In six of the eggs there are one or two very fine hair lines at the larger end. Other eggs of this species are spotted, a fact which is strongly indicated by the appearance of the set just described. Thus, Dr. Brewer, in speaking of the egg found by Mr. Batty, says, 'the ground color is a cream-white, and over this are profusely scattered minute dots of brown with a reddish tinge.' Mr. Scott describes the eggs he found as 'of a dirty white color, faintly spotted all over with light brown, which becomes quite definite at the larger end.' The single egg obtained by Mr. Drew is described as 'white.' It is thus evident that many more sets must be obtained before the prevailing type of eggs of the Ruby-crown can be determined. I may add that this species was breeding in considerable numbers, but owing to want of time

I only succeeded in finding the nest above described."—DR. J. C. MERRILL, U. S. A., in Bull. Nutt. Orn. Club, Oct. 1881, p. 204.

31. *REGULUS ORSICURUS.*

**DUSKY KINGLET.** \*\*

32. *REGULUS CUVIERI.*

**CUVIER'S KINGLET.** \*\*

33. *REGULUS SATRAPA.*

**GOLDEN-CROWNED KINGLET.**

"According to the observations of Mr. J. K. Lord, this species is very common on Vancouver's Island and along the entire boundary line separating Washington Territory from British Columbia, where he met with them at an altitude of six thousand feet. He states that they build a pensile nest suspended from the extreme end of a pine branch, and that they lay from five to seven eggs. These he does not describe."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. 1, p. 74.

33a. *REGULUS SATRAPA OLIVACEUS.*

**WESTERN GOLDEN-CROWNED KINGLET.** \*\*

34. *PHYLLOSCOPUS BOREALIS.*

**KENNICOTT'S WARBLER.** \*\*

**FAMILY Chamæidæ.—Wren-tits.**

35. *CHAMÆA FASCIATA.*

**GROUND-TIT; WREN-TIT.**

"The Wren-tit is one of several interesting discoveries made in California by Dr. William Gabel, of Philadelphia, whose life left an example of how much may be accomplished in a brief space of time by the wise use of natural gifts. \*\*\* Dr. J. G. Cooper, who found the bird 'common everywhere west of the Sierra Nevada, on dry plains and hillsides covered with chaparral and other shrubby undergrowth,' describes the nest and eggs, which he discovered at San Diego during the last week of April, 1862. The nest was placed in a shrub about three feet from the ground, and

was 'composed of straws and twigs mixed with feathers, firmly interwoven,' lined with grass and hair; the cavity was a little less than two inches wide, and about as deep. 'The eggs were .70 by .52 inch in size, and pale greenish-blue' in color."—COUES, BIRDS OF THE COLORADO VALLEY, pp. 109, 110.

**FAMILY Paridæ.—Titmice; Chickadees.**

**36. LOPHOPHANES BICOLOR.  
TUFTED TITMOUSE.**

"In respect of latitudinal distribution the Tufted Titmouse offers much the same case as the Blue-gray Gnat-catcher—both birds appear to be characteristic of a certain faunal area, beyond which they rarely, if ever, pass. Its northern limit appears to be the Connecticut Valley, for Audubon's Nova Scotian record requires confirmation. The species belongs distinctively to the Eastern Province, reaching only to the Lower Missouri, Eastern Kansas and Nebraska. Mr. Allen says that it was "one of the most numerously represented and most noisy species met with at Leavenworth." Though so restricted in its northward range, it is a hardy bird, not migratory, remaining in abundance in the middle districts throughout the year. It shares the restless, noisy, and inquisitive characters of the family to which it belongs. The eggs, of the usual shape in this group, are five or six in number, deposited in various holes and crannies; they measure about .70 by .55 inches, are white, and thickly and pretty evenly sprinkled with minute dots of reddish-brown."—COUES, BIRDS OF THE NORTHWEST, p. 19.

**37. LOPHOPHANES ATROCRISTATUS.  
BLACK-CRESTED TITMOUSE.**

"A common resident in Comal County.† Mr. Wermer examined several nests, all of which were placed in natural cavities of hollow limbs. In every instance pieces of snake-skins or their separate scales were included among the other material composing the nest. Mr. Sennett, in his description of a nest obtained at Lomita Ranche, in Southern Texas, mentioned the same peculiar-

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† WILLIAM BREWSTER, on certain rare birds in Texas.—Bull. Nutt. Orn. Club, April, 1879, pp. 76, 77.

ity, and it would appear that this habit may be characteristic of the species. Our previous knowledge of the eggs of this Titmouse rests solely upon the account by Mr. Sennett of a single example found in the Lomita nest above referred to. Mr. Ricksecker's cabinet contains a set of the eggs of this species which were taken in Comal County, April 5, 1878. These eggs measure, respectively, .74 by .58; .78 by .57; .76 by .59, being thus considerably larger than Mr. Sennett's specimen, the measurements of which are given as .60 by .48. They are regularly ovoid in shape, and handsomely marked with reddish-brown upon a clear white ground. Over the general surface these markings are distributed in fine spots, but about the larger end bold, strongly defined blotches occur, forming a nearly confluent ring. Four eggs of a set in Mr. Werner's collection are nearly similar in shape and general appearance, but the markings are finer and the ring of color about the larger end less apparent. This nest, together with the eggs and parent birds, is beautifully preserved in a section of the limb in which it was found. The entrance hole is of large size, and the entire cavity is apparently a natural one. The nest proper is placed about six inches below the exterior opening."

38. *LOPHOPHANES INORNATUS.*

**PLAIN TITMOUSE. \*\***

39. *LOPHOPHANES WOLLWEBERI.*

**WOLLWEBER'S TITMOUSE. \*\***

40. *PARUS MONTANUS.*

**MOUNTAIN CHICKADEE.**

"Although not entirely unknown, the eggs of this species have been so rarely met with and identified that a brief mention of a fine set that has recently come into my possession may not be without interest. This set was taken by Mr. Charles A. Allen in the mountains of Placer County, California, June 11, 1879. The nest had been constructed in an old hole of a *Picus abolarvatus* in a decaying pine stump. The opening was about seven feet from the ground, extended four inches horizontally, and was over twelve inches in depth. The female could not be induced to leave the nest, even after the whole side of the stump had been cut away

with an axe. She had finally to be taken from her eggs by the hand, and tossed into the air, before they could be uncovered. After they had been taken, both the male and the female returned to the hole, and insisted upon remaining there even after the last vestige of the nest had been removed.

The eggs are seven in number, and range in measurement from .64 of an inch by .50, to .63 by .49. They are of a rounded oval shape, much more pointed at one end, and six of the seven are of pure unspotted chalky white. They are untinged with any shade of green, and bear no similitude to a recent illustration purporting to be this egg. The seventh egg is slightly more elongated than any of the others, measuring .49 by .64, is of a pure chalky whiteness, but is marked over its entire surface with fine rounded dots of reddish-brown. The contrast between this spotted egg and its immaculate companions is quite striking.

The nest is a warm impacted mattress made of felted masses of the fur of small quadrupeds intermingled with a few hairs. It is four inches in diameter, the wall about an inch and a half in thickness, and the cavity nearly two inches deep. When found the eggs had been slightly incubated."—T. M. BREWER, Bull. Nutt. Orn. Club, Jan. 1880, p. 47.

#### 41. PARUS ATRICAPILLUS.

#### BLACK-CAPPED CHICKADEE.

This species is numerous throughout Eastern North America. The Chickadee, or Black-capped Titmouse, constructs its nest in hollow fence-posts, decayed stumps of trees and hollow logs; often in the immediate vicinity of inhabited dwellings. The nest is usually a warm and soft mass of hair and fur of the smaller quadrupeds, downy feathers and fine dry grasses. If the cavity is larger than necessary, they construct a deep and purse-like opening. The eggs are five or six in number—white, with a delicate rosy blush when fresh, speckled all over, but most thickly at the larger end, with small reddish-brown spots. They average .58 by .47.

#### 41a. PARUS ATRICAPILLUS SEPTENTRIONALIS.

#### LONG-TAILED CHICKADEE.

"The Long-tailed Titmouse appears to have an extended distribution between the Mississippi Valley and the Rocky Mountains,

from Texas into the British possessions, specimens having been received from Fort Simpson and Lake Winnipeg. Among the notes of the late Robert Kennicott is one dated Lake Winnipeg, June 6, mentioning the dissection of a female of this species found to contain a full-sized egg. A memorandum made by Mr. Ross, dated at Fort William, May 15, speaks of this bird as abundant at Fort Simpson, from August until November, the last having been seen November 10. One was shot, June 2, on Winnipeg River, 'a female,' who was about to lay her egg." \*\*\*

It is the largest of this genus in America. In its breeding habits it is not different from the Eastern representatives. Mr. B. F. Goss found this species breeding abundantly at Neosho Falls, in Kansas. They nest in decayed stumps, hollow trees, branches, logs, etc., after the manner of the *atricapillus*. The excavation is usually ten or twelve inches, and even more, in depth. The nest is warmly made of a loose soft felt composed of the fur and fine hair of small quadrupeds, feathers, and the finer mosses. The eggs, usually five, occasionally eight, in number, are of a rounded oval shape, measuring .60 by .50 of an inch. They have a pure dull-white ground, and the entire egg is very uniformly and pretty thickly covered with fine markings and small blotches of red and reddish-brown intermingled with a few dots of purplish."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 100, 101.

41b. PARUS ATRICAPILLUS OCCIDENTALIS.

OREGON CHICKADEE.\*\*

42. PARUS CAROLINENSIS.  
CAROLINA CHICKADEE.

"South of the once famous line of Mason and Dixon this smaller counterpart of the Chickadee seems to entirely replace it, although in New Jersey and Pennsylvania, and occasionally even as far to the north as New York City, the two occur together. Its range is presumed to be all the States South of the Potomac and the Ohio, as far to the west as the Rio Grande.\*\*\* Without much doubt it breeds in all the States south of Pennsylvania. \*\*\* According to the observations of the late Dr. Alexander Gerhardt of Whitfield County, Georgia, these birds usually breed in holes that

have been previously dug out by the *Picus pubescens*, or in decaying stumps not more than five or six feet from the ground. He never met with its nest in living trees. The eggs are from five to seven in number, and are usually deposited in Georgia from the 10th to the last of April.

The eggs of this species are slightly larger than those of the *atricapillus*, and the reddish-brown blotches with which they are profusely covered are much more distinctly marked. They are of a spheroidal oval in shape, have a pure white ground, very uniformly and generally sprinkled with blotches of a reddish-brown. They measure .60 by .50 of an inch."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 102, 103, 104.

43. PARUS MERIDIONALIS.

**MEXICAN CHICKADEE.** \*\*

44. PARUS CINCTUS.

**SIBERIAN CHICKADEE.** \*\*

45. PARUS HUDSONICUS.

**HUDSONIAN CHICKADEE.**

"This interesting species, one of the liveliest and most animated of its family, belongs to the northern and eastern sections of North America. It is found in the eastern and northern portions of Maine, and probably also in the northern parts of New York, Vermont, and New Hampshire. \*\*\*

Mr. Audubon found a nest of this Titmouse in Labrador. It was built in a decayed stump about three feet from the ground, was purse-shaped, eight inches in depth, two in diameter, and its sides an inch thick. It was entirely composed of the finest fur of various quadrupeds, chiefly of the northern hare, and all so thickly and ingeniously matted throughout as to seem as if felted by the hand of man. It was wider at the bottom than at the top. \*\*\*

The eggs of this species measure .56 by .47 of an inch, and are of a rounded oval shape, and with a white ground are somewhat sparingly marked with a few reddish-brown spots. These are usually grouped in a ring around the larger end."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 105, 107.

## 46. PARUS RUFESCENS.

**CHESTNUT-BACKED CHICKADEE. \*\***

## 46a- PARUS RUFESCENS NEGLECTUS,

**CALIFORNIAN CHICKADEE. \*\***

## 47 PSALTRIPARUS MINIMUS.

**LEAST TIT.**

"This interesting little species was first added to our fauna by the indefatigable Mr. Townsend in 1837. It is abundant throughout the Pacific coast from Fort Steilacoom to Fort Tejon. Dr. Gambel found it exceedingly abundant both in the Rocky Mountains and throughout California. \*\*\*

A nest of this bird presented by Mr. Nuttall to Audubon was cylindrical in form, nine inches in length and three and a half in diameter. It was suspended from the forks of a small twig, and was composed externally of hypnum, lichens, and fibrous roots so interwoven as to present a smooth surface, with a few stems of grasses and feathers intermingled. The aperture was at the top, and did not exceed seven-eighths of an inch in diameter. The diameter of the internal passage for two-thirds of its length was two inches. This was lined with the cottony down of willows and a vast quantity of soft feathers. The eggs were nine in number, pure white, .56 of an inch by .44 in their measurement."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 109, 110.

## 48. PSALTRIPARUS PLUMBEUS.

**LEAD-COLORED TIT. \*\***

## 49. PSALTRIPARUS MELANOTIS.

**BLACK-EARED TIT. \*\***

## 50. AURIPARUS FLAVICEPS.

**YELLOW-HEADED TIT.**

This species inhabits the Valley of the Rio Grande and Colorado. "In the Colorado and Mojave River Valleys, Dr. Cooper observed many nests, one of which he describes with particularity:—"On the 10th of March, I found a pair building, first forming a wall nearly spherical in outline, out of the thorny twigs of the *Algarobia* (in which tree the nest is usually built), then lining it with softer

twigs, down, leaves of plants, and feathers, covering the outside with thorns, till it becomes a mass as large as a man's head, or 9.00 by 5.50 inches outside, the cavity 4.50 by 2.70, with an opening in one side, just large enough for the bird to enter. \*\*\*

There were in all cases four eggs [others say four to six], pale blue, with numerous small brown spots, chiefly near the large end, though some had very few spots and were much paler; size, 0.60 by 0.44 inch. In one nest which I watched they hatched in about ten days, and in two weeks more the young were ready to leave the nest."—COUES, BIRDS OF THE COLORADO VALLEY, pp. 130, 131.

#### FAMILY Sittidæ.—Nuthatches.

##### 51. SITTA CAROLINENSIS.

#### WHITE-BELLIED NUTHATCH.

This species usually select for their nesting place the decayed trunk of a tree. In this they construct a round perforation in which they make their nest. These nesting-places often extend to the depth of fifteen, twenty and sometimes thirty inches.

On June 8th, 1880, I examined a nest which was in a tall trunk of a tree about twenty-five feet from the ground. I succeeded in gaining entrance to it by chopping for considerable time with a hatchet, at a distance of twenty inches below the original entrance of the Nuthatches. When the cavity was reached I found that the bottom of the nest was yet about five inches below the entrance which I had made. This nest was composed of chicken feathers, hair and a few dry leaves loosely thrown together. The eggs were four, which I believe is the usual number. These were of a beautiful roseate tinge thickly covered with spots and blotches of a reddish or rusty-brown, mixed with a slight tinge of purple. They measure .80 by .62. This bird inhabits the United States and British Provinces; west to the Valley of the Missouri. They are often improperly called Sap-Suckers.

##### 51a. SITTA CAROLINENSIS ACULEATA.

#### SLENDER-BILLED NUTHATCH.

This bird inhabits the "Middle and Western Provinces, United States; south to Cordova, Mexico. The nidification of the Nut-

hatches is similar in most respects to that of the Titmice. They build in holes of trees, constructing a shallow nest of grasses and similar vegetable substances, lined with hair or feathers. The eggs of the present species are five or six in number, white or creamy-white in color, speckled and blotched with reddish-brown and lavender, sometimes over the whole surface, but oftenest chiefly about the larger end, where they frequently form, or tend to form, a wreath. They measure 0.75 to 0.82 in length, by 0.55 to 0.63 in breadth."†

52. SITTA CANADENSIS.  
**RED-BELLIED NUTHATCH.**

This bird "is resident in New England, breeding abundantly in the northern portions. Audubon gives an interesting note of its nidification: "I found it building its nest," he says, "near Eastport, in Maine, on the 19th of May, before the Bluebird had made its appearance there, and while much ice still remained on the northern exposures. The nest is dug in a low dead stump, seldom more than four feet from the ground, both the male and the female working by turns until they have got to the depth of about fourteen inches. The eggs, four in number, are small and of a white color, tinged with a deep blush and sprinkled with reddish dots. They raise, I believe, only one brood in a season." The eggs are only distinguishable from those of *S. carolinensis* by their smaller size, averaging about 0.60 by 0.48; the difference is, however, quite appreciable on comparison. The amount of speckling is undetermined, but the surface is generally pretty evenly covered. They are from four to six in number."—COUES, BIRDS OF THE NORTH-WEST, p. 25.

53. SITTA PUSILLA.  
**BROWN-HEADED NUTHATCH.**

"Audubon states that this bird never goes farther north than Maryland, and that it is the most abundant in Florida, Georgia and the Carolinas. \*\*\* Their nest is usually excavated by the birds

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† From BIRDS OF THE NORTHWEST, a hand book of the Ornithology of the Region drained by the Missouri River and its Tributaries. By Elliott Coues. Washington: Government Printing Office, 1874. (p. 24.)

themselves in the dead portion of a low stump or sapling, sometimes only a few feet from the ground, but not unfrequently at the height of thirty or forty feet. Both birds are said to work in concert with great earnestness for several days, until the hole, which is round, and not larger at the entrance than the body of the bird, is dug ten or twelve inches deep, widening at the bottom. The eggs, according to Mr. Audubon, are laid on the bare wood. This, however, is probably not their constant habit. The eggs, from four to six in number, and not much larger than those of the Humming-Bird, have a white ground, thickly sprinkled with fine reddish-brown dots. They are said to raise two, and even three broods in a season. According to observations of the late Dr. Gerhardt of northern Georgia, the Brown-headed Nuthatch breeds in that part of the country about the 19th of April.

The eggs of this Nuthatch are of a rounded oval shape, measuring .60 by .50 of an inch. Their white ground-color is so completely overlaid by a profusion of fine dottings of a dark purplish-brown as to be entirely concealed, and the egg appears almost as if a uniform chocolate or brown color."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 122, 123.

54. SITTA PYGMÆA.  
**PIGMY NUTHATCH.**

"This diminutive species of Nuthatch is found throughout our Pacific coast and on the western slope of the Rocky Mountains, from Washington Territory to Southern California. \* \* \* Nests of this bird obtained near Monterey appear to be as well made as those of any of this genus, lining the cavity in which they are placed and conforming to it in size and shape, the materials sufficiently interwoven to permit removal and preservation, and warmly constructed of feathers, wool, vegetable down, hair and the silky efflorescence of seeds. Their eggs, seven in number, resemble those of the *S. canadensis*, but are of smaller size and a little more pointed at one end. Their ground-color is crystalline-white. This is covered more or less thickly with red spots, most numerous at the larger end. Their measure varies from .65 by .50 to .60 by .47 of an inch."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 120, 121.

**FAMILY Certhiidæ.--Creepers.****55. CERTHIA FAMILIARIS RUFA.****BROWN CREEPER.**

Mr. William Brewster has probably made more accurate observations upon the habits of this species than any other American ornithologist. He states† that the Brown Creeper is of regular occurrence during the breeding season throughout the heavily timbered region bordering on Lake Umbagog, Western Maine, but never an abundant species there. It is quoted that this bird breeds in hollow trees, deserted holes of Woodpeckers, and in the decayed stumps and branches of trees. "The eggs are small in proportion to the size of the bird, are nearly oval in shape, with a grayish white ground, sparingly sprinkled with small, fine, red and reddish-brown spots. They measure .55 by .43 of an inch."

The first nest discovered by Mr. Brewster, was found within a scale of loose bark of a tall dead fir tree; which was crammed with a mass of twigs and other rubbish. \*\*\* "The whole width of the opening had been filled with a mass of tough but slender twigs (many of them at least six inches in length), and upon this foundation the nest proper had been constructed. It was mainly composed of the fine inner bark of various trees, with an intermixture of a little *Usnea* moss and a number of spiders' cocoons." Upon examining a number of their nests, which he describes in detail, he further observes: "With respect to their general plan of construction, all of the eight nests which I have examined were essentially similar. Indeed, the uniform character of the nesting-sites chosen by the different pairs of birds was not a little remarkable. Thus, in every single instance that came under my observation, the nest was placed on a balsam fir, though spruce, birch, or elm stubs were often much more numerous, and frequently presented equally good accommodations. Again, in no instance did the tree resorted to retain more than three or four pieces of bark; while oftentimes the scale that sheltered the nest was the only one that remained."

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†William Brewster on the breeding habits of the American Brown Creeper: Buil. Nutt. Orn Club, Oct. 1879, pp. 199-209.

## 55a. CERTHIA FAMILIARIS MEXICANA.

**MEXICAN CREEPER.\*\*****FAMILY Troglodytidæ.--Wrens,**

## 56. CAMPYLOLORHYNCHUS BRUNNEICAPILLUS.

**CACTUS WREN.**

This species inhabits the "southwestern borders of the United States, from the valley of the Rio Grande to San Diego, in California." The nest of this bird is long and purse-shaped and very large for the size of the bird, and is usually placed on the branches of a cactus. It is composed of grasses and lined with feathers. My collection contains a set of four eggs, collected by B. W. Evermann, near Santa Paula, California. These are of an oblong oval shape, slightly pointed at one end. They are thickly covered with beautiful, rich salmon-colored spots over a white ground. These are so uniformly scattered over the entire surface as to give a beautiful rich cast to the egg. They measure from .93 to one inch in length and .64 to .65 in breadth. The nest which contained these eggs was placed in a prickly pear tree.

## 57. CAMPYLOLORHYNCHUS AFFINIS.

**SAINT LUCAS CACTUS WREN.**

This bird is an inhabitant of Lower California. According to the highest authority the nest of this species is hardly distinguishable from those of the more northern species.

"The eggs vary from 1.05 to 1 inch in length, and from .65 to .70 of an inch in breadth, and has a reddish-white ground, very uniformly dotted with fine markings of reddish-brown, purple and slate."

## 58. SALPINCTES OBSOLETUS.

**ROCK WREN.**

This bird inhabits the "Western United States, South to Guatemala." "The materials which compose the Rock Wren's nest are very miscellaneous—some general term like "rubbish" would best express the state of the case. Sometimes a nest is found to be composed almost entirely of some single substance that happened

readily available; but it is oftener built of a variety of materials—any that come handy—sticks, bark-strips, weeds, grasses, moss, hair, wool, &c. The sites selected are quite as various; usually the nest is built in a rift of rocks, or on the ground beneath some shelving rock. \*\*\* The eggs seem to run from four to eight or nine to a clutch; they measure from 0.72 to 0.77 in length by 0.60, to 0.66 in breadth, averaging about  $\frac{3}{4} \times \frac{5}{8}$ ; they are noticeable for their rotundity, and the crystalline purity and smoothness of the shell. The white ground is rather sparingly sprinkled with distinct reddish-brown dots, usually massed at the large end or wreathed around it.—COUES, BIRDS OF THE COLORADO VALLEY, p. 162, 163.

58a. *SALPINCTES OBSOLETES GUADALUPENSIS.*

**GUADALUPE ROCK WREN.**

Dr. Coues writes of a variety of Rock Wren which inhabits the island of Guadalupe, off the coast of Lower California. It is said “to ingeniously block up the entrance to its nest with an artificial wall built of pebbles, leaving an aperture only just large enough to pass.” This, in all probability, alludes to the present species.

59. *CATHERPES MEXICANUS.*

**MEXICAN WHITE THROATED WREN.**

(See following Species.)

59a. *CATHERPES MEXICANUS CONSPERSUS.*

**WHITE-THROATED WREN.**

“Mr. Sumichrast describes its nest† as very skilfully wrought with spiders’ webs, and built in the crevices of old walls, or in the interstices between the tiles under the roofs of the houses. A nest with four eggs, supposed to be those of this species, was obtained in Western Texas by Mr. J. H. Clark; it was cup-shaped, not large, and with only a slight depression. The eggs, four in number, were unusually oblong and pointed for eggs of this family, and measured 80 by 60 of an inch, with a crystalline-white ground, profusely covered with numerous and large blotches of a reddish or cinnamon brown”—BAIRD, BREWER AND RIDGWAY’S N. A. BIRDS, vol. I, p. 140.

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†This remark applies to the Mexican race.

60. *THRYOTHORUS LUDOVICIANUS.*· **CAROLINA WREN.**

The typical nest of this bird found in Ohio, where it breeds abundantly, is a massive coarse structure, made of strips of corn-stalks, grasses, hay and leaves, with an intermixture of the silk of corn. It is lined with chicken feathers, fine dry grasses and horse hair. This species is not particular as to the situation of its nest. It is found in holes of trees, in woodpiles and in low bushes, sometimes in a nook or corner of a barn, often under an accumulation of brushwood. The nest will not unfrequently measure five or six inches in depth. Sometimes these nests are arched over at the top, the opening being only large enough to admit one bird at a time.

The eggs are from five to seven in number, of a rounded-oval shape, some are more oblong than others. The ground-color is a reddish-white, covered with blotches of purple, slate and reddish-brown. These are diffused over the entire surface of the egg, probably more abundant at the larger end. The measurements vary more or less, with an average of .74 by .60.

60a. *THRYOTHORUS LUDOVICIANUS BERLANDIERI.***BERLANDIER'S WREN. \*\***60b. *THRYOTHORUS LUDOVICIANUS MIAMENSIS.***FLORIDA WREN. \*\***61. *THRYOMANES BEWICKI.***BEWICK'S WREN.**

This species "was first observed breeding by Professor Baird, in Carlisle, Penn., in 1844.

In all respects the nests and their location correspond with those of the common Wren. \*\*\* The late Dr. Gerhardt of Varnell's Station, Ga., met with this species among the mountainous portions of Northern Georgia, where it generally nested in holes in stumps. In one instance the nest was constructed five inches in length, and four in diameter, with a cavity two inches in depth, and the walls of great proportionate thickness, made externally of coarse roots, finer on the inside, and lined with various kinds of

animal fur and with feathers. Both birds worked together in constructing their nest, beginning on the 11th of April, and on the 27th of the same month this contained seven eggs. The nest was not covered at the top, in the manner of the Carolina Wren. \*\*\*

The eggs measure .67 by .50 of an inch in their average proportions, resembling somewhat those of the Carolina Wren, but having a lighter ground, with fewer and finer markings of slate and reddish-brown. The ground-color is of a pinkish-white." —BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 145, 146.

61a. **THRYOMANES BEWICKI SPILURUS.**

**CALIFORNIAN BEWICK'S WREN.** \*\*

61b. **THRYOMANES BEWICKI LEUCOGASTER.**

**TEXAN BEWICK'S WREN.** \*\*

62. **THRYOMANES BREVICAUDA.**

**GUADALUPE WREN.** \*\*

63. **TROGLODYTES AEDON.**

**HOUSE WREN.**

This is a common species throughout the United States, from the Atlantic to the Rocky Mountains. In some localities however, it is not always abundant. It builds its nest under the eaves of houses, in corners of the barn, martin-boxes, and in fact they are found nesting in every conceivable cavity or crevice. The nest is composed of a mass of miscellaneous rubbish, sticks, grasses, hay and other convenient materials. Within this they construct an inner nest composed of finer substances, lined with feathers, fine dry grasses, and sometimes with the fur of small quadrupeds.

The eggs are usually seven in number, sometimes nine, of a rounded-oval shape. Their ground-color is white, thickly dotted with fine spots of reddish-brown, with a slight tinge of purple. Their shape varies from nearly spherical to an oblong oval, some measuring .60 by .55, others with the same breadth having a length of .67.

## 63a. TROGLODYTES AEDON PARKMANNI.

**WESTERN HOUSE WREN.**

According to the highest authority, the nesting habits of this bird are almost exactly the same as those of the common House Wren of the Eastern States, building in hollow trees, in cigar boxes, holes in gate-posts, and under the eaves of houses.

The eggs too are hardly distinguishable from those of the common Wren, the spots being finer, less marked, and of a pinker shade of reddish-brown. The eggs are of a smaller size, though exhibiting great variations "In one nest the average measurement of its seven eggs is .60 by .50, that of another set of the same number .70 by .50 of an inch."

## 64. TROGLODYTES INSULARIS.

**SOCORRO WREN. \*\*\***

## 65. ANORTHURA TROGLODYTES HYEMALIS.

**WINTER WREN.**

"The Winter Wren, nowhere very abundant, seems to be distributed over the whole of North America. \*\*\* Mr. William F. Hall met with the nest and eggs of this bird at Camp Sebois in the central eastern portion of Maine. It was built in an unoccupied log hut, among the fir leaves and mosses in a crevice between the logs. It was large and bulky, composed externally of mosses, and lined with the fur of hedge-hogs, and the feathers of the Spruce Partridge and other birds. It was in the shape of a pouch, and the entrance was neatly framed with fine sticks.

The eggs were six in number, and somewhat resembled those of the *Parus atricapillus*. The female was seen and fully identified. In this nest, which measured five and three quarter inches by five in breadth, the size, solidity, and strength, in view of the diminutive proportions of its tiny architect, are quite remarkable. The walls were two inches in thickness and very strongly impacted and interwoven. The cavity was an inch and a quarter wide and four inches deep. Its hemlock framework had been made of green material, and their strong and agreeable odor pervaded the structure.

The eggs measured .65 by .48 of an inch, and were spotted with a bright reddish-brown and a few pale markings of purplish-slate, on a pure white ground."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. 1, pp. 155, 156, 157.

65a. ANORTHURA TROGLODYTES PACIFICUS.

WESTERN WINTER WREN. \*\*

66. ANORTHURA ALASCENSIS.

ALASKAN WREN.

"In a small collection of birds' skins, nests, and eggs recently acquired by the Museum of Comparative Zoology, collected at the Pribilow Islands, Alaska, is the nest and two eggs of the Alaskan Wren (*Troglodytes parvulus* var. *alascensis*), which are believed to be the first ever seen by Naturalists. The nest is quite large and very compactly built, being composed externally of fine moss of a bright green color, interwoven with fine roots, and lined heavily with hair and feathers. Conspicuous among the latter are the rosy-tipped feathers of the *Leucosticte griseinucha*. The hairs are rather coarse and white, three to four or five inches in length, and appear to be hairs of the Polar Bear. The nest was obtained in June, 1876, on St. George Island, by Mr. W. J. McIntyre, to whom it was brought by a native. It is said to have been placed deep down in the crevices of large rocks, and to have originally contained twelve eggs, all but two of which were broken before they came into Mr. McIntyre's possession. These measure, respectively, .68 by .51 and .60 by .50. Their general color is dull white, with a very few minute dots of reddish, so few and small as to be easily overlooked."—J. A. ALLEN, Bull. Nutt. Orn. Club, 1877, p. 82.

67. TELMATODYTES PALUSTRIS

LONG-BILLED MARSH WREN.

The nest of this bird is formed outwardly of coarse sedges firmly interwoven and cemented with clay or mud, making it impervious to weather. The nest is nearly spherical, in size and shape resembles a cocoanut. A small round hole is left on one side for entrance, the upper side of which is also protected from the rain by

a projected edge. It is lined with fine soft grass, feathers and soft vegetable substances. These nests are usually placed in low bushes a few feet from the ground.

The eggs average .65 by .50. They are of a rounded-oval shape, thickly marked with small blotches and spots of a deep chocolate-brown or dark fawn color. They number from six to nine.

This species is found in Eastern United States, from the Missouri river.

67a. *TELMATODYTES<sup>\*</sup> PALUSTRIS PALUDICOLA.*

**TULE WREN. \*\***

68. *CISTOTHORUS STELLARIS.*

**SHORT-BILLED MARSH WREN.**

"The Short-Billed Marsh Wren is very irregularly distributed throughout the United States, being found from Georgia to the British Provinces, and from the Atlantic to the Upper Missouri. It is nowhere abundant, and in many large portions of intervening territory has never been found. \*\*\*

Their nest is constructed in the midst of a tussock of coarse, high grass, the tops of which are ingeniously interwoven into a coarse and strong covering, spherical in shape, and closed on every side, except one small aperture left for entrance. The strong wiry grass of the tussock is also interwoven with finer materials, making the whole impervious to the weather. The inner nest is composed of grasses and finer sedges, lined with soft, vegetable down.

The eggs are nine in number, pure white, and rather small for the bird. They are exceedingly delicate and fragile, more so than is usual even in the eggs of Humming-Birds. They are of an oval shape, and measures .60 by .45 of an inch,—BAIRD, BREWER AND RIDGEWAY'S N. A. BIRDS, vol. I, pp. 159, 160.

**FAMILY Motacillidæ.—Wagtails.**

69. *MOTACILLA ALBA.*

**WHITE WAGTAIL.**

"The common White Wagtail of Europe claims a place in the North American fauna as an occasional visitant of Greenland." Nests on the ground among the grass of the meadow.

The eggs have a bluish-white ground, thickly sprinkled with fine dottings, which are most usually of a blackish-brown color, sometimes ashy-gray or reddish-brown.

70. *BUDYTES FLAVA.*

**YELLOW WAGTAIL.**

"This European species finds a place in the fauna of North America, as a bird of Alaska, where specimens have been obtained and where it is, at least an occasional visitant. Abundant species in France. Nests on the ground. Eggs, of a brownish-yellow on a reddish-white ground, profusely covered with fine dots of reddish-gray, which are more or less confluent. A few zig-zag lines of dark-brown or black are found on the larger end.

71. *ANTHUS LUDOVICIANUS.*

**AMERICAN TITLARK.**

The American Titlark "is one of the most extensively distributed of all our North American birds, being found in immense numbers over the whole length and breadth of North America. \*\*\*

All the nests of this lark that I have seen are remarkable for the thickness of their walls, and the strength, compactness, and elaborate care with which the materials are put together, particularly for nests built on the ground. They are well suited to protect their contents from the cold, damp ground on which they are placed, and their upper portions are composed of stout vegetable stems, lichens, and grasses strongly interwoven, and forming a strong rim around the upper part of the nest.

Dr. Coues describes their eggs as of a dark chocolate-color, indistinctly marked with numerous small lines and streaks of black. Audubon describes them as having a ground-color of a deep reddish-chestnut, darkened by numerous dots of deeper reddish-brown and lines of various sizes, especially toward the larger end. Those in my possession, received from Labrador by Thienemann, measure from .75 to .78 of an inch in length, and from .59 to .62 in breadth, and have a light-brown or clay-colored ground, so thickly covered with spots as to be almost concealed. These spots are of

purplish chocolate-brown, with occasional darker lines about the larger end. In others the markings are bolder and larger and of brighter hues."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 171, 172, 173.

#### 72. ANTHUS PRATENSIS.

### EUROPEAN TITLARK.

This European species claims a place in the North American fauna, on the ground of a single specimen having been found in Greenland, in 1845, and one at St. Michael's, Norton Sound.

Nest is built on the ground, generally among the grass.

Eggs are of a reddish-brown color mottled over with darker shades of the same.

#### 73. NEOCORYS SPRAGUEI.

### SPRAGUE'S TITLARK.

"Captain Blakiston (*Ibis*, V. 61) found this Skylark common on the prairies of the Saskatchewan during the breeding-season. \*\*\* He also observed these birds in northern Minnesota, May 4, 1859. A nest of this bird was built on the ground and placed in a hollow. It was made of fine grasses interwoven into a circular form, but without any lining.

The eggs were four or five in number, an oblong-oval in shape, much pointed at one end, and measuring .87 of an inch in length by .63 in breadth. Their ground-color was a dull white, so minutely dotted with a grayish-purple as to give the whole egg a homogeneous appearance as of that uniform color,—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 176.

### FAMILY Mniotildæ.—Warblers.

#### 74. MNIOTILTA VARIA.

### BLACK-AND-WHITE CREEPER.

"A species confined to the Eastern Province, reaching its western limit on the confines of the Missouri region and in Arkansas. \*\*\* Audubon states that it breeds in holes in trees, but such appears not to be its habit. Nuttall describes a nest "niched in the

shelving of a rock, 'on the surface of the ground.' " Dr. Brewer states, that so far as he knows, it always builds on the ground, and mentions a nest found in the drain of a house.

The eggs are described as being from three to seven in number, four and one-half eighths to six-eighths long, by one-half an inch to nine-sixteenths broad; oval, nearly equal at both ends, white, speckled with brownish-red and purplish dots, chiefly at the larger end.

A nest described by Dr. Brewer was composed externally of coarse hay, and compactly lined with horse hair; Mr. Nuttall's was of coarse strips of inner hemlock bark, mixed with old leaves and grass, and lined with hair. Dr. Brewer's measured three and one-half inches across outside, by one inch internal depth."—COUES, BIRDS OF THE NORTHWEST; pp. 45, 46.

74a. *MNIOTILTA VARIA BOREALIS.*

**SMALL-BILLED CREEPER.** \*\*

75. *PROTONOTARIA CITREA.*

**PROTHONOTARY WARBLER.**

This beautiful and striking Warbler is found in the Eastern Province of the United States (Southern region): Mr. Wm. Brewster writes that it is probable that its maximum abundance during the breeding season is reached in the States lying about the junction of the Ohio and Mississippi rivers.

Examining forty of their nests, all of which were found near Mount Carmel., Ill., he states that "the typical nesting-site, was the deserted hole of the Downy Woodpecker or Carolina Chickadee. The height varied from two to fifteen feet, though the usual elevation was about four. If the cavity was old and broken out, or otherwise enlarged, it was far more apt to be chosen than a neater and newer one close at hand. The stump selected almost invariably stood in or projected over water." \*\*\*

"The shape and size of the nest vary with that of the cavity in which it is placed. When the hole is deep it is usually filled up to within four or five inches of the entrance. Thus the nest when removed presents the appearance of a compact mass of moss five or six inches in height, by three or four in diameter.

When the cavity is shallow, it is often only scantily lined with moss and a few fine roots. \*\*\*

One of the finest specimens before me is composed of moss, dry leaves, and cypress-twigs. \*\*\*

Out of fifteen sets of eggs taken, two included seven eggs; three, six; three, five; four, four; two, three; and one, one egg. The average number is probably five or six. Seventeen specimens before me agree pretty well in size and general shape, nearly all being noticeably blunted at the smaller end. Two selected as extreme examples measure respectively .73 by .59 and .67 by .58. The ground-color is clear, lustrous white, with a high polish. Eggs from different sets vary considerably in markings, but two types of coloration seem to prevail. In one, spots and dottings of dull brown, with faint submarkings of pale lavender are generally and evenly distributed over the entire surface. In the other, bold blotches of bright reddish brown are so thickly laid on, especially about the larger ends, that the ground-color is in some instances almost entirely obscured." †

#### 76. *HELONÆA SWAINSONI.*

#### **SWAINSON'S WARBLER.** \*\*

#### 77. *HELMINTOTHERUS VERMIVORUS.*

#### **WORM-EATING WARBLER.**

Habitat, Eastern Provinces of United States (rather Southern); Southeastern Mexico; Guatemala; Cuba.

Two of the eggs of this warbler thus identified by Mr. Jackson, and kindly loaned to me by him are of a somewhat rounded-oval shape, less obtuse at one end. They have a clear, crystal-white ground, and are spotted with minute dottings of a bright red-brown. These are much more numerous in one than in the other, and in both are confluent at the larger end, where they are beautifully intermingled with cloudings of lilac-brown. These eggs measure, the one, .78 by .60 of an inch; the other, .70 by .56 of an inch. Another nest of this species, found by Mr. Joseph H. Batty of New York, on the side of a hill near Montclair, N. J., was also

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†Wm. Brewster on the Prothonotary Warbler: Bull. Nutt. Orn. Club., Oct., 1878, pp. 153-162.

built on the ground, in a part of the woods where there was no underbrush, and was placed in a slight hollow, with dry oak leaves collected around it, and partly covering it. The nest was made of dry leaves, and lined with grasses and fine roots. It contained four eggs, alike in their marking, and corresponding exactly with those obtained by Mr. Jackson.—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 189.

78. *HELMINTHOPHAGA BACHMANI.*

**BACHMAN'S WARBLER.** \*\*

79. *HELMINTHOPHAGA PINUS.*

**BLUE-WINGED YELLOW WARBLER.**

The Blue-Winged Yellow Warbler is found in Eastern United States and Mexico. Wilson says that it comes from the South early in May.

Concerning the nest and eggs of this species, the following is from a communication to T. M. Brewer, from Mr. N. A. Eddy of Bangor, Maine. The data are supplied by Mr. Eddy himself; it is concerning a nest which he found in June.

"The Nest was found June 14, and at that time contained one egg. It was revisited June 20, when it contained four eggs, which were taken with the nest and the female parent was shot. The nest was situated in an old orchard, about half a mile from the Coast of Long Island Sound. It was placed on the ground, in the grass, at the foot of a small bush. The nest is of a very loose structure, and is composed of oak leaves, built so as to form an inverted cone; within is a coarse lining of grape-vine bark, and this is again lined with fine grass and very fine pieces of grape-vine. The eggs are white, with small red spots forming a ring around the greater end. A few spots are also scattered over the whole surface. Before they were blown the eggs were of a flesh-colored tint. Their measurements are as follows: " .65 by .50, .67 by .49, .63 by .48, .60 by .47." —T. M. BREWER, Bull. Nutt. Orn., Club. Jan., 1880, p. 49.

80. *HELMINTHOPHAGA LAWRENCEI.*

**LAWRENCE'S WARBLER.** \*\*

## 81. HELMINTHOPHAGA CHRYSOPTERA.

**GOLDEN-WINGED WARBLER.**

This warbler occurs in the Eastern Province of the United States. It is nowhere a common species. "Dr. Samuel Cabot was the first Naturalist to meet with the nest and eggs of this bird. This was in May, 1837, in Greenbrier County, Va. \*\*\*

The late Dr. Alexander Gerhardt found the nest and eggs of this Warbler in the Spring of 1859, in Whitfield County, Ga. It contained four eggs, and was built on the ground. It was very large for the bird, being five inches in height and four in diameter.

The cavity was also quite large and deep for so small a bird, exceeding three inches both in depth and in diameter.

The outer and under portions of this nest were almost entirely composed of the dry leaves of several kinds of deciduous trees. These were interwoven with and strongly bound together by black vegetable roots, dry sedges, and fine strips of pliant bark, and the whole lined with a close net-work of fine leaves, dry grasses, and fibrous roots. Dr. Gerhardt informed me that these birds usually build on or near the ground, under tussocks of grass, in clumps of bushes, or pine-bush, and that they lay from four to five eggs, from the 6th to the 15th of May. The eggs of this species are of a beautiful, clear crystal-white, with a few bright reddish-brown spots around the larger end. Eggs from Racine, Wis., and from Northern Georgia, differ greatly in their relative size. The former measure .70 of an inch in length and .53 in breadth; the latter, .63 by .49.—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. 1 pp. 193, 194.

## 82. HELMINTHOPHAGA LEUCOBRONCHIALIS.

**WHITE-THROATED WARBLER.**

## 83. HELMINTHOPHAGA LUCIÆ.

**LUCY'S WARBLER.**

"We are indebted to Captain Bendire for the discovery of the nest and eggs of this comparatively new Warbler. He first met

with its nest near Tucson, Arizona, May, 19, 1872. Unlike all the rest of this genus, which, so far as is known, build their nests on the ground, this species was found nesting something after the manner of the common Gray Creeper, between the loose bark and the trunk of a dead tree, a few feet from the ground. Except in their smaller size the eggs also bear a great resemblance to those of the Creeper. In shape they are nearly spherical, their ground is of a crystal whiteness, spotted, chiefly around the larger end, with fine dotting of a purplish-red. They measure .54 of an inch in length by .45 in breadth."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. III, p. 504, (Appendix.)

#### 84. *HELMINTHOPHAGA VIRGINIAE.*

#### **VIRGINIA'S WARBLER.**

"In the summer of 1869, Mr. Robert Ridgway was so fortunate as to meet with the nest and eggs of this bird, near Salt Lake, Utah, (Smith. Coll. 15,239). This was June 9.

The nest was embedded in the deposits of dead or decaying leaves, on ground covered by dense oak-brush. Its rim was just even with the surface. It was built on the side of a narrow ravine at the bottom of which was a small stream. The nest itself is two inches in depth by three and a half in diameter. It consists of a loose but intricate interweaving of fine strips of the inner bark of the mountain mahogany, fine stems of grasses, roots, and mosses, and is lined with the same with the addition of the fur and hair of the smaller animals.

The eggs were four in number, and measure .64 by .47 of an inch. They are of a rounded-ovoid shape, have a white ground with a slightly roseate tinge, and are profusely spotted with numerous small blotches and dots of purplish-brown and lilac, forming a crown around the larger end."—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, p. 200.

#### 85. *HEMINTHOPHAGA RUFICAPILLA.*

#### **NASHVILLE WARBLER.**

"The following account, given by Mr. Allen, is selected from a number at our disposal. Referring to Springfield, Massachusetts, he says:

"Abundant in May and in the early part of Autumn. Arrives May 1st. to 5th, and for two or three weeks is a common inhabitant of the orchards and gardens, actively gleaning insects among the unfolding leaves and blossoms of the fruit trees. Nearly all go north, but a few retire to the woods and breed. During June, 1863, I frequently saw them in my excursions in the woods, often three or four males in an hour's walk. \*\*\*

I have found the nest of this species for two successive seasons, as follows:

May, 31, 1862, containing four freshly laid eggs. The nest was placed on the ground, and sunken so that the top of the nest was level with the surface of the ground, and protected and completely concealed above by the dead grass and weeds of the previous year. It was composed of fine rootlets and dry grasses, lined with fine dried grass and a few horse hairs, and covered exteriorly with a species of fine green moss. The eggs were white, sprinkled with light reddish-brown specks, most thickly near the larger end; longer diameter .60, and the shorter .50."—COUES, BIRDS OF THE NORTHWEST, p. 51.

#### 86. HELMINTHOPHAGA CELATA.

### ORANGE-CROWNED WARBLER.

This species is found in North America at large, but chiefly the Middle and Western Provinces.

"A nest of the Orange-crowned Warbler taken June 12, 1860, by Mr. Kennicott, at Fort Resolution, Great Slave Lake, was built on the ground, inside of a bank, among open bushes, and was much hidden by dry leaves. It contained five eggs. This nest is built outwardly of fibrous strips of bark, interiorly of fine grasses without other lining.

The eggs are very finely dotted all over—thickly about the larger end, more sparsely elsewhere—with pale-brown. They measure about 0.67 by 0.50."—COUES, BIRDS OF THE NORTHWEST, p. 53.

#### 86a. HELMINTHOPHAGA CELATA LUTESCENS.

### LUTESCENT WARBLER. \*\*

## 87. HELMINTHOPHAGA PEREGRINA.

**TENNESSEE WARBLER.** \*\*

This species occurs in the Eastern Province of North America.

"A nest of this Warbler (Smith, Coll., 3476), obtained on the northern shore of Lake Superior by Mr. George Barnston, is but little more than a nearly flat bed of dry, matted stems of grass, and is less than an inch in thickness, with a diameter of about three inches. It is not circular in shape, and its width is not uniform.

Its position must have been on some flat surface, probably the ground.

The eggs resemble those of all the family in having a white ground, over which are profusely distributed numerous small dots and points of a reddish-brown, and a few of a purplish-slate. They are of an oblong-oval shape, and measure .68 by .50 of an inch.—BAIRD, BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 206, 207.

## 88. PARULA AMERICANA.

**BLUE YELLOW-BACKED WARBLER.**

Mr. W. W. Worthington, in writing of the Blue Yellow-backed Warbler, nesting on Shelter Island, N. Y.,† states that these birds usually arrive there about the first of May. He observes that they "breed commonly on Gardiner's Island," having found "two nests there nearly ready for the eggs, on May 17th, 1879, which is about two weeks earlier than they lay on Shelter Island."

The nest, he says, is "invariably built in a bunch of long green moss, and lined more or less with the same dun-colored plant-down that the Yellow Warblers use for the same purpose, but the Yellow-backs use it more sparingly. They sometimes weave one or two horse hairs, and rarely a piece of fine grass into the nest; and these are the only materials used on this Island." "The first nest that came under my notice, was neither globular nor pensile, as they usually are, but completely open at the top like a Yellow Warbler's, and placed in a small cedar bush, not three feet from the ground, on high land, being a very unusual position. The nest is usually placed in a bush or small tree in swamps or swampy

†In "Ornithologist and Oologist" a Monthly Magazine devoted to the study of birds, their nests and eggs. Norwich, Connecticut, Oct. 1881, (p. 62)

places, and usually about ten or twelve feet up. I have seen two nests that were attached to the side of the trunks of large trees at the same height.

The number of eggs laid is four and sometimes five." My collection contains several beautiful sets collected by Mr. Worthington, between the 1st and 15th of June, 1881. These are white, finely sprinkled with reddish-brown dots, chiefly at the larger end; in some forming a confluent ring. They measure from .62 to .65 of an inch in length, and from .49 to .50 in breadth.

89. PARULA PITIAYUMI INSULARIS.

**SOCORRO WARBLER.** \*\*

89a. PARULA PITIAYUMI NIGRILORA.

**SENNETT'S WARBLER.** \*\*

90. PERISSOGLOSSA TIGRINA.

**CAPE MAY WARBLER.**

Habitat, Eastern Province of United States, north to Lake Winnipeg and Moose Factory. Breeds in Jamaica.

"Its nest and eggs have not been, with a certainty, obtained in the United States, though an egg obtained in Coventry, Vt., in 1836, and attributed at the time to this bird, closely resembles its identified eggs from Jamaica. \*\*\*

Mr. W. T. March of Jamaica, in his notes on the birds of that Island, states that this species may always be found, in its various changes of plumage, about the mangrove swamps and river banks \*\*\* He also met with several specimens of its nests and eggs, but their position was not stated. The nests had apparently been taken from a bush or tree, were three and one-fourth inches in diameter by two and one-half in height, with cavities unusually large and deep for the size of the nests. They were wrought almost entirely of long strips of thin flexible bark, strongly and firmly interwoven. The outer portions consisted of coarser and longer strips, the inner being much finer and more delicate. With the outer portions were also interwoven bits of mosses, lichens, and the outer bark of deciduous trees. The entire fabric was a remarkable one.

The eggs measure .70 by .55 of an inch, have a pinkish-white ground, blotched with purple and brown of various shades and tints. They are disposed chiefly about the larger end, usually in a ring. The eggs are oval in shape and slightly pointed at one end."

91. **PERISSOGLOSSA CARBONATA.**

**CARBONATED WARBLER.** \*\*

92. **PEUCEDRAMUS OLIVACEUS.**

**OLIVE-HEADED WARBLER.** \*\*

93. **DENDRECA ÆSTIVA.**

**SUMMER YELLOW BIRD; YELLOW WARBLER.**

This Warbler is found throughout the entire continent of North America. In Eastern United States it begins building about the middle of May. This, however, is governed by the advancement of the season. The nest is usually placed in low bushes, three or four feet from the ground. Sometimes it is placed at heights ranging from ten to forty feet, in large trees, but their favorite places are hedges and low shrubs. It is usually fastened to several twigs with a remarkable neatness and skill. It is composed of hempen fibres of plants, fine strips of bark, slender stems of plants and leaves, and down of the willow catkins. It is lined with soft, fine grasses, hair, feathers, and other warm materials. The intrusive Cow-bird makes the nest of this Warbler a favorite receptacle for depositing her egg. The nest usually measures two and one-half to three inches in height by three in diameter.

The eggs, usually four or five in number have a light green ground-color, with dots and blotches of light purple, darker purple, and shades of brown and lilac. They measure from .61 to .70 in length and from .49 to .52 in breadth.

94. **DENDRECA CÆRULESCENS.**

**BLACK-THROATED BLUE WARBLER.**

This elegant bird is found throughout Eastern North America.

"In the middle States, where the species is migratory, I used to find it common every spring and fall, during the migrations; oftenest in low and tangled woods, but also in open forest in company with *virens* and others. I am not aware of any specified in-

stances of its breeding South of the Canadas and Northern New England; but Mr. Allen notices its recurrence in Massachusetts "in the breeding season." \*\*\* Audubon describes a nest from Halifax, Nova Scotia, as being placed on the horizontal bough of a fir, seven or eight feet from the ground, and composed of bark-strips, mosses, and fibrous roots, lined with fine grass and a warm bed of feathers.

Eggs, four to five, rosy-white, sparsely sprinkled with reddish-brown at the larger end."—COUES, BIRDS OF THE NORTHWEST, p. 56.

#### 95. *DENDRŒCA CORONATA.*

#### YELLOW-RUMP WARBLER.

"The Yellow-rump lays four to six eggs, measuring about .72 by .54 inches; they are white, spotted chiefly in a wreath about the larger end, but also sparingly over the entire surface, with various shades of brown, none, however, quite reddish, but some nearly blackish, and with numerous other shell-markings of neutral tint. A nest from the Yukon (June 7) is rather rudely built of weed-stalks, grass stems, and rootlets, and warmly lined throughout with feathers. Another from the Arctic Coast, east of Anderson River, is entirely composed of soft vegetable fibre, with a few grass-stems for lining; it was built in a pine-tree, about six feet from the ground. A third from Nova Scotia, laid on the horizontal fork of a tree, is composed chiefly of very slender, stiff rootlets and similar hard stems, and is much flatter than either of the others."—COUES, BIRDS OF THE NORTHWEST, p. 58.

#### 96. *DENDRŒCA AUDUBONI.*

#### AUDUBON'S WARBLER.

"We are indebted to the late Mr. Hepburn for all the knowledge we possess in reference to its nests, eggs and breeding-habits. He procured their nests and eggs in Vancouver's Island. They were built in the forked branches of small shrubs. Around these the materials of which they were built were strongly bound, and to it the nests were thus securely fastened. They were quite long and large for the bird, being four inches in height, and three and a half in diameter. The cavity is small, but deep. The external pe-

riphery of the nest is made of coarse strips of bark, long dry leaves of wild grasses, and strong stalks of plants, intermingled with finer grasses, pieces of cotton cloth, and other materials. The inner nest is also a singular combination of various materials, yet carefully and elaborately put together. It is made up of fine grasses, feathers, lichens, mosses, fine roots, etc., all felted together and lined with a warm bedding of fur and feathers. \*\*\*

The eggs of the Audubon Warbler do not resemble those of any *Dendroica* with which I am acquainted, but are most like those of the Hooded Warbler. They measure .70 by .50 of an inch, have a reddish or a pinkish-white ground, and are sparingly marked with fine brown markings, tinted with a crimson shading."—BAIRD, BREWER AND RIDGEWAY'S N. A. BIRDS, VOL. I, PP. 231, 232.

#### 97. DENDRŒCA MACULOSA.

### BLACK-AND-YELLOW WARBLER.

Habitat, Eastern North America; in summer, New England to Hudson's Bay.

"Mr. C. J. Maynard has given us an excellent account of the nest and eggs of this species. A nest, taken the second week in June 1870, at Umbagog, "was placed on the forked branch of a low spruce, about three feet from the ground, on a rising piece of land, leading from a wood-path. The nest, which contained four eggs, was constructed of dry grass, spruce twigs, roots, etc., and was lined with fine black roots, the whole being a coarse structure for so dainty looking a warbler. The eggs were more spherical than any Warbler's I have ever seen. The ground-color is a creamy-white, blotched sparingly over with large spots of lilac and umber." The dimensions of these eggs were: 0.62 by 0.52, 0.61 by 0.52, 0.62 by 0.50, 0.63 by 0.52 (hundredths of the inch.)—COUES, BIRDS OF THE NORTHWEST, p. 63.

#### 98. DENDRŒCA CÆRULEA.

### CERULEAN WARBLER.

"This Warbler appears in Pennsylvania, Ohio, Illinois and Missouri early in May.

Mr. Audubon states that he found it numerous in Louisiana.

The nest he describes as placed in the forks of a low tree or bush, partly pensile, projecting a little above the twigs to which it is attached, and extending below them nearly two inches. The outer part is composed of fibres of vines and the stalks of herbaceous plants, with slender roots arranged in a circular. The nest is lined with fine dry fibres of the Spanish moss.

The eggs are five in number, of a pure white, with a few reddish spots about the larger end."

99. DENDRECA PENNSYLVANICA.

**CHESTNUT-SIDED WARBLER.**

During the migrations, the Chestnut-Sided Warbler is a common species of the Eastern United States; in the northern parts of which it breeds. The nest is a rather loosely woven mass of weedy, downy, and fibrous substances. The interior is more closely woven of fine grasses, with an occasional horse-hair. It is lined with wooly vegetable fibres and a few hairs of small quadrupeds. These nests are usually very firmly bound to the smaller branches by silky fibres from the cocoons of various insects. The favorite situation is low bushes in swampy or marshy places. The nests vary from two and a half inches in external height, with a diameter of from three to four inches. The cavity is about two inches deep.

The eggs are of an oblong-oval shape the ground-color is a rich creamy-white, spotted chiefly about the greater end, with shades from light reddish to various darker browns. They measure .65 by .49.

100. DENDRECA CASTANEA

**BAY-BREASTED WARBLER.**

Habitat, Eastern Province of North America to Hudson's Bay; Guatemala South to Isthmus of Darien.

"Mr. Maynard found this species the most abundant of the *Sylvicolidae* at Lake Umbagog, where it breeds. Two nests were taken in June. One was found June 3, in a tree by the side of a cart-path in the woods, just completed. It was built in the horizontal branch of a hemlock twenty feet from the ground, and five or six from the trunk of the tree. By the 8th of June it contained three fresh eggs. The other was

built in a similar situation, fifteen feet from the ground, and contained two fresh eggs. These nests were large for the bird, and resembled those of the Purple Finch. They were composed outwardly of fine twigs of the hackmatack, with which was mingled some of the long hanging *Usnea* mosses. They were very smoothly and neatly lined with black fibrous roots, the seed-stalks of *Cladonia* mosses, and a few hairs. They had a diameter of about six inches, and a height of about two and a half inches. The cavity was three inches wide and an inch and a quarter deep.

The eggs varied in length from .71 to .65 of an inch, and in breadth from .53 to .50. Their ground-color was a bluish-green, thickly spotted with brown, and generally with a ring of confluent blotches of brown, and lilac around the larger end. Occasionally the spots proved to be more or less of an umber-brown, and in some specimens the spots were less numerous than in others."—BAIRD BREWER AND RIDGWAY'S N. A. BIRDS, vol. I, pp. 253, 254.

#### 101. DENDRECA STRIATA.

#### BLACK-POLL WARBLER.

Two nests of this species, from Great Slave Lake and Fort Yukon, respectively, are entirely similar in material and structure. Both were taken in June, one with four, the other with five eggs. They are built of soft weedy material, bleached and gray, and withered almost to disintegration, mixed with grasses, and lined with finer stems of the same. The eggs are finely sprinkled with brown and neutral tint, chiefly in a wreath about the larger half of the egg, and have also a few larger blackish spots and scrawls, very sharply marked. The size is 0.70 by 0.52.—COUES, BIRDS OF THE NORTHWEST, p. 60.

#### 102. DENDRECA BLACKBURNIÆ.

#### BLACKBURNIAN WARBLER.

"This somewhat rare and very beautiful Warbler requires additional investigation into its habits before its history can be regarded as satisfactorily known. The Smithsonian collection has specimens from Pennsylvania, Ohio, Wisconsin, Missouri, Illinois and from Central America. \*\*\*

Mr. McCulloch, of Halifax, gave Mr. Audubon a nest of this bird with three eggs. The nest was formed externally of different textures, lined with fine delicate strips of bark and a thick bed of feathers and horse-hair.

The eggs were small, conical, with a white ground spotted with light red at the larger end.

The nest was in the small fork of a tree five feet from the ground, and near a brook."—BAIRD, BREWER AND RIDGEWAY'S N. A. BIRDS, Vol. I, pp. 238, 239.

103. DENDRECA DOMINICA.

**YELLOW-THROATED WARBLER.**

Habitat, Eastern Province of the United States, North to Washington and Cleveland.

"Mr. Audubon describes the nest of this Warbler as very prettily constructed, like the nests of any other of this genus, its outer parts made of dry lichens and soft mosses, the inner of silky substances and fibres of the Spanish moss. The eggs are said to be four in number, with a white ground-color and a few purple dots near the larger end. He thinks they raise two broods in a season in Louisiana. These nests are not pensile, but are placed on the horizontal branch of the cypress, from twenty to fifty feet above the ground. It closely resembles a knot or a tuft of moss, and therefore is not easily discovered from below. \*\*\*

Eggs supposed to be of this species, taken near Wilmington, N. C., by Mr. Norwood Giles (16,199 Smith. Coll.), have a ground-color of dull ashy-white, with a livid tinge. They are thickly speckled, chiefly around the larger end, with irregular markings of rufous, and fainter ones of lilac interspersed with a very few minute specks of black. They are broadly ovate in form, and measure .70 by .55 of an inch."—BAIRD, BREWER AND RIDGEWAY'S N. A. BIRDS, vol. I, pp., 242, 243.

103a. DENDRECA DOMINICA ALBILORA.

**WHITE-BROWED YELLOW-THROATED  
WARBLER. \*\*\***

104. DENDRŒCA GRACIÆ.

**GRACE'S WARBLER.** \*\*

105. DENDRŒCA NIGRESCENS.

**BLACK-THROATED GRAY WARBLER.** \*\*

106. DENDRŒCA CHRYSOPARIA.

**GOLDEN-CHEEKED WARBLER.**

Mr. W. H. Werner, in writing to Wm. Brewster of several nests of this rare Warbler, which he collected in Comal County, Texas, states that the four nests that he had found "were similar in construction, and were built in forks of perpendicular limbs of the *Juniperus virginiana*, from ten to eighteen feet from the ground. The outside is composed of the inner bark of the above mentioned tree, interspersed with spider-webs, well fastened to the limb, and in color resembling the bark of the tree on which it is built, so that from a little distance it is difficult to detect the nest." "I have had the pleasure of examining two of the nests above referred to by Mr. Werner. They are so nearly identical in every respect that one description will answer for both, and accordingly I will take for my type a fine specimen which, with an adult male bird, Mr. Werner has generously contributed to my collection \*\*\* It is placed in a nearly upright fork of a red cedar, between two stout branches, to which it is firmly attached. \*\*\* In general character and appearance it closely resembles the average nest of the Black-throated Green Warbler (*Dendrœca virens*). It is, however, of nearly double the size, in fact, larger than any wood Warbler's nest (excepting perhaps that of *D. coronata*) with which I am acquainted. It measures as follows: External diameter, 3 50; external depth, 3.45; internal diameter, 1.60; internal depth 2.00." \*\*\*

The eggs belonging with one of the nests found by Mr. Werner are "of a regular but somewhat rounded-oval form; their ground-color is clear white. Two are thinly and evenly covered with fine but distinct spots of light reddish-brown, while the third is so very faintly marked with the same color that at a little distance it appears nearly immaculate. Their measurements as taken for me by Mr. Werner, are, .75 by .57; .77 by .56; .76 by .58. In size and general appearance they are unlike any Warbler's eggs that I

have ever seen, and most closely resemble faintly spotted examples of those of the Tufted Titmouse."†

107. *DENDRŒCA VIRENS.*

**BLACK-TROATED GREEN WARBLER.**

This Warbler is found throughout the Eastern Province of the United States.

"Several nests of this bird given me by Mr. George O. Welch, of Lynn (Mass.), have been found by him in high trees in thick woods, on the western borders of that city. They are all small, snug, compact structures, built on a base of fine strips of bark, bits of leaves, and stems of plants. The upper rims are a circular intertwining of fine slender twigs, interwoven with a few fine stems of the most delicate grasses. The inner portions of these nests are very softly and warmly bedded with the fine down and silky stems of plants. They have a diameter of three and a quarter inches, and a height of one and a half. The cavity is two inches in diameter, and one and a half in depth.

The eggs measure .70 by .50 of an inch, have a white or purplish-white ground, and are blotched and dotted with markings of reddish and purplish-brown, diffused over the entire egg, but more numerous about the larger end. One end is much more pointed than the other."—BAIRD, BREWER AND RIDGEWAY'S N. A. BIRDS, vol. I, p. 264.

108. *DENDRŒCA TOWNSENDI.*

**TOWNSEND'S WARBLER.** \*\*

109. *DENDRŒCA OCCIDENTALIS.*

**HERMIT WARBLER.** \*\*

110. *DENDRŒCA KIRTLANDI.*

**KIRTLAND'S WARBLER.** \*\*

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† William Brewster, on certain rare birds in Texas: Bull. Nutt. Orn. Club, April, 1879, pp. 77, 78.

## III. DENDRŒCA PINUS.

**PINE-CREEPING WARBLER.**

Habitat, Eastern United States to the Lower Missouri, North to Canada and New Brunswick.

The nest is built in pine trees and is made of a variety of soft vegetable substances, plant-down, &c., usually mixed with fine rootlets, and often with hair or feathers, and set on a foundation of coarse fibrous and weedy material. It measures about three inches across by two deep, and generally presents a pretty firm brim of circularly disposed fibres.

Dr. Brewer describes the eggs as of a rounded oval shape, with an average diameter of .72 of an inch, a breadth of .55. "The ground-color is a bluish-white. Scattered over this are subdued tintings of a fine delicate shade of purple, and upon this are distributed dots and blotches of a dark purplish-brown, mingled with a few lines almost black."

## II2. DENDRŒCA MONTANA.

**BLUE MOUNTAIN WARBLER.** \*\*

## II3. DENDRŒCA PALMARUM.

**RED-POLL WARBLER.**

Habitat, Mississippi Valley (north to Great Slave Lake) and West Indies. Casual in certain Atlantic States. The nest and eggs of this variety are doubtless the same as those of the following species.

## II3a. DENDRŒCA PALMARUM HYPOCHRYSEA.

**YELLOW RED-POLL WARBLER.**

Habitat, Atlantic States.

The nesting site chosen by this bird is said usually to be the edge of a swampy thicket, more or less open, placing it invariably on the ground. The nest is small, compactly and elaborately constructed of an interweaving of various fine materials, chiefly fine dry grasses, slender strips of bark, stems of the smaller plants, hypnum, and other mosses. Within, it is warmly and softly lined with down and feathers.

Their eggs measure about .70 of an inch in length by .55 in breadth. Their ground-color is a yellowish or creamy-white, and the blotches, chiefly about the larger end, are a blending of purple, lilac, and reddish-brown.

#### 114. *DENDRÉCA DISCOLOR.*

### PRAIRIE WARBLER.

In Massachusetts the Prairie Warbler invariably frequents wild pasture-land, often not far from villages, and always open or very thinly wooded.

In Georgia their nests are built in almost every kind of bush or low tree, or on the lower limbs of post-oaks, at the height of from four to seven feet.

They arrive there about the 10th of April. The nest of this warbler is a snug, compact, and elaborately woven structure, having a height and diameter of about two and one-half inches. The cavity is two inches wide and one and one-half deep. The materials are chiefly soft inner bark of small shrubs, mingled with dry rose-leaves, bits of vegetable wood, woody fibres, decayed stems of plants, spiders' webs, etc. It is lined with a few vegetable fibres and a few horse-hairs. The nest is usually built on a low bush.

The eggs are of an oval-shape, pointed at one end, and measure .68 by .48 of an inch. They have a white ground, marked with spots of lilac and purple, and two shades of umber-brown.

#### 115. *SIURUS AURICAPILLUS.*

### GOLDEN-CROWNED THRUSH.

The Golden-Crowned Thrush, or Oven-Bird, arrives in Massachusetts as early as the 1st of May; it is recorded as reaching Western Maine at the same time.

The nests of this bird are always constructed on the ground, placed under the shelter of a projecting root, or a thick clump of bushes. It is generally made with arched or domed roofs, with an entrance on one side, like the mouth of an oven—hence its com-

mon name. The typical nest is of the appearance of two nests united at the rim, and leaving only a small opening at one side. They are usually composed of mosses, lichens, dry leaves and small dry stems of plants. The entrance is a strong frame-work of small twigs and roots, intermingled with mosses firmly interwoven.

The eggs are oval in shape, one end being but slightly smaller than the other. Their ground-color is a beautiful creamy white. They are marked with dots and blotches of a red and reddish-brown, chiefly at the greater end. They are usually four or five in number, and average .82 by .55.

#### 116. SIURUS NÆVIUS.

### SMALL-BILLED WATER THRUSH.

Habitat, Eastern Province of North America, North to the Arctic Ocean. A nest of this Warbler found by Mr. Verril in Western Maine is described by Dr. Brewer as being built in an excavation in the side of a decayed moss-covered log, the excavation forming an arch over the nest in the manner of that of the Golden Crowned Thrush. The nest itself is an exceeding beautiful structure four and a half inches in diameter, but only an inch in depth, being very nearly flat, the cavity only half an inch deep. The entire base was made of loose hypnum mosses, interspersed with a few dead leaves and stems. The whole inner structure or lining was made up of the fruit-stems of the same moss, densely impacted. The outer circumference was made up of mosses and intertwined with small black vegetable roots.

Their eggs vary in length from .81 to .87 of an inch, and in breadth from .65 to .69. They have an oblong-oval shape, tapering to a point at one end and rounded at the other. Their ground is a clear crystal-white, and they are more or less marked with lines, dots, and dashes of varying shades of umber-brown. These markings are more numerous around the larger end, and are much larger and bolder in some than in others, in many being mere points and fine dots and in such cases equally distributed over the whole egg. In others a ring of large confluent blotches is grouped around the larger end, leaving the rest of the egg nearly unmarked.

116a. *SIURUS NÆVIUS NOTABILIS.***GRINNELL'S WATER THRUSH. \*\*\***117. *SIURUS MOTACILLA.***LARGE-BILLED WATER THRUSH.**

"Until very recently we have had little or no reliable information bearing upon the nidification of the Large-billed Water Thrush. \*\*\* The writer had the good fortune to secure two fully identified nests of this species, in Knox County, Indiana, during the past Spring. The first, taken with the female parent, May 6, contained six eggs, which had been incubated a few days. The locality was the edge of a lonely forest-pool in the depths of a cypress swamp, near White River. A large tree had fallen into the shallow water, and the earth adhering to the roots formed a nearly vertical but somewhat irregular wall about six feet in height and ten or twelve in breadth. Near the upper edge of this, in a cavity among the finer roots, was placed the nest, which, but for the situation and the peculiar character of its composition, would have been exceedingly conspicuous. \*\*\* The nest, which is before me, is exceedingly large and bulky, measuring externally 3.50 inches in diameter by 8 inches in length, and 3.50 inches in depth. Its outer wall, a solid mass of soggy dead leaves, plastered tightly together by the mud adhering to their surfaces, rises in the form of a rounded parapet, the outer edge of which was nicely graduated to conform to the edge of the earthy bank in which it was placed. In one corner of this mass, and well back, is the nest proper, a neatly rounded, cup-shaped hollow, measuring 2.50 inches in diameter by 2.50 inches in depth. This inner nest is composed of small twigs and green mosses, with a lining of dry grasses and a few hairs of squirrels or other mammals arranged circularly.

The eggs found in this nest are of a rounded-oval shape and possess a high polish. Their ground-color is white with a fleshy tint. About the greater ends are numerous large, but exceedingly regular blotches of dark umber, with fainter sub-markings of pale lavender, while over the remainder of their surface are thickly

sprinkled dottings of reddish-brown. But slight variations of marking occurs, and that mainly with regard to the relative size of the blotches upon the greater ends. They measure, respectively, .75 by .63, .78 by .64, .75 by .63, .76 by .62, .76 by .62, .75 by .61.— WILLIAM BREWSTER, Bull. Nutt. Orn., Club, July, 1878, pp. 133, 134.

#### 118. *OPORORNIS AGILIS.*

#### CONNECTICUT WARBLER. \*\*

#### 119. *OPORORNIS FORMOSA.*

#### KENTUCKY WARBLER.

This Warbler is an abundant species in the Southern States. It is recorded that Dr. J. P. Kirtland procured its nest and eggs near Cleveland, Ohio. Frank W. Langdon in Bull. Nutt. Orn. Club, October, 1879, makes note of a nest which he found near Madisonville, Hamilton County, Ohio. This he describes as “placed on the ground at the root of a small elm sapling, was concealed by a sparse growth of weeds, and consisted of two distinct portions. The foundation was a saucer-shaped mass of beech and maple leaves loosely interwoven with a few weed stems, and retained its shape sufficiently well to permit careful handling without injury; surmounting this basal portion was the nest proper, a rather bulky and inelegant structure elliptical in shape, composed of dark-brown rootlets and weed stems, with which were interwoven a few dried leaves. There was also a trace of an effort at horse-hair lining, a half dozen hairs perhaps being disposed around its interior.

The eggs, which are four in number (exclusive of the Cowbird’s egg which accompanies them), are oblong-oval in shape, spotted and speckled everywhere with reddish-brown and lilac on a glossy white ground, the markings on two specimens being massed at the larger end, while those on the other two form a distinct “wreath” around the rather blunt apex. They were far advanced in incubation (May 28th), and measure, respectively, .72 by .54, .73 by .56, .75 by .56, .73 by .55.”

## 120. GEOTHLYPIS PHILADELPHIA.

**MOURNING WARBLER.**

Habitat, Eastern Province of the United States. The only nest known of this species was found by Mr. John Burroughs, in the State of New York. This was built in ferns, about a foot from the ground, on the edge of a hemlock wood. It was quite massive, composed of stalks and leaves. The cavity was quite deep, and lined with fine black rootlets. The eggs were three in number, measuring .75 by .55. They "were of a light flesh color, uniformly speckled with fine brown specks."

## 121. GEOTHLYPIS MACGILLIVRAYI.

**MACGILLIVRAY'S WARBLER.**

This Warbler is found throughout the Western and Middle Provinces of United States. It breeds in abundance in Utah, Montana, Idaho, Oregon, Washington Territory, and probably also in Northern California.

They usually build in low underbrush or thickets. The nest is cup-like in shape, about two inches in height, three in diameter, and somewhat loosely constructed of slender strips of bark, decayed stalks of plants, dry grasses, intermixed with a few fine roots, and lined with finer materials of the same. The cavity is one and a half inches in depth, and two in diameter at the rim. The eggs, four in number, are .75 of an inch in length and .50 in breadth. The ground-color is a pinkish-white, marbled and spotted with purple, lilac, reddish-brown and dark-brown, approaching black.

## 122. GEOTHLYPIS TRICHAS.

**MARYLAND YELLOW-THROAT.**

This Warbler is found throughout the whole United States. In Ohio it begins to build about the middle of May. The nest is usually placed on the ground in a bed of old leaves, at the roots of low shrubs, often it is sheltered under a brush-pile. It is some-

times placed in a hollow in the ground. It is a large massive structure for the size of the bird, composed chiefly of dry grasses, leaves, strips of bark and small twigs and decayed vegetable matter. An inner nest is constructed, which is lined with fine grasses carefully interwoven.

I have always found the nests of this Warbler in low swampy places. The eggs are from four to six in number, and vary greatly in size. Eggs from different parts of the United States are quoted as exhibiting "a variation in length of from .55 to .72 of an inch, and in breadth from .48 to .58 of an inch; the smallest being from Georgia, and the largest from Kansas. They have a beautiful clear crystalline-white ground, dotted and blotched around the greater end with purple, reddish-brown and umber.

#### 123. ICTERIA VIRENS.

### YELLOW-BREASTED CHAT.

Common throughout the Eastern United States.

In Ohio it begins to build about the middle of May, constructing its nest within a few feet of the ground, in low bushes, brambles and vines, generally in a thicket. It is a rude and somewhat loosely-woven nest, composed mainly of dry leaves, grasses and twigs. The inner portion is more compactly made of finer dry grasses and small fibrous roots.

The eggs are of a rounded-oval shape, and vary in length from .85 to .95 of an inch, and in breadth from .65 to .70. The ground-color is white, dotted and blotched with reddish-brown, purplish and lilac.

#### 123a. ICTERIA VIRENS LONGICAUDA.

### LONG-TAILED CHAT.

Habitat, the Western Province of United States.

According to Mr. Ridgway, the nesting habits of this species are exactly the same as those of the preceding, but the eggs are larger, varying "in length from .95 to 1.00 of an inch, and have an average breadth of .70 of an inch. Their markings do not differ essentially in shadings from those of the common species."

124. *MYIODIOCTES MITRATUS.***HOODED WARBLER.**

Habitat, whole Eastern Province, rather Southern.

The Hooded Warbler frequents thickets and undergrowth, and like other members of the genus, is very active in capturing insects on the wing in the manner of the true Flycatcher.

The nest is placed in a bush or low tree, within a few feet from the ground. It is composed of leaves, grasses, fine inner bark, moss, and lined with fine grass and horse-hair. The eggs are white, tinged with a flesh-color, spotted with reddish-brown chiefly at the larger end. They measure from .46 by .62 to .50 by .68.

125. *MYIODIOCTES PUSILLUS.***BLACK-CAPPED YELLOW WARBLER.**

Little is known in regard to the breeding habits of this species. It is quoted as breeding from Massachusetts northward. The nest is built in bushes near the ground, and composed of moss and small twigs, lined with vegetable fibres. The eggs are white, sprinkled around the larger end with brownish-red and lilac, and measure from .69 to .63 by from .45 to .49.

125a. *MYIODIOCTES PUSILLUS PILEOLATUS.***PILEOLATED WARBLER.**

Habitat, Pacific Coast of North America.

Mr. B. W. Evermann informs me that he found a nest of this species near San Buenaventura, Cal., May 23, 1881. It was situated "about one foot from the ground in a clump of blackberry bushes. Nest was composed of dead leaves of the blackberry, very loosely put together, lined with fine strips of bark and a few horse-hairs." Mr. Evermann states that the nest contained four eggs.

The eggs are of a dull, whitish color, thickly freckled with rusty brown chiefly at the larger end.

126. *MYIODIOCTES MINUTUS***SMALL-HEADED FLYCATCHER.** \*\*

127. *MYIODIODES CANADENSIS.***CANADIAN FLYCATCHING WARBLER.**

Habitat, whole Eastern Province of the United States, west to Missouri.

"The nest of this species is a rude and bulky structure, which would scarcely be attributed to so delicate a bird. The description is taken from the only one I have seen, collected at Lynn, Massachusetts, by Mr. G. Welch. It is irregular in contour, about four inches in one diameter and nearly six in the other, though less than two inches deep. It is composed chiefly of dried pine-needles, closely laid together, but with these are mixed a number of leaves, chiefly outside and below, some fibrous strips and weed-stalks. The cavity itself is very small, neatly finished, and lined with a quantity of black horse-hair. This nest contained three eggs, white, spotted with reddish-brown and lavender, chiefly at the larger end, where many of the spots are confluent, but also sparingly sprinkled over the whole surface. Size 0.68<sub>o</sub> by 0.52. The nest is placed on the ground."—COUES, BIRDS OF THE NORTHWEST, pp. 80, 81.

128. *SETOPHAGA RUTICILLA.***AMERICAN REDSTART.**

Habitat, chiefly Eastern North America.

The Redstart builds a beautiful little nest usually in the low branch of a tree, eight to ten feet from the ground, and most always in a thick grove. It is made of very soft materials, fine strips of bark, hempen fibres, down of the milk-weed, &c. It is lined with hair and fine stems of grasses.

The eggs of this species are similar to those of the Summer Yellow Bird; but having a grayish-white ground color, instead of a light green, and are blotched and dotted with purple, lilac and brown.

129. *SETOPHAGA PICTA.***PAINTED REDSTART.** \*\*130. *SETOPHAGA MINIATA.***RED-BELLIED REDSTART.** \*\*

131. *CARDELLINA RUBRIFRONS.*

**RED-FACED WARBLER.** \*\*

132. *ERGATICUS RUBER.*

**RED WARBLER.** \*\*

133. *BASILEUTERUS CULICIVORUS.*

**BRASHER'S WARBLER.** \*\*

134. *BASILEUTERUS BELLI.*

**BELL'S WARBLER.** \*\*

**FAMILY Vireonidæ.—Vireos.**

135. *VIREOSYLVIA OLIVACEA.*

**RED-EYED VIREO.** \*\*

This Vireo is found throughout the whole of Eastern North America.

It builds a pensile nest, suspending it from the small forks of a forest tree, at heights ranging from ten to fifty feet. It is cup-shape and very strongly made of fine strips of bark, hempen fibres, pieces of hornets' nests and the webs of spiders and caterpillars. These are all glued together with the saliva of the bird. It is lined with fine grasses and hair. These nests are so durable that they resist the storms of winter, and are often occupied by the same birds a second season.

The eggs four, sometimes five in number have a pure white ground-color sparingly sprinkled with fine dots of dark reddish-brown, chiefly at the larger end. They measure .78 by .60.

136. *VIREOSYLVIA AGILIS FLAVO-VIRIDIS.*

**YELLOW-GREEN VIREO.** \*\*

137. *VIREOSYLVIA CALIDRIS BARBATULA.*

**BLACK-WHISKERED VIREO.**

This Vireo belongs to "Cuba and the Bahamas." "It has

been taken several times at Charlotte Harbor, in Florida and is thus entitled to a place in our fauna.

The eggs of this species are three in number, of a brilliant white delicately tinted with pink, and marked with a few fine red and red-brown spots, usually about the larger end."

### 138. VIREOSYLVIA PHILADELPHICA.

### PHILADELPHIA VIREO. \*\*

### 139 VIREOSYLVIA GILVA.

### WARBLING VIREO.

This Vireo breeds abundantly from Virginia to Nova Scotia, and in all the Northwestern States. It arrives in the Middle States about the 15th of April and in New England early in May. In Ohio it begins to build about the middle of May.

The nest is usually suspended in the fork of twigs at the extremity of a branch, and at the height of from twenty to fifty feet from the ground. I have most frequently found the nest placed in the branches of the Sycamore trees along the banks of streams. They are usually sheltered almost entirely from view by overhanging leaves. The typical nest is a beautiful structure that hangs like a little basket between the small twigs, firmly secured by strips of fine bark woven around the twigs. It is composed of flaxen fibres, stems of plants and vegetable substances. It is lined exclusively with fine grasses.

The eggs are usually five in number and have a beautiful pure white ground-color, sparingly spotted at the larger end with markings of dark-brown. They measure .70 by .56.

### 139a. VIREOSYLVIA GILVA SWAINSONI.

### WESTERN WARBLING VIREO.

The nests of this species are not distinguishable, except in the necessarily varying materials, from those of the Eastern species. The eggs are the same.

## 140. LANIVIREO FLAVIFRONS.

**YELLOW-THROATED VIREO.**

This Vireo is found throughout the Eastern United States.

The nest is a pendant structure, and hemispherical in shape. It may always be readily distinguished from any other nest of this family by the profusion of lichens and mosses with which its outer portion is adorned and covered, giving it the appearance of a large moss-covered knot.

The eggs of this species vary from .95 to .88 of an inch in length, and from .65 to .60 in breadth. Their ground-color is white, often with a very perceptible tint of roseate when fresh. In this respect they differ in a very marked manner from the eggs of any other of this genus, except, perhaps, the *bärbatula*, and may thus always be very easily recognized. They are more or less boldly marked with blotches of a dark roseate-brown, also peculiar to the eggs of this species, though varying greatly in their size and depth of color.

## 141. LANIVIREO SOLITARIUS.

**BLUE-HEADED VIREO.**

Habitat, United States from Atlantic to Pacific.

Seven nests of this species, found in Lynn and Hingham, Mass., exhibit peculiarities of structure substantially identical. In comparison with the nests of other Vireos, they are all loosely constructed, and seem to be not so securely fastened to the twigs, from which they are suspended. One of these nests, typical of the general character, obtained in Lynn, May 27, 1859, by Mr. George O. Welch, was suspended from the branches of a young oak, about twelve feet from the ground. The external depth of this nest was only two and a half inches, the diameter three and a quarter, and its cavity one and three quarters deep, and two inches wide at the rim. It was constructed externally of yellow and of gray birch-bark, intermingled with bits of wool and dry grasses. The external portion was quite loosely put together, but was lined, in a more compact manner, with dry leaves of the white pine, arranged in layers.

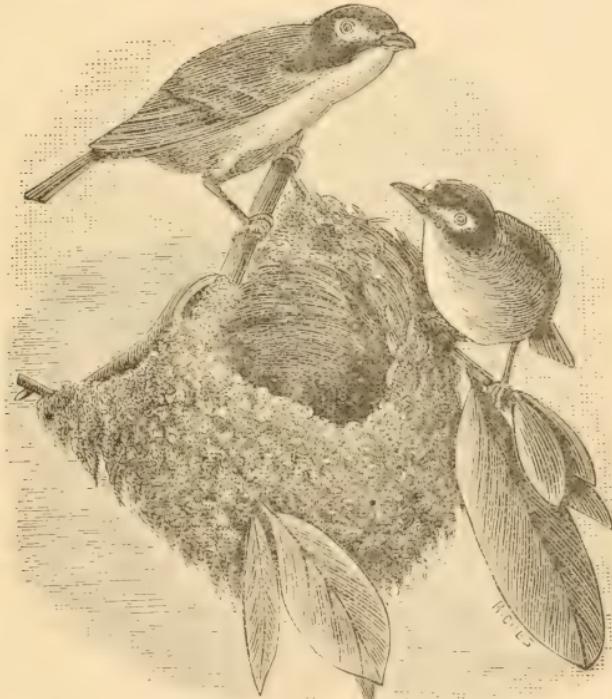
The eggs are of an oblong-oval shape, moderately pointed at one end, and of a white ground, less crystalline than in the other species. They are spotted pretty uniformly over the entire egg with dots of dark red and reddish-brown. They are usually five in number.

141a. *LANIVIREO SOLITARIUS CASSINI.*

**CASSIN'S VIREO. \*\***

141b. *LANIVIREO SOLITARIUS PLUMBEUS.*

**PLUMBEOUS VIREO. \*\***



Black-capped Vireo, male, female and nest.†

†Reproduced from a colored engraving by W. H. Werner, in Bull. Nutt. Orn. Club, Oct., 1879, and noted by Mr. Brewster in his interesting article on this species.

## 142. VIREO ATRICAPILLUS.

**BLACK-CAPPED VIREO.**

So far as known, all the specimens of this rare bird that have been taken are from Mexico and Texas. The first authentic nest and eggs of the Black-capped Vireo was collected in Comal County, Texas, in May, 1878, by Mr. W. H. Werner, of South Bethlehem, Penn. In a communication to Mr. William Brewster, giving an account of their nesting habits, he states that he always found them in mountainous districts. "They frequented low brushwood, and built their nests from three to four feet above the ground." Mr. Brewster in writing of a nest which was built "in a red oak" collected on the 6th of May, by Mr. Werner, describes it as follows: † "It is suspended in the fork of two very slender twigs, and is in every way after the usual type of Vireonine architecture. In a few points of detail, however, it differs slightly from any Vireo's nest that I have seen. Although, generally speaking, of the ordinary cup shaped form, the walls are usually thick and firmly felted, and the entrance being very much contracted, the bulging sides arch over the mouth of the nest, giving to the whole a nearly spherical shape. This peculiarity may be of an individual nature, though it is conspicuously shown in the specimen represented by Mr. Werner's drawing. \*\*\* The measurements of my nest are as follows: Greatest external diameter, 2.90; external depth, 2.25; internal diameter at the mouth, 1.30 by 1.68; internal depth, 1.40; greatest thickness of walls, .63." \*\*\* This nest, Mr. Brewster adds, "is made up of fine strips of reddish bark, probably from some species of cedar, layers of small, delicate, bleached leaves of a former year's growth, a few coarse grasses, one or two catkins, and several spiders' cocoons. These are firmly bound together, and the whole attached to the forked twigs above by fine shreds of vegetable fibre, caterpillars' or spiders' silk, and sheep's wool. The lining is of fine grasses and what appear to be the slender needles of some coniferous tree, the whole being arranged with that wonderful smoothness and care which belongs to the highest order of nest-builders alone. Mr. Werner's nest, to judge from the sketch

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†In Bull. Nutt. Orn. Club, April, 1879, pp. 99-103.

already mentioned, is almost identical with mine. He describes it as "pendant, similar to that of *Vireo belli*, perhaps rather more bulky. The outside is composed of dried leaves and grass, interwoven with spiders' webs and lined with fine grass and rootlets. The greatest diameter is 3 inches; inside diameter, 1.75 inch; depth, 1.80 inch; thickness of walls from .45 to .60 of an inch." The eggs found in my nest measure respectively .68 by .53; .66 by 53; .67 by .52; .68 by .55. They are regularly ovoid in shape, and of a uniform pure, though rather dull, white, *without spots or marking of any kind*. In this last respect all the specimens obtained during the past season in Cormal County, Texas, agree."

#### 143. VIREO NOVEBORACENSIS.

#### WHITE-EYED VIREO.

The White-eyed Vireo is one of the most common of its genus in all parts of the United States east of the Rocky Mountains.

The nest is usually a cup shaped structure swaying from a forked twig, and is rather large for the size of the bird. It is seldom placed more than three or four feet from the ground. It is composed of a mass of odd and miscellaneous materials, such as straws, bits of decayed wood, blades of grass, mosses, lichens, and various vegetable substances.

The eggs are usually five in number. Their greatest breadth is .65 of an inch, and their length .80. They have a clear crystal-white ground, spotted about the larger end with fine dark-purple and reddish-brown.

Low swampy places near the edges of woods covered with briars, or the tangled thickets of blackberry and wild vines are the favorite nesting places of this bird.

#### 144. VIREO HUTTONI.

#### HUTTON'S VIREO.

This species is found in various parts of California, and in the northern and eastern portions of Mexico.

"Hutton's Vireo (*Vireo huttoni*) breeds in the vicinity of Santa Cruz, though not in abundance. Retiring in habits, their nests

and eggs are rarely found. April 7, 1874, I found a nest placed ten feet from the ground, suspended from a dead branch of a *Negundo*, containing three eggs incubated about five days. March 30, 1875, I found another nest placed eight feet from the ground, suspended from the small twigs of a *Frangula*. \*\*\* The nest—a neat, compact structure, composed of fine vegetable fibres, bits of paper, and grasses covered on the outside with green and gray mosses, lined with fine grasses—measures 3.25 inches in diameter outside, 1.75 inside; depth 2.25 outside, 1.50 inside.

The eggs, four in number, are white (a delicate blush-color before blown), marked with minute dots of reddish-brown, more numerous toward the larger end. They measure respectively, .70 by .52, .70 by .51, .69 by .51.68 by .52. Two other nests were found, each containing four eggs. They were placed one in a *Negundo*, thirty feet high, the other at the extremity of an oak limb, twenty-five feet from the ground.”—WILLIAM A. COOPER, Bull. Nutt. Orn. Club, April, 1878, p. 68.

#### 145. VIREO BELLI.

### BELL'S VIREO

Bell's Vireo is found in the United States, from the Missouri River to the base of the Rocky Mountains.

“This species was first procured by Mr. Audubon’s party in the excursion to the Yellow-Stone River, in what is now known as Dakota Territory.”

A nest from West Texas, obtained by Captain Pope, is described as follows: “It is three inches in diameter, and but one inch and three quarters high. The opening is circular, but only one and a-half inches in width. The outer nest is made up of an interweaving of fine strips of bark and dry leaves, intermingled with and firmly bound around by strong flax-like fibres of different plants. Within it is lined with fine flexible grasses and stems of plants. The eggs of this species are from .73 to .76 of an inch in length, and from .52 to .56 in breadth. They are pure white, sparingly spotted with fine red dots distributed around the larger end.

**146. VIREO PUSILLUS.****LEAST VIREO.**

This bird occurs in Arizona, chiefly its lower portion, and California, from Sacramento to Cape St. Lucas. The habits of this Vireo, as far as known, correspond closely with those of Bell's and the White-eyed Vireo.

Nests from Arizona are described as substantially like those of the former species. The eggs measure about .69 by .56, and are of crystalline whiteness, speckled with red and reddish-brown—the markings being very minute and scarcely discernible in some cases, in others larger and more distinct.

**147. VIREO VICINIOR.****GRAY VIREO. \*\*****FAMILY Laniidæ.—Shrikes.****148. LANIUS BOREALIS.****GREAT NORTHERN SHRIKE.**

In the breeding season this species is found throughout the whole of North America north of the United States. The nest is built in trees, and except the base of twigs and stalks, is composed of soft mosses, stems and grasses, thoroughly felted together, and lined abundantly with down and feathers. "The egg measures 1.10 by .80 and is of a light greenish-ground, marbled and streaked with blotches of obscure purple, clay-color, and rufus-brown.

**149. LANIUS LUDOVICIANUS.****LOGGERHEAD SHRIKE.**

Habitat, South Atlantic and Gulf States; North to Mississippi and Ohio Valley.

This Shrike begins nesting in Ohio about the middle of May. A typical nest before me is a large massive structure made of twigs, roots and stems of plants; an inner nest is made of fine grasses, lined with feathers and a few horse-hairs. It measures six inches

in diameter by four in height; cavity three in width by two and one-half inches in depth. Six eggs in this nest have an average of 105 by .76.

Their ground color is a yellowish-white, blotched with obscure purple, light brown and a purplish-gray; more or less confluent.

This bird builds its nest usually in small thorn trees, hedges or in tangled briars, about six to eight feet from the ground.

149a. *LANIUS LUDOVICIANUS EXCUBITORIDES.*

**WHITE-RUMPED SHRIKE.**

Habitat, Middle Province of North America to the Saskatchewan, East, through Kansas, Iowa, Ohio, Illinois, Wisconsin—California.

Mr. B. W. Evermann informs me that he found a nest of this species near Santa Paula, Cal., March 7, 1881. He states that they usually build in alders, live oak and orange trees, from five to fifteen feet from the ground. Nests very bulky.

Eggs in my collection, strongly resemble those of the Loggerhead. In fact, there is no perceptible difference.

149b. *LANIUS LUDOVICIANUS ROBUSTUS.*

**LARGE-BILLED SHRIKE.** \*\*

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**FAMILY Ampelidæ.—Waxwings.**

150. *AMPELIS GARRULUS.*

**NORTHERN WAX-WING; BOHEMIAN WAX-WING.**

Habitat, Northern parts of Europe, America and Asia. In America, in winter regularly to the Northern States. This bird is known everywhere as a wanderer, and only in a few instances have its breeding places been discovered. The nest and eggs were first discovered by Mr. John Wolley in Lapland. In this country its nest has been found by Mr. Kennicott on the Yukon, and by Mr. McFarlane on the Anderson River. Dr. Coues says that "the bird undoubtedly nests in the United States," he having found

young birds in the month of August in the Rocky Mountains, he further adds that "in general terms it may be asserted that the nest and eggs of the Bohemian only differ materially from those of the Carolina Wax-wing in size, and that the two birds have substantially the same breeding habits." The eggs obtained by Mr. Wolley measure an inch in length and from .70 to .67 in breadth.

Dr. Brewer states that "the egg obtained by Mr. Kennicott on the Yukon is smaller than the European specimen, measuring .90 by .65 of an inch.

Its ground is more of a greenish-slate or stone color and the spots are of a dark brown, with a deep violet shading "

#### 151 AMPELIS CEDRORUM.

#### CEDAR WAX-WING.

The Cedar Bird or Cherry Bird is found throughout North America, and breeds from Florida to the Red River country. The nest is built on the horizontal branch of a tree at distances varying from four to eighteen feet from the ground. The favorite position is the branch of an apple-tree. It is large and bulky, four to six inches in external diameter, rather firmly and compactly built, and is composed of stems, twigs, rootlets and dry leaves. The eggs are usually five, their ground-color varies from light slate to a deep shade of stone-color tinged with olive. The markings are blotches and spots of a dark brown and purple, almost black. They measure .85 by .65

#### FAMILY Hirundinidæ.—Swallows.

##### 152. PROGNE SUBIS.

#### PURPLE MARTIN.

Common throughout the whole of North America. The Martin is an inhabitant of towns and cities where they find suitable nesting places in the eaves and cornice of buildings, or in boxes prepared for their use. They also build in the deserted excavations of Wood-peckers, in cavities of dead limbs of the sycamore and walnut trees.

The nest is loosely constructed of leaves, straws, twigs, bits of string, rags and paper. The eggs, four or five and sometimes six in number are of an oblong-oval shape, are pointed at one end and pure white. They average .97 by .68.

152a. PROGNE SUBIS CRYPTOLEUCA.

**CUBAN MARTIN.** \*\*

153. PETROCHELIDON LUNIFRONS.

**CLIFF SWALLOW.**

Habitat, North America at large.

They are often found in colonies during the breeding season and build their nests on the outside of buildings, and under eaves. In uninhabited regions the nests are placed against a vertical or over-hanging rock.

The nests of the Eave Swallow are composed entirely of mud, tempered by the bill of the bird, and deposited in its position as a little pillet. They are retort-shaped, the nest proper being almost closed in between the top of the wall and the projecting eave or cornice, and the opening built out for several inches to form the neck of the flask or retort. The cavity is large, and well lined with bits of straw, feathers and wool. The eggs are white, marked with dots, blotches and points of reddish-brown, chiefly about the greater end. They are less elongated than those of the Barn Swallow, and in seventy five specimens of each before me, the markings of the two are hardly distinguishable. In length they vary from .75 to .87, and their average breadth is .60."

154. HIRUNDO ERYTHROGASTRA.

**BARN SWALLOW.**

Common throughout the whole of North America.

This swallow, as its name implies, builds its nests in the interior of a barn, under the roof, attached to the beams and rafters.

They also breed in caves, crevices of rocks and under the sides of wooden bridges. The nest is composed of mud, small sticks, twigs and straws, lined with fine grasses, and feathers.

The eggs are from four to six in number. They are more elongated than those of the Cliff Swallow, are white, marked with spots and blotches of bright reddish-brown, chiefly at the larger end. They average .78 by .56.

155. *TACHYCYNETA BICOLOR.*

**WHITE-BELLIED SWALLOW.**

Common throughout the whole United States. In Ohio the White-bellied Swallows nest in the old excavations of woodpeckers, or natural cavities of dead trees, always in the vicinity of water. During their migrations these birds are seldom seen far from running streams. They arrive early in April. The nest is made of leaves and grass thickly lined with feathers.

The number of eggs is from four to seven and occasionally nine. They vary in length from .75 to .85, and in breadth from .50 to .56.

156. *TACHYCYNETA THALASSINA.*

**VIOLET-GREEN SWALLOW.**

The Violet-green Swallow is a common bird from the central plains of North America to the Pacific coast. Breeds abundantly in California, arriving as early as the middle of March. It is also found abundant in Oregon and Washington Territory. Nests in the knot-holes of oak and other deciduous trees, or in deserted woodpeckers' excavations. The nest is formed of a few dry grasses, covered over with a thick mass of feathers. The eggs are pure white, large for the size of the bird, measuring .80 by .50.

157. *COTILE RIPARIA.*

**BANK SWALLOW.**

The Bank Swallow or Sand-Martin is a common species throughout the whole of North America. The holes in which this bird nests are usually dug quite near the level of the ground in the perpendicular face of a bank. They are excavated by the birds, and extend to the depth of from two to four feet. The termination of the excavation is usually somewhat enlarged and the bottom

thinly covered with small twigs, grasses and a few feathers. The eggs are white, from four to six in number, oval in shape, and average .72 by .47,

158. *STELGIDOPTERYX SERIIPENNIS.*

**ROUGH-WINGED SWALLOW.**

This Swallow is found throughout the whole United States. They construct their nests in the crevices between the stones in the walls and arches of bridges, and almost invariably directly over running water, in some instances a little above the surface of the stream. I have found their nests in a clay bank six feet from the edge of the water.

Their nests are often found in the crevices in the rocks of stone-quarries. They are composed of dry grasses, straws and leaves, lined with a few feathers. They are similar to those of the Bank Swallow. The eggs, five or six in number, are pure white and average .75 by .53.

**FAMILY Cærebidae.—Creepers.**

159. *CERTHOIOLA BAHAMENSIS.*

**BAHAMAN HONEY CREEPER.**

This species belong properly to the Bahaman group of the West Indian Islands. It was found at Indian Key, Florida, in January, 1858, where it appeared to be not at all rare.

The nests are described as usually built in low trees and bushes; they are composed of silk-cotton, and dry grasses. Some of these nests are made in the form of a globe, with a small opening below the side. The walls are very thick. The eggs are described as of a "greenish-white, thickly but indefinitely dashed with reddish at the larger end."

**FAMILY Tanagridæ.—Tanagers.**

160. *EUPHONIA ELEGANTISSIMA.*

**BLUE-HEADED EUPHONIA. \*\***

## 161. PYRANGA RUBRA.

**SCARLET TANAGER.**

This Tanager is distributed over a wide extent of territory, from Texas to Maine, and from South Carolina to the northern shores of Lake Huron, in all of which localities it breeds.

The Scarlet Tanager, one of the most brilliant and striking of all our birds is a common summer resident in Ohio, arriving the last week in April and remaining until the latter part of September.

They begin to build about the last of May or early in June. The nest is placed on the horizontal branch of a forest tree, from ten to twenty feet from the ground. They are usually very nearly flat, measuring from four and one-half to five and one-half inches in diameter, and about two in height, with a depression of only about half an inch. They are loosely constructed of twigs, stems, fine strips of bark and lined with fine rootlets, and fine inner bark. The eggs are from two to five, of a greenish blue; blotched and spotted with a reddish or rufus-brown more or less confluent, in some chiefly at the greater end. They vary in length from an inch to .90, and have an average breadth of .65.

Mrs. N. E. Jones in the superb work on "The Nests and Eggs of the Birds of Ohio" gives us an exquisite colored illustration of the nest and eggs of this species.

Dr. Howard Jones in the text of the same work states that he has "never found over three in a set, and this seems to be the common number; but there is good authority for the statement that as many as five are sometimes laid."

## 162. PYRANGA LUDOVICIANA.

**WESTERN TANAGER.**

This Tanager is found throughout the western portions of United States, from the Great Plains to the Pacific. The nest is almost identical with that of the preceding species.

Mr. B. W. Evermann informs me that he found a nest of this species June 26, 1880, in the Yosemite Valley. This nest was placed about fifteen feet from the ground, upon the horizontal

branch of a sugar-pine, next to the body of the tree. It contained four young, perhaps a week old. The eggs, three or four in number, measure .95 by .65. They are of a rounded-oval form. Their ground-color is a light bluish-green, speckled, chiefly at the greater end with markings of umber, intermingled with a few dots of lilac.

163. PYRANGA HEPATICA.

**HEPATIC TANAGER.**

Captain Bendire found what he identified as this species breeding near Tucson, Arizona. Its nests and eggs are said to resemble those of the Summer Redbird. The eggs vary in length from 1.02 to .65, and in breadth from .70 to .67. Their ground-color is a pale light green; some sparingly marked over the entire egg with conspicuous blotches of purplish-brown, others are thickly covered with fine dottings of the same hue.

164. PYRANGA ÆSTIVA.

**SUMMER REDBIRD.**

The Summer Redbird is found chiefly in the Southern States. Dr. Howard E. Jones informs me that it is not rare at Circleville, Ohio, twenty miles South of Columbus.

The nest is placed on the horizontal or drooping branch, near its extremity, the tree being generally an oak, sometimes a hickory and situated at the edge of a grove or near the roadside. It is constructed of various vegetable substances; fine, slender, dry grasses, catkins, stems and leaves. It is described as often being so thin that the eggs may be seen from below.

The eggs, usually three, vary in size and shape, from an oblong to a rounded oval. Their length is from .80 to an inch and they average about .68 in breadth. Their color is a bright light shade of emerald-green, spotted, marbled, dotted, and blotched with various shades of lilac, brownish-purple, and dark brown.

164a. PYRANGA ÆSTIVA COOPERI.

**COOPER'S TANAGER.** \*\*



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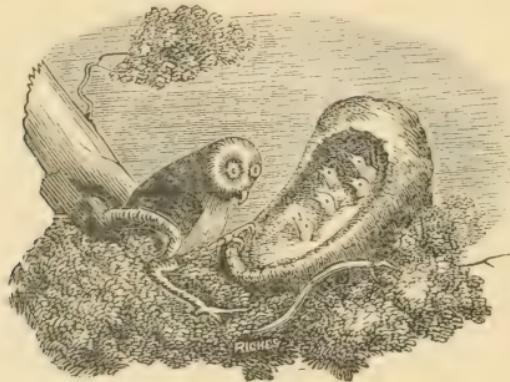
DIRECTIONS  
For Collecting and Preserving  
*BIRDS' EGGS.*

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**T**HE number and variety of the eggs of birds are curious subjects of contemplation, and should be carefully noted whenever opportunity offers. They are as essential to the personal history of the species as any other part of our inquiries. Collectors should be impressed with the fact that eggs are *worthless* for scientific purposes if doubt is attached to their *identification*. The *greatest care* therefore should *always* be taken to identify the parents of nests and eggs secured. It is not always sufficient to detect a supposed parent near the nest, for there is much liability to mistake where different kinds of birds are breeding together, particularly if they be nearly related species, or those species whose nest, eggs and breeding habits are similar. To the experienced

ornithologist, a bird actually seen on the nest or fluttering away from it is the only sure indication of the parentage. But if the collector has had little experience in studying birds the parent should be snared or shot to put identification beyond doubt, for a bird's life should count as nothing against the verification of a rare nest or the establishment of a new fact.

The preceding pages of the present volume will give the young collector an idea where he must look for the nests and eggs of the species therein enumerated, but as they are more difficult to procure than birds it is often only through careful and patient observation that they are at all discovered. They are found situated in all manner of places; in cliffs, marshes, tree-tops, low shrubs, clay banks, hollow stumps, thick grass and rushes. The Wood Duck builds its nest in hollow trees, while other closely related species build nests on the ground in swampy places among the rushes. Gulls and Terns usually nest on the ground. The Cowbird never constructs a nest, but deposits its egg in the nests of other birds smaller than itself—their eggs are found in the nests of Warblers, Vireos and Sparrows. Larks, Grouse, Quail, Snipe, Woodcock and Waders construct their nests on the ground.



Owls at Home.

Owls are found nesting in hollow stumps or trunks of trees, in nooks of buildings, in the crevices of rocks, sometimes in burrows

in bluffs, and often an old Hawk's or Crow's nest is occupied. The Short-eared Owl usually nests on the ground.

Hawks usually build their nests of coarse sticks and twigs, placing them in high trees. The nest of the Sparrow Hawk is placed in the cavity of a high tree, while that of the Marsh Hawk is usually placed on the ground. Hawks and Owls breed as early as February and March.

All the nests of the Carolina Dove which I have found on the ground in Central Ohio, where the soil is clayey and cold, the eggs were often addled, and this applies to other partially ground-nesting birds, such as the Brown Thrasher.



Ruby-throated Hummingbirds and Nest.

I have observed that in Ohio the Ruby-throated Hummingbird prefers nesting in the branches of the buckeye to all other trees. The birds are especially abundant about this tree when it is in full blossom, early in May. In other localities they are found nesting on the horizontal limb of a forest tree, or in an orchard. Careful and patient observation of the birds themselves during the breeding season gives the best clue to the situation of nests, many of which are hidden with the utmost display of the instinct of self-preservation.

Eggs, as a rule, should be kept in sets; a "set" being those taken from any one nest; and each one of a set should bear a number referring to a corresponding one in a note-book where full par-

ticulars of the nest and eggs should be given. A printed label similar to the following diagram is also necessary:

No. .... Name. ....  
Collected by .....  
Locality .....  
Date. ....  
Set. .... Identity. .... Incubation ..  
Nest. ....

For illustration, the blank lines of the label should be filled in the following manner: No., 126. Name, Arkansas Flycatcher. Collected by J. L. Clemons. Locality, San Diego, California Date, June 2, 1881. Set,  $\frac{1}{4}$  (indicating that the number of eggs in this set is four). Identity, bird seen on nest Incubation, begun. Nest made of coarse sticks and twigs, lined with hair and cotton, placed in an "Australian Gum Tree," twenty feet from the ground.

All these data should be carefully written, and the label placed in the cabinet with the eggs. If there are several sets of the same species, the collector should have his own number to distinguish the sets.

The label with full data should *always* accompany the set in making exchanges. Besides the above particulars the note-book should be filled with memoranda devoted to the record of nests found and examined; the general nature of the surroundings; the precise color and condition of the eggs when found, as all these fade quickly from the memory.

Few persons make extensive collections of nests; many birds make no nests, others only such structures as cannot well be preserved; those that can be collected require a wrapping of thread for their safe keeping. Nests and nesting-places, are therefore, as a rule, described and recorded in a note-book and not kept for study.

For preservation, eggs must of course be emptied of their contents. This is done by drilling a *single* hole in the side with a steel drill made for the purpose. Drills of several sizes must be used for different kinds of eggs. Having carefully drilled the hole, apply a blow-pipe to the lips, force the contents out by blowing into the *one* hole, holding the egg meanwhile over a basin of water. After the egg is blown it should be thoroughly rinsed by taking water into the mouth and spiring it through the blow-pipe. A few trials will show the operator how delicately eggs must be handled to prevent breakage. Accidents occur more frequently from blowing too hard and bursting the egg than by breaking it under the pressure of the fingers in drilling or subsequent handling.



Instrument for holding Eggs while Drilling and Blowing.

I can recommend the above simply constructed instrument for holding eggs while preparing them for the cabinet.

It costs but a trifle, and is easily made. The oval rings do not touch the egg as they are covered with a light gauze like mosquito netting which holds the egg lightly but securely.

I have used this instrument for several years and have found it to be much better than the fingers for holding eggs while drilling and blowing.

*Never* make holes at the *end* of the egg, or on opposite sides. This is an *old* method and should be dropped at once.

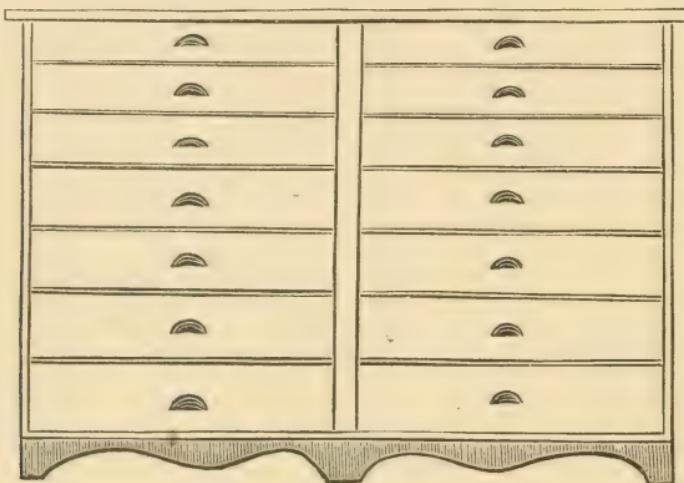
Eggs with *one* hole *smoothly drilled* in the *side* present a neater appearance in the cabinet and without they are exceedingly rare are the only kind sought by experienced collectors in making an exchange.

In every case the hole should be as small as can be got along with; a fresh Robin's egg for example, may be emptied and rinsed through a hole scarcely admitting the head of a common pin,

There is, however, difficulty in extracting the contents of an egg that has an embryo partially developed. The shell grows more fragile as incubation advances and the membrane which lines the shell grows thicker and tougher.

The hole must necessarily be made larger and the embryo should be extracted a little at a time with an embryo hook or forceps and cut in pieces with a fine narrow-bladed scissors. The lining membrane should be extracted if possible in the same manner.

Ragged holes in eggs can be improved by pasting gold-beater's skin over them.



Egg Cabinet.

The above is a front view of an egg cabinet which is capable of holding a very extensive collection of both nests and eggs.

The dimensions of the original, of which this is a drawing, is three feet in height, four feet in width, and two feet deep. The drawers are in two rows, have graded depths, from an inch and a half to three inches and a half; and are arranged from the deepest at the bottom to the shallowest at the top. The drawers of a cabinet of this kind should fit tightly to exclude dust, and each drawer should be made with a projected edge. The interior of the drawers should be divided into compartments for each set of eggs; these compart-

ments should be partially filled with fine grated cork, or box-wood sawdust. In this the eggs should be placed in sets, and each drawer should bear a label indicating its contents.

As many valuable eggs are liable to be broken by collectors not knowing how to pack them properly for shipment, a few suggestions on this point will not be out of place here.

When eggs are to be shipped by mail or express they should never be packed in anything but wooden or tin boxes. Each egg should be wrapped in cotton and bound lightly with thread and then wrapped in tissue paper. Place them in layers in the box with bits of cotton between each egg. The bottom, sides and end of the box is often lined with sheet cotton which is still better protection. If these brief directions are followed, eggs can be sent to any distance without danger of breakage.



## TAXIDERMY.

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# Preparing Bird Skins FOR THE CABINET.

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In preparing specimens for scientific purposes it is not worth while to make a collection of mounted birds, although they may be very desirable for ornamental purposes. To the student of ornithology it takes too much time which may more profitably be devoted to field work, and again, mounted birds take up too much room and are not so easily handled and examined as skins.

*Cabinets:*—In all ordinary cases collections of skins are preserved in the drawers of a cabinet—this in shape resembling a bureau or similar to the illustration of the egg cabinet on page 90 is very convenient both for the storage and transportation of specimens. The drawers should fit tightly to exclude dust and insects; and the case should also be made with folding doors. The dimensions of a convenient cabinet is about four feet in height, three feet wide and two feet deep, having drawers of graded depths, from the deepest at the

bottom to the shallowest at the top, for the reception of the different sizes. In these drawers where the specimens are kept, camphor, or insect powder should be freely used. I have found by experience that benzine is the *most effective* insecticide; the cotton in which the specimens are laid should be thoroughly saturated with it once or twice a year.

Each drawer of the cabinet should bear a label indicating its contents. The expense of such a cabinet would be of course according to the elegance of its material and finish.

*Choice of Guns, Ammunition &c:*—A few hints with regard to the choice of guns will not be out of place here. Birds may be trapped or snared but they are almost always shot. The choice of a gun must depend largely upon the collector's means if not also upon his individual preference.

The modern double-barreled breech loader is without doubt the best arm for general purposes; many collectors however use cane-guns, "blow-guns" or a kind of pistol now extensively manufactured to which a skeleton stock is fitted if desired.

Whatever weapon is selected let it be a breech-loader in which metallic or paper cartridges can be used.

Most of the collector's shooting is to be done with the finest shot that can be obtained, in order to injure specimens as little as possible. But as the collector will secure large as well as small birds, he should provide himself with an assortment of cartridges loaded with shot of different sizes. Three fourths of the cartridges should contain small charges of mustard seed shot and the remainder may be loaded with No. 8 and No. 4.

The kind of charge may be indicated by marking the shot-wads with a figure showing the No. of shot contained in the shell.

The collector should at all times be careful to have his cartridges well made, and to be always sure to know exactly what kind of a load is in each of them. While passing through thick bushes always carry the gun under the arm, as this prevents its accidental discharge by the bushes catching the trigger or hammer.

As birds inhabit all kinds of places, it is impossible to tell the collector where he must go to find them, unless he be in search of

particular species—the haunts of these can only be known to him by the ripening of his general experience in field work. Such things must be learned in actual practice. One intending to make a general collection of the birds of any particular vicinity will do well to cover the whole ground, ransacking every locality. Birds as a rule are found in low well watered and wooded places. Early morning and late evening hours are the best for collecting. Each specimen as soon as procured should be carefully cleansed and smoothed; the mouth and vent should be plugged with cotton. The specimen should then be thrust head first into a stiff paper cone, in order to keep the plumage from injury. I would recommend a fish-basket or wooden box to carry the result of the day's shooting.

*Measuring Specimens:*—Before skinning, each specimen should be measured as to the total length and spread of the wings, as these dimensions cannot be accurately taken after it is prepared for the cabinet. The "length" is the distance in a strait line from the tip of the bill to the end of the tail. The "expanse of wing" is the distance between the ends of the longest primaries when the wings are fully spread apart.

A third measurement may also be taken before the specimen is skinned; that is, the "length of wing," which means the distance from the "bend of the wing" (from the carpal or wrist joint, sometimes improperly called the shoulder) to the end of the longest primary. Other measurements, usually taken either from the fresh or dry specimen, are those of the tail, bill, tarsus and middle toe with its claw. The tail should be measured from the insertion of the feathers in the coccyx to the end of the longest feather. Bills and feet cannot usually be accurately measured without the compass. Besides measuring, it is always well to note the color of the eyes bill, feet naked patches of skin, or any soft parts liable to fade or change in any way in drying. All these memoranda should be entered in a note book, and also inscribed on the label of the specimen, together with the date of capture, the sex (ascertained by dissection), the locality where procured, the collector's name, and any further notes or observations that would be of interest.

*Instruments and Materials:*—The instruments needed in preserving birds are comparatively very few; although a great many more than I here suggest can be added. They are as follows: One pair of flat-nosed pliers; a pair of cutting pliers; a pair of tweezers; a scalpel; a flat file; needles and thread; and a stiff brush. The materials are: *annealed* wire of different sizes; cotton, tow, hemp and fine grass; fine soft thread from the cotton-factories is also needed. This is wound on what are called “bobbins;” it is used in the manufacture of cloth, and is the best article for winding a freshly-mounted bird. When this cannot be had the best substitute is shoemaker’s hemp thread.

*Arsenical Solution:*—Common dry arsenic or arsenical soap are the two articles almost universally used for preserving skins. It is a well known fact that arsenic in the form of a powder is very injurious to the health. Furthermore, the common dry powdered arsenic that is usually sold at the apothecary shops is of such an inferior quality—rendered so by adulteration—that its effects as a preservative is of little consequence, and dry arsenic, no matter how pure, has not the penetrating powers as something of a similar nature in a liquid form. I therefore introduce a new Arsenical Solution which is the most powerful and effectual preservative known to science. It can be applied to the skin of both birds and mammals in various ways with the most gratifying results, which will be given hereafter in detail, and while the principal ingredient of this Solution is pure crystallized arsenic it is not injurious to the health, as is the dry pulverized arsenic, which is poisonous from its being inhaled while dusting it on skins. It is made as follows: Take one pound of Crystallized Arsenic and one-half pound of Bicarbonate of Soda, add to this five pints of water; boil the whole down to *three pints* over a slow fire—stirring frequently to prevent the arsenic and soda settling to the bottom. It is a good idea to first break the large pieces of arsenic in order that they may quickly dissolve. When cold it is ready for use. By mixing a quantity of Spanish Whiting with a small amount of the liquid until it forms a very thin paste, it is now ready to be applied to skins by the use of a brush. This makes a most substantial

coating for skins of all kinds. I have opened and examined the skins of several birds that had been mounted for fifteen years. They were such birds as the Ring-necked Duck, Pin-tail, and Herring Gull; the Barred and Horned Owls. In every instance where there was a thick coating of this paste it appeared in a crystallized form resembling marble. The skins of the seabirds presented a fresh and well-preserved appearance, while the feathers were fairly saturated with the poisonous solution, rendering them entirely free from the attack of insects. \*

*Skinning Birds:*—A collector is not always supposed to be proficient in the higher branches of taxidermy, and any one can readily learn to make a fairly good skin, answering all scientific purposes; but he should at *all times* strive to make a skin that can be properly mounted, if so desired. With this object in view, I shall endeavor to make my directions as clear as possible, pointing out exceptions as the work of skinning proceeds.

In removing the skin from the bird, the body, if fat or bloody, should be dusted with corn meal, as this prevents the plumage from being soiled. The first advice usually given is, to make an incision along the middle line of the abdomen, from the end of the breast-bone to the vent. This is not altogether correct. Don't be afraid of opening a bird too high up on the breast.

In the greater portions of skins the cut is too short for ready manipulation of the bird in consequence of its being mounted from the dry skin, and it is necessary to prolong the cut. The skin on the edge of the old cut will be shrunken and thickened, and a stitch taken in it holds and does not tear out, but in the new cut the edges are thin and weak and a thread pulls easily through, thereby causing great annoyance to the individual who is at work on the dry skin. After the incision is made the skin should be carefully raised on each side as far as the legs. These are to be cut away from the body at the knee joint, inside the skin, and afterwards skinned down as far as the tarsus, scraping the flesh from the shin-bone, but leaving that bone in place.

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\*The method of rendering feathers insect proof by the application of this Arsenical Solution is given farther on in its proper place.

In long-legged birds of prey and waders, the tendon back of the leg should be taken out so that the leg can be wired easily if the bird should ever be mounted. It is also a great aid in keeping the scutellæ of the tarsus intact.

This can be done by making an incision back of the heel—that is, the tibio-tarsal joint, and another incision in the fleshy part of the foot. Now sever the tendon at the heel, place an awl under it and pull it down and out. The part contained in the tibial portion can be removed from above while the leg is being skinned. Next, skin around the coccyx or tail-bone cutting off and severing the tail from the body inside the skin.

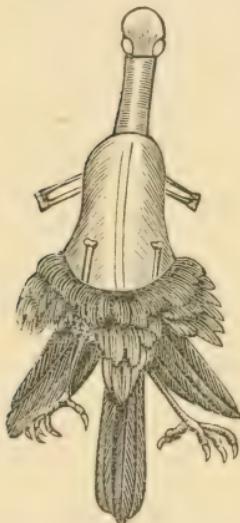
The bird may now be hung head downward, by a hook inserted in the exposed stump of the rump; and with a little care the skin may be gradually stripped off as far as the wings. The wings are to be severed from the body, inside the skin, at the shoulder joint. At this stage the wings themselves are to be separately skinned; detaching the secondaries from the ulna; *scraping* the bones thoroughly and removing the humerus or single bone of the wing entirely. This method of skinning the wing is only applied to small birds. *Always leave in all* but the head of the humerus in good-sized birds. *Never* detach the secondaries from the ulna in birds the size of Cooper's Hawk and upwards for in order to do good work on a large bird if it should ever be mounted, the secondaries *must be attached* to the bone. Especially is this the case where the bird is to have the wings spread. When the secondaries are detached *it is impossible* to give them the even spacing and regular spread that they have in nature.

The muscles and tendons can be removed by making a cut on the under side of the wing, from the elbow to the wrist; this cut can afterwards be neatly sewed up and the feathers will fall smoothly to their place and cover the seam. As soon as the wings have been severed, the skin, which by this time will have been turned inside out, will easily slip along the neck as far as the head. To skin the latter is the most difficult part of the job, and must be carefully done or the skin will tear.

The head should be skinned *close down* to the base of the beak,

*especially in front of the eyes.* The eyes are to be picked out, and the triangular portion of the skull, together with the flesh between the jaws, and the brain is to be removed, leaving the sides and top of the skull attached to the bill. The skin above the eyes and ears is closely adherent by membrane to the bone and must be detached with great care.

In the general process of skinning after the first incision, little if any use of the knife or scalpel is required, except to sever the legs, tail, and wings, to work about the eyes and ears, and to remove the base of the skull. The cutting may be better done with the scissors than with the knife. The skins of most birds slip off very easily and can usually be detached with the thumbnail.



Skin Ready for Re-  
turning.

In the cases of Woodpeckers some Ducks and a few other birds, the heads of which are too large in proportion to the caliber of the neck to be skinned as heretofore directed, this part must afterward be separately skinned by an incision made from the outside along the middle line of the skull. This is done after the body has been severed from the skull and the skin returned.

If the above process has been properly conducted the skin has been turned inside out. The Arsenical paste may now be applied by means of a brush to *every part* of the skin. Especially the head, wings, legs and tail should be heavily coated with it. This paste takes the place of Arsenical Soap in aiding the skin to slip easily over the head.

Now fill the eye sockets with pellets of cotton the size of the bird's eye and the skin is ready to be turned right side out.

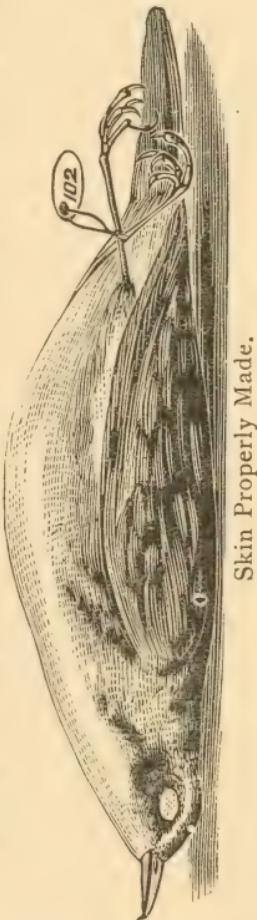
*Never "bung out" a bird's eyes by putting too much cotton in the sockets or orbits. Be particularly careful about this in Hawks and Eagles, who have deep set eyes, which should be pressed inward rather than distended.*

After the skin has been turned right side out and the feathers of the head, neck and wings are nicely adjusted, the wing-bones of opposite sides should be tied with thread *inside* the skin as near together as the back of the natural body of the bird is broad. The next procedure is to

*Sew the Wings in their Proper Place* :—There are many modes of adjusting the wings to their proper place but I know only of one method which can be relied upon for accuracy, and can be applied to mounted birds as well as skins with the most satisfactory results.

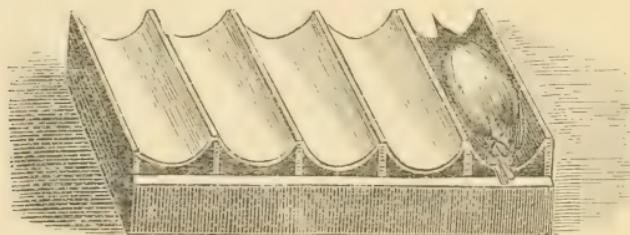
It is applicable to all birds excepting those like the Eagle and Fish Hawk whose wings extend forward and are not covered with the side feathers of the breast. It is as follows: After placing the wings in position, with the bones of the forearm pushed well into the skin, so that they may lie down on each side; take hold of the edge of the skin at the opening and raise it up; at the same time holding it towards the light—now, looking into the skin a bare spot will be discovered in the skin of the axilla or armpit. Through the centre of this bare or transparent spot push a needle with thread from the inside of the skin—now thrust the needle between the third and fourth metacarpal bones of the wing opposite the end of the coverts of the bastard wing; return the needle by thrusting it back in new places between the third and fourth metacarpal bones and through the skin of the axilla or armpit. Now draw the wing up close to the skin and tie it firmly on the inside. If these directions are followed, the collector or taxidermist will never fail having the wings adjusted in their proper place.

*Filling Skins* :—A cylinder or roll of fine tow or cotton is now made, rather less in size than the neck of the bird; this should be



inserted in the neck; one end of the cylinder resting in the cavity of the skull, the other extending as far as the tail. The leg bones of all birds from the size of a Robin and upwards should have a slight wrapping of tow, hemp or fine grass when they are to be made into a skin—particularly is this the case in Hawks and all rapacious birds. The body-stuffing of any bird may be made of cotton or tow; the latter is preferable for large birds. This should be made in one mass, rather firmly moulded into something like the shape of the bird's body or trunk, but rather less in bulk. Insert this into the skin until it fits nicely, bring the edges of the incision together and the skin is about completed. In some cases the opening is held together by taking one or two stitches with a needle and thread.

The usual fault of beginners is in using too much stuffing; thus making the skin to "bulge out" in the wrong places, especially between the shoulders and along the neck. Never make the neck of a skin too long. The specimen is usually meant to lie on its back with the head drawn down near the body. It only remains to "set" the specimen in a shapely manner by folding the wings neatly, adjusting the head and neck, bringing the legs together and crossing them. The throat of the bird should be filled with cotton and the skin can now be labeled and placed in a drying-board.



Drying-board.

These are found very useful in forming or moulding the shape of the skin. They are made by glueing or tacking pieces of thin wood of the same size on a board, equal distances apart. Pieces of heavy paper are fitted between the cross-boards and glued or tacked

in position so as to form semi-cylindrical grooves. Tin or zinc can be used in making drying-boards for large birds.

Ducks, Herons, Geese and all other long-necked birds should, when placed to dry, rest upon the breast with the head and neck placed upon the back. The feet of the long-legged Waders should be placed underneath the breast.

All skins prepared for the cabinet should have a label attached to the legs, giving the species, sex, locality, date of collection, &c. In most cases the body should be examined to make sure of the sex of the specimen. The testes of the male and the ovaries of the female lie in the same position in the small of the back, close to the kidneys, and may easily be reached by cutting through the wall of the abdomen on one side and pushing the intestines out of the way. The testes of the male are a pair of yellowish bodies lying close together. The ovary is a flattened mass of small spheres. In the breeding season both these organs are subject to such enlargement that they become very conspicuous, and differ so much in appearance that they cannot be mistaken. At other seasons of the year they can only be recognized upon close examination. The male is denoted by the sign of Mars, the female by the sign of Venus, or the right leg is crossed over the left to indicate the male, and the left over the right to denote the female.

*Removing Blood and Grease from Skins:*—Collectors should at all times be *very particular* to remove blood stains from the feathers immediately after the bird is skinned. This can be done by washing with hot water and drying with plaster of paris, moving the feathers constantly to keep the plaster from setting. If the stain has not entirely disappeared, wash the place freely with spirits of turpentine and dry with plaster as before. When blood is hard dried upon feathers it is almost impossible to efface it. I have removed old stains from feathers with very satisfactory results in the following manner. Take a quantity of water and alcohol—about half of each; wash the stained parts with this and then apply a thin paste of corn-starch to the feathers and allow it to remain there until dry. It is a difficult task to remove grease either from the inside or outside of a bird skin and under all circumstances requires

patience. If the inside is greasy sprinkle freely with plaster of paris and scrape with a blunt knife, removing the plaster from time to time so as to thoroughly absorb the grease I have removed grease from the inside of very fat skins by the application of hot sand—using the white sea sand, and applying it abundantly in the manner of the plaster and scraping with a blunt knife. When a bird's feathers are greasy wash the greasy place freely with spirits of turpentine, and then pour on plaster, replacing it with fresh as soon as it has become saturated with the turpentine, at the same time brushing and moving the feathers in order that the plaster may penetrate. This is the *best* method I know of for removing grease and dirt from feathers.

*Rendering Feathers Insect Proof:*—Few collectors or taxidermists ever think of the great importance of having the feathers of their birds protected against the ravages of insects—*Dermestes*, etc., except by the use of some insecticide such as camphor, insect powder or benzine—none of which are permanent. To this end I will give a very simple remedy which, once applied to the feathers will do for all time, and will save the collector of the uneasy thought that his specimens are liable to be destroyed by the ravages of these well known pests. Take any quantity of water, one-fourth of which should be the Arsenical Solution in the *liquid form*, given on page 95. Take a quantity of *white sea sand* and thoroughly saturate it with this weakened Solution; now bury the bird skin in it from twelve to twenty-four hours. At the end of this time the feathers will be sufficiently poisoned. This liquid can be made as strong as desired by adding more of the Arsenical Solution, but it should be tested with a black feather to see that it is not too strong of the Solution, and if too strong it will discolor the feather.

*How to Soften Dry Skins:*—There are many ways in which a dried bird skin may be softened and made ready to mount, and nearly every taxidermist has his own method. I consider the following method the simplest, easiest and most effective :

The skin should be opened and the filling from the body, neck and head removed. Tear some cotton cloth into strips from an inch to two inches in width, wet them thoroughly in warm water

and wrap them round the leg and foot until it is covered with several thicknesses of the wet cloth, quite to the ends of the toes. Lift up the wing and put two or three thicknesses of wet cloth round the joint, and also between the wing and the body. Put some wet cotton or small rags inside the skin, wrap the whole skin completely in several thicknesses of cloth and lay it aside. If the bird is not larger than a robin, the skin will be soft enough to mount in about twelve or fourteen hours.

Under the head of *large birds*, it is necessary to place all birds above the size of the Robin, for the reason that the legs, being large and thick in comparison with the skin of the body, require extra treatment. The legs of some birds require several days' soaking, and were the skin of the body relaxed for the same length of time it would macerate and the feathers fall off. The legs of large birds must, therefore, be started first in the relaxing process.

Take, for example, the skin of a Pheasant: cover the nails and beak with wax, if the skin is an old one, or else they will flake off; wrap the feet and legs with wet cloths as described above, and let the skin lie without other wrapping for one day. At the end of this time the joints can be bent somewhat, and they should be manipulated until they bend easily. When they will do this, put wet cloths round the joints of the wings—in the body, neck and head, and wrap the whole skin in a wet cloth. At the end of the second day the entire skin will be soft. The next step is to scrape all the hard parts of the skin and manipulate it until it is as soft as when fresh.

This process applies, with slight modifications, to all large bird skins, but the larger the bird, the longer it will take to relax. Sometimes the wings require soaking half as long as the legs in a very large bird.

By the above process, skins may be softened and made ready to mount according to their size, about as follows: Wren to Robin, in twelve to fourteen hours; Ruffed Grouse, two days; Great Blue Heron, three days; Bald Eagle, four days; Skins which are but a few months old will soften in about half the time they would require were they five years old, and if properly made in the first place will make as handsome mounted specimens as the fresh skins.

# MOUNTING BIRDS

## *With Closed Wings.*

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O mount a bird in a natural and life-like attitude requires constant and careful study of the birds in their native haunts, and to become perfect (if such a thing be possible) in any branch of taxidermy we must *study nature at all times*. While to observe birds in their natural state is the best way to obtain a knowledge of their forms and attitudes, it is likewise of the greatest importance on the other hand to know of some method that will aid us in giving to our mounted specimens grace and naturalness in the shortest time and most satisfactory manner. I therefore introduce my method which I believe to be perfection in its practical application. I do not discard all other methods because they differ in principle from my own, but give mine simply that it may be of aid to the beginner and that it may lead to still greater discoveries by the thoroughly practical taxidermist who will not refuse to adopt what I believe to be an improved method. When a bird has been skinned as before directed, with the wings sewed in their proper place, the next procedure is to fill the neck, which is done in an entirely different manner from that of filling the necks of skins. Cut some tow very fine and roll it into balls the thickness of the

neck on the *natural body* of the bird. Do not make the balls hard. Place these tow-balls in rotation in the neck until it is entirely filled. This can be easily done by the aid of forceps. In birds the size of the Robin it requires about four balls or rolls of tow to equal the length of the natural neck, as in A, Fig. 2. The number however, must *always* be governed according to the *length* of the bird's neck. Now sharpen *three* pieces of annealed wire, two for the legs and one with which to make the artificial body. A long piece of wire should be straightened by placing one end in a vise and pulling steadily at the other; when this is done it can then be cut in pieces. The leg wires should be thick enough to support the bird when mounted, and should be about double the length of the legs.

The sharpened wires should be forced through the sole of the foot, through the tarsus and along the leg bone.

The leg bone should be fastened to the wire by a wrapping of tow, making the leg a trifle smaller than it naturally was. Proceed in the same manner with the other leg and the skin is ready for the reception of the artificial body. Take the third wire, which should be about twice the length of the leg wires, place it along the back of the *natural body* of the bird with the sharpened end extending out over the length of the neck; now bend this wire around the natural body length-wise, bring it up in front and clinch it as in Fig 2. To clinch the wire securely it should be hammered on a solid surface, but if it is thin can be pinched with pliers, so that it will hold fast. You will now have the *exact* shape and length of the *natural body* or trunk of the bird as represented in Figs. 1 and 2.

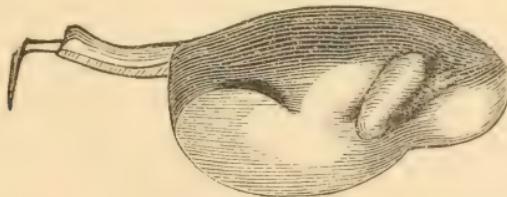


Fig. 1.—Natural Body or Trunk of a Bird.

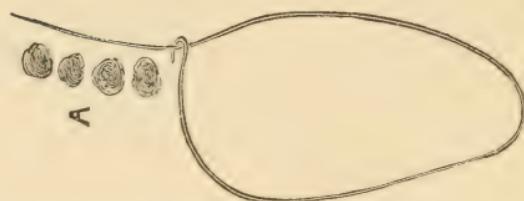


Fig. 2.—The wire as taken from the natural body, forming the shape lengthwise, also the balls of tow used in filling the necks of mounted birds.

As you now have the shape and size of the body lengthwise, the breadth must be taken with calipers; or, it can be pretty accurately guessed at when one has had enough experience in the matter. Roll up firmly a quantity of tow a little larger than the size of the natural body and place it in the wire. Now bind it firmly with thread in every direction as in figure 3, make a *solid* and *compact* artificial body imitating *exactly* the one from which the skin was taken. In making artificial bodies for birds, *all the characteristics* of the *natural bodies* should be brought out *very strongly*, in order to represent the natural form of the bird.

If the natural form of a bird is long and flat like that of a loon it should be *made* so; if it is short and round like that of an owl it should be *modeled*; and in *all other cases* the artificial body should *strongly represent* all the prominent characteristics of the natural.

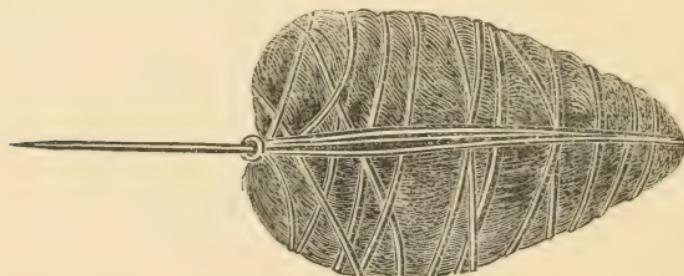


Fig. 3.—Artificial Body.

The body being made, it is now ready to be inserted into the skin. This is done by taking hold of the body and pushing the wire which is intended to support the head and neck through the center of the balls of tow in the neck *through* the skull, as represented in Figs. 4 and 5. The wires of the legs should now be thrust *through the middle* of the body and bent at the ends in the shape of a hook and then drawn back and anchored in the body as shown in Fig. 4. After this is done the skin should be gradually pulled over the body and the opening nicely sewed up. The tail feathers of all large birds should be wired by passing a long smoothly pointed piece of small wire through each tail feather at the flat part of the quill near the body. The tail can then be spread according to the position of the bird. The feathers should also be held in position by placing two pieces of card-board across them, and they should pinned together with pins—similar to that represented in Fig. 6—(Eagle showing wings wired in position.) It is not necessary to wire each tail-feather in small birds; the use of card-board is sufficient, as shown in the Harlequin Duck, Fig. 5. The tails of all birds should be supported by thrusting a wire through the fleshy part of the tail into the body, and then bent in the shape of a letter T for the tail to rest on.

The bird now being sewed up and the tail-feathers arranged, straighten the legs parallel with the sides and bend them in a natural position. Now smooth the plumage and fasten the bird to a temporary perch or stand. Take hold of the wire that supports the head and neck and bend it back, giving the proper position to the head. It will now be seen that by *this method*, where the *balls of tow* are used in *filling the neck*, in place of a stiff, solid neck, usually made by the old methods, the neck can be lengthened or shortened as may be desired by taking hold of the head and sliding it up or down on the wire until the neck is of the *proper length*.

After arranging the position of the bird, the throat should be nicely filled out with cotton. Be *very* particular about this in *all* birds, for they will look gaunt and hungry if the throats remain without filling. The eyes should now be set by placing a small

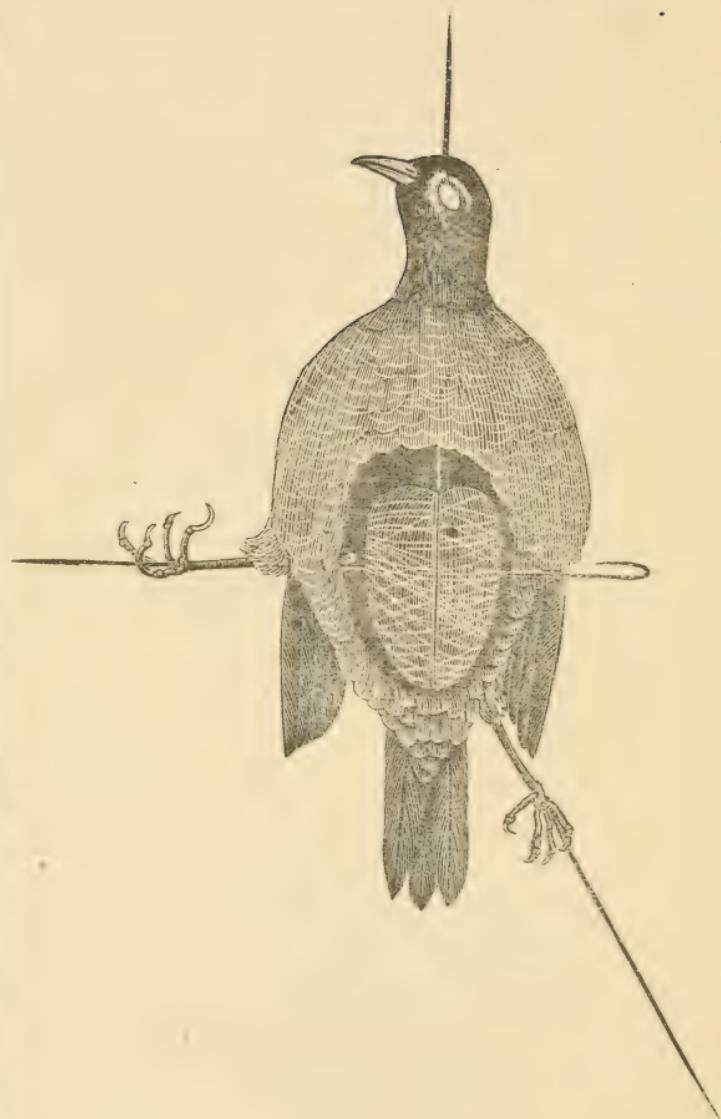


Fig. 4. The artificial body in place for the reception of the wires of the legs; showing how the wires should be anchored or clinched.

amount of soft putty over the cotton in the sockets; apply mucilage to the inside of the eye-lids and press the artificial eyes in position. Adjust the eye-lids in their place by picking them out over the artificial eyes with a pin. *Great* care should be taken to set the eyes as naturally as possible, as it is one of the principal points which adds to the life-like appearance of mounted birds.



Fig. 5.—Harlequin Duck, mounted from a dry skin; showing the wire projecting from the head and the wrapping of thread to hold the plumage in order.

The eyes of hawks and eagles instead of being set flat in the sockets project forward and thereby have a piercing look, and should be so placed in the mounted specimen. The bill may be fastened together by thrusting a pin through the lower mandible

into the upper, or passing a thread through the nostrils and under the lower mandible into the upper, or passing a thread through the nostrils and under the lower mandible where it can be tied in position. The bird is now ready to be wound lightly with thread as represented in Fig. 5. This is done in order to keep in place any of the feathers that happen to be out of order. When a bird is wrapped in this manner it should be examined every day until thoroughly dry, to see that none of the feathers become misplaced.

Although the wings may be sewed in their proper place as before directed, it is almost always necessary to stick small pointed wires or pins in different parts of the body to aid in holding them in position. When the bird is thoroughly dry the wire which supports the head and neck should be cut off close under the feathers of the head. The web-feet of ducks should be spread and held in place with pins.

*Long-necked Birds*—To place the balls of tow in the necks of ducks, a pair of long stuffing forceps is necessary. The necks of herons and swans should be made by wrapping tow around the wire which supports the head. This must be made the same length and thickness of the natural neck, and should have a coating of paste made of corn-starch, so that when dry it will hold the neck firm, and the sharpened point of the wire in these cases should protrude through the skull.

The best time to cleanse a bird that is being mounted is after it has been wired and sewn up, but before placing it on a perch.





# MOUNTING BIRDS *With Spread Wings.*

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**A**N eagle swooping down upon its trembling prey, or stooping from a height upon a mountain rock, a group of warblers flying and darting at their midnight enemy—the owl—an eagle, hawk or owl, suspended with its prey in its talons, all go to make up a variety of attitudes and break the monotony in a large collection of mounted specimens.

A white dove or pigeon, suspended on an invisible wire, makes one of the most beautiful and desirable of ornaments. It is, however, more difficult to mount a bird with the wings spread than to mount one in a quiet position. As there are no positive rules of detail for these touches of the art, it will depend largely upon the

taste and skill of the operator. A knowledge of anatomy will aid one greatly in giving a natural and life-like appearance to all birds under this head.

In skinning a bird that is to have its wings spread, always leave in all but the head of the humerus or upper arm bone. It may be skinned down to the elbow and thoroughly cleansed, and then should be broken off. *Never* detach the secondaries from the ulna. The muscles and tendons can be removed by making a cut on the under side of the wing from the elbow to the wrist; now lift up the skin and the flesh about the ulna and radius or double bones can then be taken out and the bones scraped clean these without detaching the secondaries from the ulna. On bones put a heavy coating of the Arsenical Paste, especially at the joints. Sew up the skin under the wing by cross-stitching, and the feathers will fall nicely to their place. Some recommend substituting the removed flesh of the wing with a filling of clay, but this is not necessary.

The artificial body for birds that are to have the wings spread should be made solid and compact in order to secure the many wires that must be thrust into it. In birds of prey the muscles of the leg should be well developed. Place the balls of tow in rotation for the filling in the neck as before described, giving the skin a thorough coating of the Arsenical Paste; insert the body into the skin and anchor the wires of the legs in the same manner as described in mounting birds with closed wings. The body being inserted and the opening nicely sewed up, the legs should be bent in their proper shape and the bird placed on a stand. The wings of the bird will of course be drooping, and its general shape will be distorted. Sharpen two long wires for the main support of the wings; now run each of these wires through the wrist (sometimes improperly called the shoulder), pass them down through under the feathers that cover the opening under the wing which was sewed up, and thrust them into the body. The wings should now be bent in their proper shape, giving them their natural curves. Additional wires are required to support the wings until dry. These are sharpened and thrust into

the back and carried up under the wings and bent over them, as shown in the accompanying figure.



Fig. 6.—Eagle properly mounted, showing position of the supporting wires and card-board holding the feathers in their proper place in birds with spread wings.

The feathers of the wing should be held in their proper place by pinning card-board over them, as represented in the above cut. The tail-feathers of all large birds should be wired by running a piece of small wire through each feather at the flat part of the quill near the body, and should also have card-board pinned to it, and then spread in position.

When a bird is to be suspended it should have the wings slightly raised; the wire which it is to be hung upon may be run through the body from the back and clinched on the breast.

## MISCELLANEOUS RECIPES, &c.

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### To Preserve Small Birds Entire.

Take strong alcohol and dissolve in it about 1 drachm of corrosive sublimate to every quart of the spirits. Test with a black feather to see that it is not too strong of the sublimate. Soak small birds in this preparation three or four days; then take them out and allow to dry. For a bird the size of a pigeon remove the entrails, wash it clean, and let it remain 10 to 15 days.

### Glue for Feathers.

Gum arabic,	-	-	-	-	4 ounces.
White sugar,	-	-	-	-	1 ounce.
Arsenical soap,	-	-	-	-	½ "
Starch,	-	-	-	-	4 ounces.
Water,	-	-	-	-	8 or 10 "

Melt the gum arabic in water, after which boil all the ingredients well together.

### Arsenical Soap.

For the benefit of those who would still prefer to use arsenical soap in place of the Arsenical Paste the following usual compound is given:

White soap,	-	-	-	-	2 pounds.
Powdered arsenic,	-	-	-	-	2 "
Camphor,	-	-	-	-	5 ounces.
Sub. carbonate of potash,	-	-	-	-	6 "
Lime,	-	-	-	-	2 "
Alcohol,	-	-	-	-	8 "

DIRECTIONS.—Slice the soap and melt it in a small quantity of water over a slow fire, stirring it sufficiently to prevent its burning. When melted, add the potash and lime, and boil until it becomes quite thick. Now stir in the powdered arsenic, after which add the camphor, previously dissolved in the alcohol. When the mass has been boiled down to the consistency of thick molasses, pour it

into an earthen jar to cool and harden. Stir it frequently while cooling to prevent the arsenic settling to the bottom. When cold it should be like lard or butter. For use, mix a small quantity with water until it resembles buttermilk, and apply with a common paint brush.

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### Annealed Iron Wire.

Take common iron wire, make it red-hot, and suffer it to cool gradually ; this renders it soft and pliable, so that it may be easily bent in any direction.

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### To Make Artificial Branches.

Take a piece of annealed wire of a suitable thickness, fasten it to a stand and wind fine tow round it, at the same time applying common glue to hold it fast. After it is made the desired shape, glue the entire surface of the branch and cover it with lichen. The lichen should first be made brown and crisp by baking it in an oven and then pulverized. This makes the most natural looking artificial branch I know of.

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### To Make Artificial Rocks.

The most natural artificial rocks can be made by placing sticks in an irregular manner on a pine board of any desired dimensions ; cover the sticks with cloth, apply common glue to the surface and cover it with smalts of different colors. Pieces of moss and lichen can be put on here and there to produce a natural effect. It will depend entirely upon the taste of the artist to make a natural looking rock by combining the different colors of smalts sand.





## ENTOMOLOGY.

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### COLLECTING & PRESERVING INSECTS.

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**G**F all species of animal-life the insects are the most numerous, and their beautifully diversified forms are well worthy the careful study of the naturalist. Before any attempt is made to collect insects, certain apparatus must be provided, not only to enable us to secure them, but also to preserve them after they are caught.

First in importance is a *net* for catching Lepidoptera and other insects.

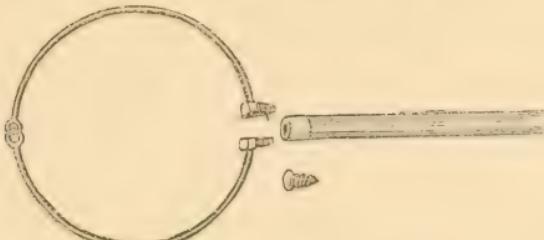


Fig. 7.—Frame for Insect Net.

The above will illustrate the frame work of one of the most convenient nets I know of. It is made as follows: Take two pieces of stout brass wire, each about 18 inches long, bend them half-circularly and join them at one end, making a link similar to that in a chain. At the other ends there is a screw cut in half, each half of which is soldered to the ends of the wire. When pressed together they will screw into the top of the handle, which is made with a piece of brass tubing one inch long, fastened on the end, in which threads are cut to receive the screw of the frame. The handle is also provided with a solid threaded screw which can be put in the end and used for a walking cane. The net can be folded and put in the pocket.

To the frame there should be affixed a bag made of fine, strong gauze or mosquito netting from which the stiffening has been well washed; this bag should be about eighteen inches long, and the top bound with a strip of muslin which should be fastened to the frame or rim. The handle may be made three or four feet long. Besides the net the collector should be provided with some strong paste-board or light wooden boxes, lined at the bottom with cork; these should be of a size convenient to carry in the pocket. Insect pins of the best quality are, of course, indispensable.

Forceps of various sorts should be at hand; the small, delicate, narrow-bladed kind, with fine sharp points, are excellent for handling minute specimens. For pinning insects into boxes the forceps should be stout, the blades blunt and curved at the end, so that the insects can be pinned without slanting the forceps much.

Fig 8 represents forceps especially adapted for Lepidoptera, but they can also be used for pinning other insects.

Various pill-boxes, vials and bottles must always be taken, some containing alcohol or whisky—if the collector be an intemperate man he had better leave the latter article at home, for if he should drink freely he may be compelled to change his study to that of herpetology.

A most indispensable article is a Cyanide Bottle, as nearly all insects can be killed by its use. It is made as follows: Take a wide-mouthed bottle and fill it one-fourth full of cyanide of potassium; this should be covered with plaster-of-paris, which is made into a paste by mixing with water in the usual manner and then pouring it over the cyanide and covering it completely. Another very easy manner is to saturate cotton with chloroform and place it in the bottom of a wide-mouthed bottle.

Setting-boards for spreading the wings of insects may be made by sawing deep grooves in a thick board and placing a strip of pith or cork at the bottom.

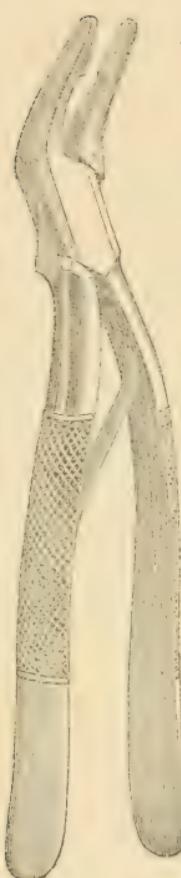


Fig. 8.—Entomological Forceps—half-size.

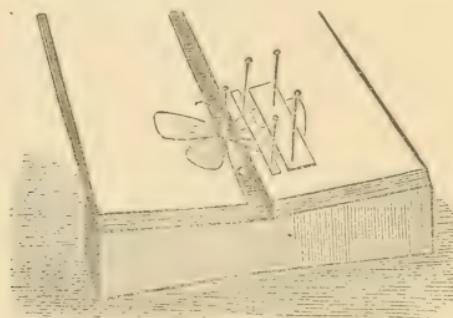


Fig. 9.—Setting-Board.

Figure 9 represents the simplest style of setting-board. It may be made of two pieces of thin pine board fastened together by braces at the ends, and left wide enough apart to admit the bodies of the insects. Strips of cork or pith, in which to fasten the pins, may then be tacked or glued below so as to cover the intervening space. This board can be hung against the wall, out of the way, by attaching a ring or loop to one of the braces.

For ordinary use boards 2 feet long, 3 inches wide and  $\frac{1}{3}$  inch thick, with three braces—one in the middle and one at each end— $1\frac{1}{2}$  inches deep at the ends, but narrowing from each end to  $1\frac{1}{6}$  inches at the middle. This slight rising from the middle is to counteract the tendency of the wings, however well dried, to drop a little after the insect is placed in the cabinet. The wings are held in position until dry by means of strips of paper pinned over the wing of the specimen, as shown in the above figure.

A cabinet can be made similar to the illustration of the egg cabinet on page 90, but should be provided with outside doors and have several rows of drawers. These may be  $1\frac{3}{4}$  inches deep; they are made of  $\frac{1}{2}$  inch stuff, with soft pine bottoms, or lined with cork for the reception of pins. The top edges of the drawers should be painted occasionally with creosote; the drug permeates the wood, and keeps away *Dermestes* and *Anthrenus*, the pests so destructive to collections of natural history. The drawers should be papered inside with white paper, such as periodicals and magazines are printed on.

Whatever manner of box or drawer is used, great care should be taken to keep it out of the sunlight and to make it so that the dust will not penetrate, and it should always be kept out of a damp place.

Insects arranged in cases and hung upon the wall make beautiful and attractive ornaments. These can be made any size desired, and the glass front should be fastened with hinges to be opened when necessary. The bottom should be lined with cork and covered with white or tinted paper. Collectors should bear in mind that care in killing insects effects very sensibly the looks of the

cabinet. If hastily killed and distorted by being pinched, with the scales rubbed off and otherwise mangled, the value of such a specimen is diminished either for study or neat appearance in the collection.

*Pinning Insects, &c.*—The pin should be thrust through the thorax of most insects. The Coleoptera, however, should be pinned through the right wing-cover; many of the Hemiptera are best pinned through the scutellum. The specimens should all be pinned at an equal height, so that about one-fourth of the pin should project above the insect. For very minute insects the smallest pins are used. Small Coleoptera are usually gummed upon cards. This is done by gumming promiscuously upon a sheet of card-board; now place the beetle upon it, drag out the limbs with a pin, and then leave it to dry. The card must be cut afterwards around your insect so as to suit it. When the card-board has been filled, and you are desirous of separating the species, cut out the insects with finely pointed scissors, pass the pin through the card and in a bit of cork. The gum is composed of three parts of tragacanth to one of arabic, both in powder, to be mixed in water containing a grain of corrosive sublimate, without which it will not keep, until of a consistency just thick enough to run. As this gum is of an extremely absorbant nature, nearly a fortnight is required before it can be properly made. It is advisable to keep adding a little water and stir it every few days until it is of the proper consistency; dissolve the grain of corrosive sublimate in the water which is poured first upon the gum.

In spring and early summer thousands of minute species of the Coleoptera may be captured in the air with the net, especially just at night. During the summer and autumn a great many nocturnal species may be captured near a light placed at an open window, or out of doors. They are found in every variety of situation—on plants, in decomposing animal and vegetable matter, in mushrooms, under bark of trees, under stones, especially in moist and shady places; many are found creeping on the ground in dusty roads. Some of the most beautiful beetles are found in the excrements of animals and under stones. Many peculiar species not

found in other situations live under material cast up by the ocean; others are found along the shores of lakes and rivers, and many also are found living in the water.

Beetles can easily be captured by the use of large forceps; they should at once be thrown into the Cyanide Bottle, where they will die instantly.

To mount the large specimens, force the pin through the right wing-cover near the thorax; before placing it in the cabinet arrange the legs in their natural position and paint the abdomen and thorax with a solution of corrosive sublimate and alcohol. This will keep away those destructive pests, *Anthrenus* and *Dermestes*. The solution can be made by taking one ounce of corrosive sublimate to half a pint of alcohol. Small beetles can be gummed on card-board as before mentioned, and then arranged in the cabinet. Beetles may be preserved in alcohol or in a weak solution of carbolic acid. The latter has additional advantage of preserving the specimens that have been immersed in it from the ravages of noxious insects for some time. Glycerine is excellent for preserving beetles that have delicate colors which fade in alcohol, but they cannot be mounted without being cleansed.

While traveling, Coleoptera, with their larvæ, etc., should be thrown into bottles and vials filled with strong alcohol. When the bottle is filled, new liquor should be poured in and the old may be saved for collecting purposes; in this way the specimens will not soften and can be preserved indefinitely, and the colors do not in most cases change.

Hemiptera: Bugs and Plant Lice, can be found in large numbers on low bushes and in the grass during the summer and autumn. The large carnivorous kinds are often found on bushes with caterpillars transfixed in their jaws. Hibernating species are found under leaves in hard-wood forests.

The numerous aquatic species should be taken out of the water with a net, and should be carefully handled to avoid the sharp sting or piercer, with which some are armed.

The soft-bodied species of *Aphis* or plant lice, may be preserved in alcohol or glycerine. All the bugs should be pinned through

the distinct triangular scutellum, situated in the middle, at the base of the wings. The small, hard species of leaf hoppers should be pinned through the right wing-cover.

Orthoptera, ( grasshoppers, crickets, etc.,) may be found everywhere—in the open fields and woods, and may be caught in the net. They can be killed by dropping them into a Cyanide Bottle. Crickets may be found in the ground in burrows, under stones, and in the grass; a few species may be taken on bushes and leaves of trees.

All the above may be mounted by placing the pin through the thorax and arranging the legs in a natural position. The wings should be extended in the same manner as butterflies.

Walking-Sticks are found on low bushes or on trees, sometimes on the ground.\* They can be killed with the Cyanide Bottle, and require delicate handling while being moved, as they are very fragile. It requires the utmost patience to adjust and arrange their body and legs.

Care should be taken in collecting the Lepidoptera, (butterflies and moths.)• Many valuable specimens are rendered worthless by careless handling, and by persons not knowing how to catch them. In catching butterflies the net can be put over them while sitting on flowers and bushes, or they can be secured while flying by sweeping the net towards them and the moment they are in it giving it a quick turn, so that the upper end of the net will hang over the rim, thereby preventing its escape before you have an opportunity to secure it.

When they are in the net you can easily kill them by pressing the thorax between the thumb and index finger, the wings always being folded back, and this must be done while they are *in* the net. In so doing the gauze of the net will be between your fingers and the butterfly. Do not attempt to put your hand inside the net and commence a chase of the captive, which will result in either its escape or in tearing its beautiful wings. Even in the manner I recommend it requires care and dexterity to catch them without mutilating or rubbing off the scales which constitute the beauty of their coloring.

When it is desired to pack butterflies for transportation they should have the wings folded back into the position they occupy when at rest, and should then be put in a paper folded in the shape of a three-cornered envelope; the locality and date of capture may be written on the envelope before putting the specimen in it. The paper used should be soft, not too stiff or heavy, and care should be taken in placing the specimen in, so that its wings, or feelers will not catch in the folds of the paper and become broken or scratched. These papers should be put in a wooden box until it is a little more than full, and before fastening the lid down put in a little gum-camphor to keep the vermin away until the box reaches its destination.

Besides the Butterflies proper, there are various moths (Heterocera,) that also fly in daytime; among them the Humming-bird Hawk moths, *Sesia Thysbe*, *S. diffinis*, &c. ;) these must be treated the same way as Hesperidae, but as they are large-waisted creatures pressure would spoil their beauty. They should be killed by inserting a needle dipped in oxalic acid or cyanide of potash, thrusting it into the head and passing it through the body once or twice.

During the day many small moths may be detected on the underside of leaves on shady corners of rocks, under the eaves of houses, &c. These can be captured by placing your wide-mouthed Cyanide Bottle over them, when they will become overpowered by the fumes of the drug and drop into the jar, from whence they may be taken out and pinned in the collecting box.

Catocalas may be taken in the same manner. These fine moths during the day sit on trunks of trees, and are scarcely distinguishable from the bark. For night collecting a preparation of rum and sugar mixed to the consistency of syrup should be painted in patches and strips on the trunks of trees and other suitable places; this has a wonderful attraction for Noctuae and many by this means may be obtained, which otherwise would never grace the naturalist's cabinet.

The moths will alight on this sweet mixture, and by directing the light of a lantern on them and using your Cyanide Bottle you

can make many captures. Some collectors use strong smelling molasses for this purpose, others sugar and water boiled down to a thick sirup.

Butterflies and moths should be nicely arranged on the setting-board by inserting a pin in the middle of the thorax, spreading the wings evenly and holding them in their place by means of card-board pinned across them as in Fig. 9. After taking a moth from the setting board, and before placing it in the cabinet, paint the abdomen and thorax with a solution of corrosive sublimate and alcohol, before mentioned for beetles, in order to keep insects away, for it is on the setting-board that the eggs of *Anthrenus* or *Dermestes* are deposited and then afterwards hatched.

Moths to be packed for transportation should be managed differently from butterflies. To fold the wings back like day butterflies is unnatural, and it compresses the back of the thorax, thereby destroying much of the beauty. The box in which they are to be placed should be lined with cork at the bottom. Each moth should be put on a pin and this forced into the cork with forceps, through, even to the wood of the box, to hold them securely. The larger moths should have the abdomen secured by a little cotton drawn over it and fastened by pins forced into the bottom of the box.

Dragon Flies are to be found flying over the fields and meadows, but are most abundant in the immediate vicinity of water. On account of their quick motions they are somewhat difficult to catch with the net. They can be best killed with the use of the Cyanide Bottle. They should be pinned through the center of the thorax and the wings spread on the setting-board with the legs arranged in the proper manner. The larvæ of almost all these insects are aquatic. They emerge from the water perfect insects. The larvæ can be preserved in alcohol.

Bees, wasps, ichneumon flies, gall flies and saw flies or Hymenoptera are to be found in abundance everywhere in the fields and woods. They should be pinned through the thorax, high up on the pin, with the wings and legs nicely adjusted.

It is best to capture these fierce insects with the tweezers to avoid

their stings. Their larvæ resemble grubs or maggots, and may be preserved in alcohol or liquor.

Flies and mosquitoes can be killed with the Cyanide Bottle, or pinned alive. The long-legged species should have a piece of cardboard placed under their bodies upon which their legs may rest, and this prevents their loss by breakage. Dung, mould in hollow trees, stems of plants and putrid flesh contain numerous larvæ of these insects ; they may be preserved in alcohol.

To relax dried specimens, take a large earthen pot with a lid to it, which can be bought at any crockery store, in this put about three inches of clean white sand. Pour in water enough to penetrate it through and through, but don't make it too wet ; then smooth the sand over and lay thereon two thicknesses of clean white paper. On this lay your specimens that need softening and put on the lid and allow them to remain for twenty-four hours. At the end of this time they can be moved in any position and are ready for the setting-board, where they should be adjusted as before directed. All specimens when put into the cabinet should be carefully labeled, recording the date and locality in which they were found. Notes of various circumstances relative to their habits, observed at the time of capture, etc., should also be recorded in a book.

Camphor, creosote, cyanide of potassium, benzine and turpentine are used in cabinets to prevent the ravages of *Anthrenus*, *Dermestes*, etc., but all tend to fade the brighter colors of moths and butterflies.

In this connection I can only quote : "Eternal vigilance is the price of liberty."





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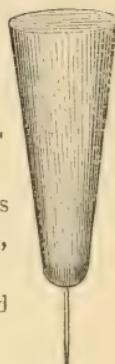
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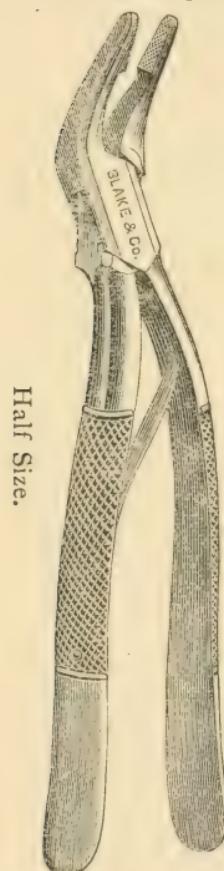
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