





of all of North America, North of Mexico, and will present the area throughout which each species breeds; date of their arrival; site chosen for nests, materials used, and all the characteristics in shape, style, etc.; of the eggs it will give the number, size, color, markings, etc.; with complete details of incubation and birth of young birds, their food, and the care bestowed upon them. The work will contain practical directions for the formation of cabinets of oölogy, with the best modes of collecting and transporting eggs, and a vast amount of interesting information for the guidance of those who love to study birds and bird life. Besides the lithographic plates, each issue will contain a large number of wood-cuts of nests, illustrating the characteristic architecture of each family. The work has the approval of the leaders of ornithology in this country, and it is safe to say that it will take the place of a standard work. Mr. Ingersoll of the Smithsonian Institution, Washington, D. C., will be glad to receive memoranda of new observations on any of the topics embraced in the scope of the work. Subscription 50 cents per number, or \$5.50 a year.

NEW YORK EVENING POST.

"One cannot read this first instalment of Mr. Ingersoll's work on the Nests and Eggs of North American Birds, without wondering how it is that nobody has thought of writing such a book before. There is no more attractive branch of natural history, and none that a larger number of persons have the means of studying, than that which relates to our native birds; and chief among their peculiarities are their nesting habits; yet we believe that until now no naturalist has offered to the thousands of intelligent country folk, who are interested in the birds of our land, a treatise of this sort devoted exclusively to the structure of the nests, the size, shape, number and color of the eggs, and the curious nesting habits of the various species of wild birds that we have among us.

"To this task Mr. Ingersoll brings the learning and observation of a skilled ornithologist and the grace of a practised writer, making a text which is worthy even of the birds. In treating of the nests and eggs, Mr. Ingersoll becomes, of necessity, the biographer of the birds themselves, inasmuch as the chief business of the old birds is to rear their young, while the only

business of the young birds is to be reared. In the nest the whole life of the birds centres; and hence to write fully of the nests and eggs, and nesting habits, is to write very fully and adequately of the birds themselves and of their characters, as shown in the choice of places for building, in the structure and surroundings of the nests, in the guardianship of the young, and in the foraging methods adopted by the several species.

"All this Mr. Ingersoll does with the ornithologist's instinct of accuracy, and the magazine-writer's habit of making his accounts as interesting as possible.

"The work is worthy of all praise, both for its conception and its execution."

COMMENTS OF CRITICS.

"Mr. Ernest Ingersoll, the writer of this work, brings to it peculiar fitness, having already produced several sprightly essays on the habits and peculiarities of our native birds, and being able also to present the results of wide observations at the West from his labors as zoologist on one of the Hayden surveys. Mr. Ingersoll is one of the circle of naturalists whose early training began with the late Professor Agassiz, who taught that science must be learned from nature rather than from books; it follows that the works of our younger school of scientists are sure to be rich in new facts, drawn from personal observation."—*New York Tribune.*

"Ernest Ingersoll, known to the readers of the *Evening Post* as a pleasant and careful writer on ornithological subjects, is preparing for the Naturalists' Bureau a work of unusual popular interest."—*New York Evening Post.*

"Mr. Ingersoll is known to me to be a hard-working and faithful naturalist, as well as to have acquired a certain familiarity with the subject he proposes to treat. He uses a facile and attractive pen, and is well able to invest his work with interest for the public. I have confidence in him as a skillful workman, and look forward with unusual interest to the appearance of the promised work."—*DR. LORET COATES, U. S. Geological Survey.*

"I have confidence in Mr. Ingersoll's ability to prepare a creditable work on the subject named."—*J. A. ALLEN, Museum of Comparative Zoology, Harvard College.*

A
HISTORY
OF THE
NESTS AND EGGS
OF
AMERICAN BIRDS,

BY
ERNEST INGERSOLL.

LATE ZOOLOGIST OF THE UNITED STATES GEOLOGICAL SURVEY; MEMBER OF THE BOSTON SOCIETY OF NATURAL HISTORY; NUTTALL ORNITHOLOGICAL CLUB; THE DAYENPORT ACADEMY OF SCIENCES; EXPERT U. S. FISH COMMISSION.

Illustrated by superbly executed lithographic plates.

GEORGE A. BATES,
NATURALISTS' BUREAU,
SALEM, MASS.

The work will be illustrated with colored plates, the finest ever printed of the eggs of birds.

The author has the hearty approval and assistance of the leaders of ornithology in this country, in the way of access to unique specimens in cabinets, notes from private journals, etc. Among these may be mentioned: Dr. Elliott Coues, Naturalist of the United States Geological Survey; Prof. J. A. Allen, of the Museum of Comparative Zoology, Cambridge, Mass.; Captain Charles Bendire, U. S. A.; prominent members of the Nottall Ornithological Club and other gentlemen very well known.

The publisher wishes an *active agent for this work in every place in the country*. Full particulars, with circular, will be sent *free*.

CONDITIONS OF PUBLICATION.

The work will be issued in large 8vo parts. Each part will be printed on very heavy super-calendered paper, made expressly for this work and will contain two magnificent chromo-lithographic plates. The price of the work will be fifty cents per part. **In no case** will subscriptions be taken for *less than the whole work*.

Any one sending a club of *four subscribers* will receive a copy of the work *free*. Samples (*which must be returned*) will be sent to those who wish to inspect before subscribing.

GEO. A. BATES, PUBLISHER,
Salem, Mass.

[Agents Wanted.]

A LETTER FROM ELLIOTT COUES,

AUTHOR OF

Key to North American Birds.

WASHINGTON, D. C., March 6, 1878.

EDITOR OF "THE COUNTRY":

I am glad to learn that we are likely to have a good work on the Nests and Eggs of our birds. Mr. Ingersoll's prospectus reads well, and it will be a great thing if he comes up to the mark he sets for himself. Comparatively little attention has been paid to this important subject, and the field is wide open to any one possessing the required ability and the necessary material.

PROSPECTUS.

PERHAPS no branch of zoology is more attractive than ornithology; and certainly no department of this branch excites more interest, particularly in the young student, than the nesting habits of the birds. It is a matter of no little difficulty, skill and expense, to secure a satisfactory collection of the skins of the birds of any one district, not to speak of the whole country; but a cabinet of the nests and eggs of birds is far more easily obtained. It happens naturally, therefore, that there are a larger number of private collections of the nests and eggs than of the skins of birds; yet, while several works—for instance, Dr. Coues's "Key"—exist for the purpose of properly identifying the specimens in the latter, no book has yet been printed in America by which birds' eggs may be to every one in communication with naturalists, professional and amateur, throughout the country.

The book herein proposed is intended to satisfy this want. Yet, as its title indicates, it will be something more than a mere "egg-book." It will endeavor to bring into the prominence they deserve those interesting phases of bird-life presented during the annual breeding season. Upon this our books of ornithology have touched only incidentally, and the information extant is scattered through a hundred publications, many of which are obscure pamphlets, the obscurer "proceedings" of scientific societies, or foreign books inaccessible to most persons. The mere bringing of these dispersed facts together, into a connected narrative of the nesting habits of each species, would be highly valuable; but the author will add a large amount of original and hitherto unpublished matter, aiming to make the work as exhaustive as the development of the subject at this date will admit.

Our principal formal treatise on North American ornithology is Dr. Brewer's; but that was published more than twenty years ago, and treats of only the raptorial and fessirostral birds. A few colored plates of eggs appear in Samuels's Birds of New England, but no full series of illustrations of the eggs of our birds has ever been published, nor has the general subject ever been systematically treated; not even though accounts of the nests, eggs and breeding habits of North American birds have always formed part of our systematic treatises on ornithology. A work which shall bring together, digest and systematize our knowledge of the subject, and treat the matter formally as a distinct branch of ornithology, is a desideratum which I trust Mr. Ingersoll is about to supply in a thoroughly satisfactory manner.

The proposed work is timely, much needed, and will be a great acquisition to the literature of ornithology if the announced plan be faithfully carried out. I may take the liberty of suggesting that such a work, to take a distinctive position and prove of the most real use, should be pretty rigorously and scrupulously restricted to the special subject; its own field is broad enough, and can be most profitably cultivated if it be cleared of all encumbrance. I may add that Mr. Ingersoll is known to me to be a hard-working and faithful naturalist, as well as to have acquired a certain familiarity with the subject he proposes to treat. He uses a facile and attractive pen, and is well able to invest his work with interest for the public. I have confidence in him as a skilful workman, and look forward with unusual interest to the appearance of the promised work.

ELLIOTT COUES.


NOTICES FROM THE PRESS.

Philadelphia, Sunday Post, March 17, 1878.

Geo. A. Bates of the Naturalist's Bureau, Salem, Mass., announces the publication, in monthly parts, of a "Natural History of the Nests and Eggs of American Birds," by Ernest Ingersoll, late zoologist of the United States Geological Survey, and a young naturalist of widely recognized ability. The work is to be issued in monthly numbers, illustrated by elegantly executed lithographic plates. It will include the birds


Part I.

Price 50 cents.



NESTS AND EGGS
OF
AMERICAN BIRDS.

BY
ERNEST INGERSOLL.



March, 1879.
(Pp. 1-24, Pls. I, II.
Edgar A. Mearns.)

S. E. CASSINO,
NATURALIST'S AGENCY,
SALEM, MASS.

* * * *Every student of Oology in North America should read*

THE OÖLOGIST:

A MONTHLY JOURNAL DEVOTED TO THE STUDY OF BIRDS AND THEIR EGGS.

Edited by S. L. WILLARD.

THE growing popularity of the study of Birds' Eggs among the naturalists of this country, and especially among youthful scientists, has demonstrated that this study should have a suitable exponent, which should not only keep collectors posted as to current oölogical events in general, but form a suitable and desirable medium for imparting the news of recent discoveries in Oölogy, and publishing notes from little-known localities. It is to the young collector an almost indispensable guide to general Oölogy, for special consideration is given to the department relating to Birds' Eggs. Notes and items concerning the little known breeding habits of interesting species, and peculiarities of oviposition, illustrated with wood-cuts of the most prominent normal and abnormal characteristics pertaining thereto, will form a most important feature, while the series of papers, on the nesting of various species of North American Birds will, to every student of Oölogy, be as a valuable treatise on this important science. Our illustrations of eggs will be of a high character, and in every respect will be faithful representations of the specimens described. Its list of correspondents now numbers many of the most able and careful observers in the country, who constantly supply it with new and valuable notes.

In its ornithological department, *The Oölogist* will maintain its already important place in natural history literature. The accounts vividly given of the habits of North American and occasionally exotic species, form an important book of reference for the ornithologist; and the series of notes, both in this department and that of Oölogy, conspire to imbue the youthful collector with even greater zeal for the pursuit of the study of Birds and their Eggs. And, though we claim for this journal a place in the study and laboratory of the young oölogist, we would call the attention of older and experienced scientists to its always interesting table of contents.

We earnestly solicit notes and items upon the subject of Oölogy from all parts of the country: and especially would we request that observations upon any unusual phenomena in this department be brought to our notice and published: for, though we shall occasionally publish extracts from ornithological journals, we desire our contents to be as far as possible original.

The Oölogist is highly complimented by Prof. S. F. BAIRD and Dr. ELLIOTT COUES of the Smithsonian Institution, Dr. T. M. BREWER, WM. BREWSTER, Dr. G. M. LEVETTE and the other most prominent ornithologists of the country.

Terms: 60 cents a year, postage paid; single numbers, 5 cents.

* * * Vols. II, III, IV, complete, to date, excepting No. 3 of Vol. II, can be furnished. Price, \$1.00.

Address all communications and subscriptions to

THE OÖLOGIST,

ONEIDA STREET, Utica, N. Y.

FAMILY TURDIDÆ. THRUSHES.

1. THE ROBIN.

TURDUS MIGRATORIUS *Linn.*

Migratory Thrush; Robin Redbreast.

THE robin is distributed in the breeding season over the *whole United States*, excepting the extreme south, and over the most of British America. Everywhere it is one of the earliest birds to nestle, and in the southern part of its range raises two or more broods in a season. In the middle states the robins have paired by April 1; and have begun to build their homes before the middle of the month. As far north as Detroit, fresh eggs are to be had the second and third weeks of April in abundance, while even on the upper Missouri and at Puget Sound, the first broods of young are out early in June, and a second brood prepared for.

The situation of the nest is extremely varied, and little concealment seems to be attempted. A fork, or the upper surface of a large limb, in an old orchard tree or garden evergreen, is a favorite site; but woodland trees, the protruding end of a fence-rail, the top of a pillar, a stump, the ground or a ledge of rocks, the interior of a well, the ribs of a fossil megatherium in a college cabinet, the broken-out hole of a woodpecker or squirrel, or even a bush in the midst of a colony of noisy black-birds, have all been frequently occupied. Occasionally they will build in companies, as in a case at Danvers, Mass., where fully a dozen pairs built their nests on the plate which supported the rafters of a kiln-house.

Sometimes the bird displays a strong lack of sense. In Geneva, N. Y., a robin took possession of a sort of trough which had been nailed up under the eaves of a barn; but, seeming unable to fix upon any particular spot, deposited the mud and straw along the entire length of the trough, about ten feet. After working several days she abandoned the task. Another similar instance is recorded where robins attempted to plaster their nest along the cornice of a house for thirty feet. One robin placed its nest between the tracks on the abutment of a railway bridge; though it flew off every time the trains passed over, the young were brought out. Another knew no better than to sit upon its eggs in a dead walnut under a blazing sun, instead of placing its nest where it would have been shaded by foliage. On the other hand, singularly advantageous spots are often selected, and much time and labor saved by discretion. The persistency with which robins adhere to a site once chosen, and the indefatigable efforts by which they seek to overcome difficulties, even procuring concerted help from other robins, and planning to meet unthought-of contingencies, are illustrated by many anecdotes. One of these I beg to quote from an essay by Mrs. Mary Treat, in Harper's Magazine for June, 1877, since it is peculiarly instructive:

The last three years a robin (*Turdus migratorius*) has nested on a projecting pillar that supports the front piazza. . . . In the spring of 1874 she built her nest on the top of the pillar—a rude affair; it was probably her first effort. The same season she made her second nest in the forks of an oak, which took her only a few hours to complete. She reared three broods that season; for the third family she returned to the piazza and repaired the first nest. The following spring she again came to the piazza, but selected another pillar for the site of her domicile, the construction of which was a decided improvement upon the first; for the next nest she returned to the oak, and raised a second story on the old one of the previous year, but making it much more symmetrical than the one beneath. The present season (1876), her first was, as before, erected on a pillar of the piazza—as fine a structure as I ever saw this species build. When this brood were fledged, she again repaired to the oak, and reared a third story on the old domicile, using the moss before mentioned, making a very elaborate affair, and finally finishing up by festooning it with long sprays of moss.

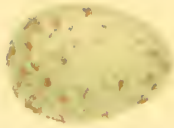
Ranging through so wide an extent of country, and coming

under so multifarious conditions, the nests naturally vary as much in construction as in situation. Persons who wish to pursue this part of the subject farther will find some very suggestive thoughts in an article by Dr. C. C. Abbott, printed in the Popular Science Monthly, Vol. VI, February, 1875, page 481, entitled "A Short Study of Birds' Nests." The robin's ordinary method of architecture is as follows: when a place has been chosen, a little mud is first brought and patted by the feet into a suitable shape for the foundation. Upon this is laid a platform of coarse grasses, and walls of the same materials are gradually erected, intermixed with a plentiful allowance of mud, smoothed and compacted by the feet and breast of the bird, which frequently saturates its feathers with water, the better to accomplish the result. This foundation is allowed to dry fully before the wall is further increased, and each addition is supported by another plastering of mud, until the proper height of wall is reached, when the whole is given plenty of time to harden before the rim is overcast with grass, so as not to break under the mother's feet while she feeds her young, after which the lining of soft grasses is put in. Sometimes one or the other will bring material unsuitable for a certain stage of the construction. This will not be thrown down and forgotten, but simply laid one side and used when the proper time comes; and occasionally some soft matter, like cotton, will get in, but does not then seem to be utilized by the bird in the way of increased comfort, but only for stability.

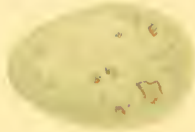
A curious deviation from the mud walls was noticed near New York City. Two robins built nests in the same orchard. One worked after the ordinary pattern, the other used for the main body of the structure fine fibrous roots and twine; she then added clean damp moss (*Sphagnum*) instead of mud, which she must have gone at least a mile to obtain. To hold the moss in place she interwove long horse hairs and fine dry grass. It took her four or five days to complete the structure, whereas the mud nest was completed the same day it was begun. Mr. A. F. Gray writes me that he lately saw two robins' nests on the Massachusetts coast, built almost entirely of bleached eel-grass; they were unusually bulky and

loosely built, some of the eel-grass hanging down at least ten inches below the rim of the nest. The inner lining was made in the common way, of the usual grasses. One of the nests which he obtained had a few dead leaves in its base. Finally, the collection of Dr. Wm. Wood, of Connecticut, contains three robins' nests, all built during the same season, within the same tobacco-shed, and made wholly of bits of tobacco-twine woven inseparably together. Presumably, these three nests were made by the same pair; and Dr. Wood is reported as inclining to the opinion that two of them, at least, were made before any eggs were laid, since he has known of such a case.

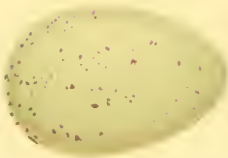
Such exceptions to the rule seem fairly to support Dr. C. C. Abbott's clever explanation, lately advanced, of the use of mud by the robin alone among the thrushes; for, leaving out an occasional scant supply in the nest of the wood-thrush, none of the other species employ it in their architecture. Dr. Abbott considers it probable that, at the close of the glacial epoch, the robin was among the most venturesome of the birds to move again into the new territory slowly yielded by the ice, and there found it needful to fortify its home very stoutly by thick walls of mud against the arctic and changeful temperature; and that it has persisted in this practice, deriving a benefit from being able to set at breeding so much earlier in the season than its more poorly-housed relatives. Dr. Abbott adds that the tendency of all variation in the modes of nest-building practised by birds now is, he thinks, toward greater simplicity. The cases cited above, of the robins which built their nests without mud, might be considered as examples of this I suppose. Possibly the wood-thrush used to build a wind-proof home of mud, but has now almost wholly abandoned it. It must be confessed, however, that I find a circumstance militating against this theory in the habits of the blue jay (*Cyanura cristata*), which builds an open nest in the cold north, and one largely composed of mud in the hot south; but this may perhaps be explained by saying that the bird finds the chill and solid earth a cooler and cleaner house-material in the dry south than vegetable matter, which in the north, under a different climate, it prefers.



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Lith. Armstrong & Co. River side Press Cambridge

NESTS AND EGGS OF AMERICAN BIRDS

OF J. AUDUBON, ZENKER.



The robin's nest, when finished, is about 4 inches in internal diameter and 2 inches deep, very rough and bulky externally. Its construction usually occupies the birds during four or five busy days, after which, if the necessities of nature be not too urgent, and especially if the weather be damp, sufficient time is given for the mud to dry; while, on the contrary, it sometimes happens that the first eggs must be laid before the walls are fully done, and the finishing touches be put on afterwards. My own impression has always been that both birds work at it together, but the weight of evidence seems to be that the female is the real architect. "She probably considers him incapable of so great an undertaking," says Mrs. Treat, "as to assist in the construction of even a mud cabin. Nevertheless, he is very watchful and solicitous while she is at work, and during incubation; and when the young are hatched, he does as much for their support, while in the nest, as the female, and as soon as they leave the nest she shirks all the responsibility of protecting and providing for them."

The eggs are four or five in number, of a beautiful bluish-green, or sea-green color, and are the largest of all the true thrushes' eggs. They will average 1.10 by .80 of an inch in dimensions. The wood thrush's eggs resemble them most closely, but are slightly smaller and more slender. The eggs are dropped daily until the nest-complement is provided. Rare abnormal specimens have been found, which were pure white, and others that were darkly spotted.

The female, often relieved by her mate, sits twelve or fourteen days, by which time the young have all come out; on the following day their eyes are open, but they remain in the nest from ten to fifteen days longer. For a long time they do not recognize their parents, opening their mouths as widely and crying as eagerly if a cat approach as when they hear the fluttering wings that are really bearing food to them. Both parents are extremely solicitous for the safety of the nest, and jealous of intrusion, rousing the whole neighborhood with their fuss and clamor when disturbed; but by keeping quiet and at a formal distance, making slow advances, you can easily win their confidence. Both are also very attentive to their

helpless charges, alternately, and almost incessantly, bringing food to satisfy their rapacious appetites. A single anecdote will illustrate the depth of this parent-love. A few years ago a pair of robins built their nest on the beams of a shed within sight of the study window of the Rev. S. A. L. Drew, at South Royalton, Vermont. They laid their eggs, and in due time young appeared, which grew until too large to remain in the nest, when one or two got out upon the beam. Cats were constantly on the watch, waiting until the fledglings should slip off, and the parents were in great distress; but they were by no means idle, for at daylight on the succeeding morning, Mr. Drew saw a second, (new) nest beside the old one, in which were two of the young. Thus the old birds successfully met the emergency, and reared their family in safety until able to fly.

Two, and in the case of old birds, often three broods are brought out in a single season; but the eggs of the last laying are likely to be fewer and smaller than the previous clutches.

An important part of the food of the young consists of grubs, earthworms, ground-beetles, measuring-worms and the larvæ of various moths and butterflies which infest the garden, besides various species of diptera, including the house and stable flies, the mosquito, and many others; add to these the fruits of several varieties of cherry, the strawberry, raspberry, currant and other berries. The insects are preferred, however, and the services of the robin, in destroying the injurious cut-worm alone, are inestimable. The quantity required for the support of the young in a nest is prodigious, and taxes the faithful parents to the utmost to provide it.

The Cape St. Lucas Robin (Var. *CONFINIS*, No. 1a), is regarded as only a variety of the Eastern bird, from which its general habits are not known to differ.

2. THE OREGON ROBIN.

TURDUS NÆVIUS *Gmelin.*

Spotted, Painted and Golden Robin (Oregon to Vancouver); Varied Thrush.

The Oregon robin of the northwest coast ranges from *Behring's Straits to Southern California*, and eastward through the Rocky Mountains; while several erratic specimens have been taken in the Eastern States, always, however, in winter.

In the spring it retires to the extreme north to breed; and to Mr. W. H. Dall we are mainly indebted for what we know of its nest, several of which he discovered in Alaska. One, found May 22, was built about two and a half feet from the ground, upon a pile of rubbish which had been drifted into a clump of willow bushes. The situation, as in all other cases, was a secluded one, close to the river bank.

The nest was 6 inches in diameter, and 2 1-2 thick, but the depression of the cavity was slight. It was composed of dry mosses and lichens well compacted, and fragments of dry stalks of grasses. Another nest, seen by Dr. Minor in Alaska, was a more finished structure. The outside consisted of a basket of slender twigs, within which was an inner nest of interwoven fine dry grasses and long gray lichens. The eggs, in number, size, shape and ground-color, are closely similar to those of the eastern robin, but are somewhat profusely marked with round distinct spots of dark brown, nearly black, which makes them indistinguishable from the eggs of the mavis, or song-thrush (*Turdus musicus*) of Europe.

3. THE WOOD THRUSH.

TURDUS MUSTELINUS *Gmelin.*

Wood Robin; Song or Swamp Thrush; Mavis; Swamp Angel (Adirondacks).

The wood thrush breeds throughout its range in the United States, where it is distinctively an *eastern* bird. It is found northward to New England and Canada West; westward to Dakota, and southward in winter, to Central America. Through the central portion, all have paired by May 1, and the nest is

usually completed by the 15th of the month, except in New England, where the date is somewhat later. Although very common in wooded and thickety districts, they are more shy than the robins, and conceal their houses with much greater care, often contriving to curtain them with long leaves and trailing vines.

The nest of this thrush is nearly as bulky as the robin's, but generally has little or no mud in its composition. It is placed upon the horizontal branch of a forest tree, anywhere from six to forty feet above the ground, or in the forks of a sapling. The materials are twigs, coarse grasses, and dried leaves—of which latter, in damp situations, there is often a great thickness underneath—well combined, and lined with fine roots and grasses. While it is not common to find this thrush nesting away from the woods, Dr. Brewer, Mr. Burroughs and others mention instances where it built in gardens close to the house, so long as it was left undisturbed; and a friend of mine, in Astoria, L. I., has amused himself for several summers in providing a familiar pair of wood thrushes with quaint materials, including strips of newspaper, and watching them construct their home in his door-yard. Whatever its situation, the type is well adhered to, and the foundation of dead beech or oak leaves is a characteristic. But I remember one case in which ribbon-like grass had been used instead, and I am told that in lieu of the usual layer of impacted leaves, an underpinning of mud or cow-dung is sometimes found. The construction of the whole occupies both sexes steadily for five or six days, and measures externally about 5 inches in diameter; internal width, 4 inches; depth, 1.75 inches.

The books say that but one brood is raised in New England, but I am inclined to think otherwise. Mr. Maynard says the usual time of nesting, near Boston, is June 1, although he has found the young on the 4th. Mr. Samuels places the date as May 20. In Michigan, Mr. A. B. Covert of Ann Arbor writes me, he has taken fresh eggs on various dates between May 10 and June 4. During the summer of 1873, I spent several weeks at Norwich, Conn., where these thrushes are abundant. On June 2, I found one of their nests, containing four eggs, which

had been sat upon, and on June 4, another similar one; the following day an unfinished nest was found; from this time constant search met with no wood thrush's nest until the 21st, when another was found, containing four fresh eggs, which I then considered a second brood, not seeing why this pair should have delayed their building until all their neighbors' young were hatched. This trip furnished another curious note. On June 5, I found a nest of the wood thrush, nearly finished, on the lower limb of a large oak. Visiting it again on the 18th, it contained three eggs only slightly addled. Did these eggs belong to the original builders who were so dilatory; or had the nest been abandoned and afterward taken possession of by another pair? In eastern Pennsylvania, Mr. Gentry has recorded nests with eggs, discovered as late as July 15; but he thinks these the labor of birds whose early efforts had been frustrated, and that only one brood is raised. I am certain that along Lake Erie, in New Jersey and on western Long Island, two broods are brought out: but there is much irregularity as to time, young birds, old eggs and new nests being found side by side.

The eggs are usually four, but sometimes only three in number. They are uniform deep blue, not inclining to green so much as the robin's, than which, also, they are one-fifth smaller, more slender and pointed; average dimensions are .98 by .78 of an inch. The female alone sits upon the eggs, which hatch in thirteen days, the male meanwhile paying devoted attention to her wants. Their behavior when the nest is approached is very different in different individuals. If the female is sitting, she will usually remain upon the nest, watching you intently, until you reach out your hand to touch her, when she will suddenly slip away and cannot be induced to show herself while you remain in the vicinity; but sometimes, with an unnatural courage born of her terror, she stands her ground, bristles up, and whistling, screaming and hissing, repeatedly darts at your head with the utmost fury.

The parent birds manifest much solicitude for their offspring, and assist by turns in supplying them with food. Mr. Gentry mentions a long list of insects probably on their bill of fare,

among which are earthworms, the larvæ of various moths and butterflies, including the tent-caterpillar, the young of flies, small moths and beetles, and small fruit, cherries and strawberries, when these are adapted to their age and condition.

Young wood thrushes are said to be easily reared in confinement.

4. THE HERMIT THRUSH.

TURDUS PALLASI *Cabanis*.

Solitary and Rufous Tailed Thrush; Ground Swamp Robin (Maine);
Rain-Bird (Nova Scotia).

The typical hermit thrush ranges all over eastern North America, wintering in the southern states, whence it spreads northward in the spring, reaching New England by May 1. It breeds in the Alleghanies from *Pennsylvania northward*, but in New England only north of the hilly parts of Massachusetts; thence to Labrador, the islands in the Gulf of St. Lawrence, and perhaps Greenland; also in Colorado. Dr. C. C. Abbott says that this thrush seems to be less common in New Jersey than Audubon described it to be, and that about one in twenty which pass the city of Trenton breeds, retiring for that purpose about June 1. Dr. Abbott also assures me that Mr. Cassin once told him that he had found a nest of the hermit in a swamp at Camden, N. J.

The nest of this thrush is always built upon, or close to the ground, usually away from the woods, and under bushes in swampy places. "Such care is taken to conceal its nest in the recesses of tangled undergrowth, that few are the ornithologists who have found it. If Wilson, Nuttall, or Audubon ever saw a nest, no one of them recognized its owner. The nests and eggs which they describe as those of the hermit were certainly the olive-backed thrush's, the only one which nests at any considerable distance from the ground and lays spotted eggs." Dr. Brewer mentions that in Parsboro, Nova Scotia, he saw one in the midst of the village, but in a marshy place, nearly unapproachable. At Upton, Me., Mr. Maynard found two nests on top of decayed logs, and Mr. Samuels has several which he took from low scrubby bushes; I have heard of other

similar cases, but all such were in wet places. The materials used are decayed, deciduous leaves, remnants of dried weeds, sedges, plants and grass, mixed with twigs and lined with fine matter. The structure thus so closely resembles that of the veery that one must be cautious not to mistake its commoner home for that of the rare hermit's. In the north much moss is used, — sometimes exclusively among the pine woods; while A. L. Adams, in his *Field and Forest Rambles*, mentions that in New Brunswick mud enters into the composition of the nest.

When you approach their hiding place, the birds mournfully retire and keep silent; but it is said if a hawk or crow, in search of young birds, comes near, they attack it courageously.

Eggs are laid about the first week in June. A correspondent in North Bridgton, southwestern Maine, writes me, however, that he has seen eggs nearly hatched, on May 24, and also fresh ones as late as July 10. The eggs are of a somewhat elongated-oval form, and in color light blue, with a tendency to green. As remarked above, the earlier ornithologists were all mistaken in describing these eggs as spotted or blotched, since there is no such instance authenticated. The measurements are about .90 of an inch long, by .62 wide, in average examples. Two broods are sometimes raised in a season.

In the west there are two distinct varieties of this species: Audubon's Thrush (Var. *AUDUBONI*, No. 4*a*); and the Dwarf Thrush (Var. *NANUS*, No. 4*b*).

Audubon's thrush, also called the Rocky Mountain hermit, is the more common, and the more southern in its habitat, extending from northern Colorado and Utah in summer to Central Mexico, where it is resident upon the table-lands. It breeds abundantly through the southern Rocky Mountains, at great altitudes, and at Salt Lake City, where Henshaw found its nest. Another nest, taken by him on June 7, at Fort Garland, Colorado, he describes as built in the cavity of a broken pine stub, about three feet from the ground. It was composed almost wholly of strips of bark and coarse grasses, covered externally with mosses. A nest found at Fort Ellis, Montana, in a small pine tree in the mountains, consisted entirely of mosses lined with fine grass leaves. The eggs in all cases are deep greenish

blue, like those of the robin, and measure .85 by .72 of an inch. It is not easy to understand why this variety should depart so widely from the custom of the other hermit thrushes, all of which nestle upon the ground.

The dwarf thrush is chiefly restricted to the Pacific coast. It breeds from Oregon northwards, and in the Sierra Nevada; and except in being slightly smaller, its nests and eggs are like those of the eastern bird.

5. THE OLIVE-BACKED THRUSH.

TURDUS SWAINSONI *Cabanis*.

Swainson's Thrush; Swamp-robin (Maine).

The typical olive-backed thrush wanders in its migrations over nearly the whole of the continent, but is resident in summer only *north of Massachusetts*, except about Salt Lake, Utah, and in rare instances among the remote mountains of New Jersey and Pennsylvania. If we are to believe that Wilson and the other early ornithologists really meant this bird in their accounts of the "hermit" thrush,—and there seems little doubt of it,—then their record must be accepted as proving more southerly localities than it is now known to inhabit in the nesting season.

Swainson's thrush begins its housebuilding in Maine and New Hampshire the last days of May; and its fresh eggs have been found at the Isle of Grand Menan from June 5 to 21. In the Wahsatch Mountains, Utah, the date is a fortnight later. The favorite building location is beside a woodland stream or near a path or road; the depth of the woods is avoided. The positions chosen vary. Among the large number of nests which have been found at Lake Umbagog by Deane, Bailey, Brewster, Purdie and others, some were placed at a considerable height on the horizontal branches of forest trees; others near the ground in small evergreens; and some rested on the tops or broken limbs of dead "stubs" in the most exposed manner. In Utah, it chooses the willow bushes in the bottoms of the cañons.

The nest measures 4 inches in width by 2 in height, and the cavity is rather shallow. It is a more neatly and carefully constructed home than that of any other of the thrushes. Conspicuous among its miscellaneous materials are *Hypnum* mosses, which, by their fibrous masses, distinguish these nests from all except those of the West Coast variety (*ustulatus*). Besides this moss are found fine sedges, grasses, stems of reedy plants, "red, glossy vegetable fibres, the stems of flowering *Caledonia* mosses, lichens, fine strips of bark, etc.," varying with locality.

Usually three, but apparently never more than four, eggs are laid, which average .88 by .66 of an inch in measurement. The ground-color in most cases is pale bluish green, but sometimes light blue. The egg is thickly speckled with spots of russet brown and reddish, more or less confluent, and with many variations. The rearing of more than one brood in a season appears to be exceptional, and has been altogether denied; but I am inclined to think it happens; indeed, I have apparently trustworthy information that a nest with fresh eggs was taken at North Conway, N. H., in a swampy thicket on the mountain, as late as July 11.

When driven from the nest, the mother silently conceals herself, or alights close by, offering no resistance or complaint.

Besides the typical, eastern form, there are two well-marked varieties of this species—the Gray-checked, or Alice's Thrush (Var. ALICLÆ, No. 5a); and the Oregon Thrush (Var. USTULATUS, No. 5b).

The former breeds abundantly from Labrador along the Arctic Circle to Alaska. Its nests are generally placed on the branches of low trees, within reach of the hand, and are constructed of various vegetable substances so soft that no separate lining is required; and they thus resemble the nests of the parent species in all respects except in the absence of the bright *Hypnum* moss, so characteristic of *Turdus swainsoni*. Occasionally the nest will be found upon the ground, when it is likely to have mud-walls much like a robin's. Dr. Coues saw these birds in deep, shaded ravines in Labrador July 24, the young just beginning to fly, amid the most intense anxiety on

the part of the parents. The eggs of Alice's thrush Dr. Brewer excellently portrays as either of 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 their mean breadth .64. The ground color is more distinctly blue, than in eggs of the olive-back, and their shape smaller and more round.

Variety *ustulatus*, the Oregon thrush, is restricted to the Pacific Coast, occurring abundantly in the breeding season from Lat. 34° in California to Alaska. It nests in central California by the middle of May—fresh eggs being found at Santa Cruz, for example, from May 15 to June 6—and farther north several days later, building generally on a horizontal branch of a low tree, or in hazel, willow or brier bushes. The nests are well described as “large, compact, strongly constructed and neat. They measure about 5 inches in their external diameter, with a height outside of 3; the cavity is comparatively shallow, being rarely 2 inches in depth. The external portions are constructed almost entirely of *Hypnum* mosses matted and glued together, and sparingly interwoven with dry leaves and fine fibrous roots, and are lined with finer materials of the same kind.” Dr. Suckley tells us that the moss, with which the nests are so profusely covered, takes root in the damp climate near the coast, and grows until it forms a large mass.

The eggs are pale green in ground-color, variously spotted with reddish-brown over underlying suffusions of neutral tint and faded russet. Sometimes the blotches are distinct, small and frequent, all over the eggs; in other specimens they are large and washed out, with dottings between, while in some there is a universal dense clouding of fine specks of faded tint. In size they average .87 by .72 of an inch. Two broods are raised, even at Puget's Sound.

6. WILSON'S THRUSH.

TURDUS FUSCESCENS *Stephens.*

Tawny Thrush; Veery (New England).

This beautiful singer breeds from the latitude of *Pennsylvania and Iowa, northward* to Quebec, westward along the upper Missouri, and in the valleys of Utah and Colorado.

The veery makes its appearance in New England from the south, early in May, and begins to build during the third week of that month; but in the centre of Maine the date is a fortnight later. At Pembina, Dakota, Dr. Coues found fresh eggs on June 9, and in southern Colorado Mr. Henshaw took them on the 19th. Except in the far north, where its breeding is delayed until midsummer, it no doubt brings up two broods in a season. Audubon and Wilson Flagg speak of the nest as being built on mounds of sticks and grass, in the darkest part of the woods, and say that it is made to resemble the surrounding objects; while Nuttall and others write that it sometimes chooses bushes and low trees. These situations are exceptional, for the nest is almost invariably placed unsupported upon the ground. Those I myself have found were in a secluded swampy place distant from houses, in fern-tussocks; and although one was in Lorain county, Ohio, and the other near Norwich, Conn., the similarity was complete, and encircling strips of the inner bark of the grape-vine were a characteristic feature of both. These nests were composed of dead leaves, broad grasses and strips of bark wound round and round, and thin chips and remnants of dried plants, lined with finer strips and threads of the same. The walls were not woven or overcast, and it was with great difficulty that the nest could be kept together. The site is almost always a damp one, and hence a thick mass of dead leaves is usually brought together by the bird, upon which the superstructure rests. There seems to be little variation in the manner; but one of Henshaw's nests from Colorado had been built on top of a nest of the preceding year, as occasionally happens with the robin. A nest found by Arthur F. Gray, at Danvers, Mass., was placed at the foot of an alder-clump eight inches above the ground. The base was

composed of maple leaves, upon which the superstructure was woven of coarse grasses, and lined with fine roots and grasses. The measured dimensions were: external diameter, 4.50 inches; internal, 2.60; depth inside, 1.60.

Since the above was written, Dr. Brewer announces (Bull. Nutt. Orn. Club, III, 193) the finding in Vermont of a large and bulky nest of the veery saddled on the horizontal limb of a tree fifteen feet high. Previously, it appears, Mr. George O. Welch had met with a similar case, where the elevation of the nest was twenty-five feet.

The eggs are a deeper shade of bluish green than those of the hermit thrush, but not so dark as those of the cat-bird; their form is generally oval, sometimes lengthened and sharpened; their average size is about .93 by .66. As in many other eggs, the longest specimens are not always the broadest. Mr. Allen states that at Fort Rice, on the Upper Missouri, among many nests containing the ordinary green eggs, one set was found thickly speckled with very small dots of olive. This has lately been duplicated by the four eggs found in the Vermont nest mentioned above, where the eggs were spotted, one very strongly with golden brown, the others less so. In Massachusetts and in Michigan, the first set of four or five eggs is laid about June 1; the second set, three or four, in July.

The female's anxiety for the concealment of her home is very great, and when she hears your approach she steals away, and will not return while you are near, skulking about in silence, or with an occasional low complaint. Such has been my experience; yet Mr. Gentry records that near Philadelphia the female does not exercise the least precaution by keeping silence, but allows her over-solicitude to betray at once the situation of her precious charge.

7. THE MOUNTAIN MOCKING-BIRD.

OREOSCOPTES MONTANUS (*Towns.*) *Baird.*

Mocking-Bird (Wyoming, Montana); Sage Thrasher.

The western mocker ranges from the *Black Hills to the Pacific Coast*, between Cape St. Lucas and British America,

breeding over nearly the whole area, but not very plentifully, and always amid the desolation of the sage-brush plains. Nuttall had the good fortune to find the first nest reported, in what is now western Wyoming. It was placed in a "wormwood" bush, and "was made of small twigs and rough stalks, lined with strips of bark and bison wool."

In northern Nevada—the centre of their summer range—the ardent males begin that eager rivalry which marks the approach of the breeding season, early in April, and the first eggs are laid by the 20th, the nests having been begun a week earlier. This date is also true northward to Oregon at least, and full time is thus left for bringing out a second brood. As soon as the laying begins, the males become perfectly silent, "their main occupation being that of sentinel on guard for the approach of an intruder."

While a sage bush, or its prickly companion the greasewood, is preferred by the mountain mocker, he also places his domicile on other bushes and small trees, brush-heaps, or even on the ground at the roots of a bush; but always low down. It is a large, rude structure, built of twigs and lined with fibrous roots. A curious nest was noted by Henry Henshaw in his report to Lieut. Wheeler, in charge of explorations and surveys west of the rooth meridian. It was seen on June 22, at the Alkali Lakes near Fort Garland, Colorado, when the embryos were nearly ready to be hatched. This nest, a bulky affair of twigs lined with grass, was placed in a low bush. Eight or ten inches above it was a platform of twigs, which, whatever may have been the original intention, certainly served as an admirable screen from the rays of an almost tropical sun. It may possibly have been intended as the site of the nest, and then, for some reason, abandoned for the one beneath.

The four, rarely five, eggs average 1.02 by .71 of an inch, and present little variation in any respect. In color they are rather light greenish-blue, boldly and sharply marked all over, but more thickly at the large end, with spots of burnt brown, underneath which are a great number of smaller specks, points and faint touches of a lighter brown, yellowish, purple and lavender. It approaches some styles of mocking-birds' eggs.

Though they taper toward the smaller end, it is not pointed, but decidedly blunt.

“When a nest is disturbed,” Mr. Ridgway says, “the parent birds do not protest, but merely run anxiously about the meddler, in the manner of a robin, now and then halting, and with outstretched necks closely observing his actions. When the young are hatched, however, they become more solicitous, and signify their concern by a low *chuck*.”

8. THE MOCKING-BIRD.

MIMUS POLYGLOTTUS (L.) *Boie*.

The mocking-bird is spread over the *southern half of the United States* from the Atlantic to the Pacific. From the Carolinas southward to Nicaragua it is resident; northward it not unfrequently extends its summer wanderings to Massachusetts, lakes Erie and Ontario, and westward to the borders of Arizona, breeding throughout this extent. In the middle districts of the southern states, the mocking-bird raises two and sometimes three broods, the first of which appears in March, the second in May, and the last in September. The first brood contains five or six eggs, the second four or five, and the third, when there is one, rarely more than three, of which Audubon says only two usually hatch out. “The dew-berries from the fields, and many kinds of fruit from the gardens, mixed with insects, supply the young as well as the parents with food. The brood is soon seen emerging from the nest, and in another fortnight, being now able to fly with vigor, and to provide for themselves, leave the parent-birds, as many other species do.”

No description which I could write would so pleasantly or accurately portray the home of the mocking-bird as Alexander Wilson has done in the following paragraph :

The precise time at which the mocking-bird begins to build his nest varies according to the latitude in which he resides. In the lower parts of Georgia, he commences building early in April, but in Pennsylvania rarely before the 10th of May; and in New York, and the states of New England, still later. There are particular situations to which he gives

the preference. A solitary thorn bush, an almost impenetrable thicket, an orange tree, cedar, or holly bush, are favorite spots, and frequently selected. It is no great objection with him, that these happen, sometimes, to be near the farm or mansion house. Always ready to defend, but never over-anxious to conceal, his nest, he very often builds within a small distance of the house, and not unfrequently in a pear or apple tree; rarely at a greater height than six or seven feet from the ground. The nest varies a little in different individuals, according to the conveniency of collecting suitable materials. A very complete one is now lying before me, and is composed of the following substances: First, a quantity of dry twigs and sticks; then, withered tops of weeds, of the preceding year, intermixed with fine straws, hay, pieces of wool and tow; and, lastly, a thick layer of fine fibrous roots, of a light-brown color, lines the whole. The eggs are four, sometimes five, of a cinereous-blue, marked with large blotches of brown. The female sits fourteen days, and generally produces two broods in a season, unless robbed of her eggs, in which case she will even build and lay the third time. She is, however, extremely jealous of her nest, and very apt to forsake it if much disturbed. It is even asserted by some of our bird-dealers, that the old ones will actually destroy the eggs, and poison the young, if either the one or the other has been handled. But I cannot give credit to this unnatural report. I know, from my own experience at least, that it is not always their practice; neither have I ever witnessed a case of the kind above mentioned. During the period of incubation, neither cat, dog, animal nor man, can approach the nest without being attacked. The cats, in particular, are persecuted whenever they make their appearance, till obliged to retreat. But his whole vengeance is most particularly directed against that mortal enemy of his eggs and young, the black snake. Whenever the insidious approaches of this reptile are discovered, the male darts upon it with the rapidity of an arrow, dextrously eluding its bite, and striking it violently and incessantly about the head, where it is very vulnerable. The snake soon becomes sensible of its danger, and seeks to escape; but the intrepid defender of his young redoubles his exertions, and, unless his antagonist be of great magnitude, often succeeds in destroying him.

With reference to the jealous care with which the female guards her nest, Audubon, in his *Birds of America*, writes:

During incubation the female pays such precise attention to the position in which she leaves her eggs when she goes to a short distance for exercise and refreshment, to pick up gravel or roll herself in the dust, that, on her return, should she find that any of them had been displaced or touched by the hand of man, she utters a low, mournful note, at the sound of which the male immediately joins her, and they are both seen to condole together. Some people imagine that, on such occasions, the

female abandons the nest; but this idea is incorrect. On the contrary, she redoubles her assiduity, and scarcely leaves the nest for a moment; nor is it until she has been repeatedly forced from the dear spot, and has been much alarmed by frequent intrusions that she finally and reluctantly leaves it. Nay, if the eggs are even on the eve of hatching, she will almost suffer a person to lay hold of her.

In nesting on the plains beyond the Rio Grande, these birds often select a cactus; and the structure they contrive, composed of thorny twigs and briars, and placed in one of these plants, is encircled on all sides by spear-like points, impervious to every creature that has not wings. Often the only way for the collector to possess himself of the nest is by hewing through the abattis with his knife. The eggs are laid there the first week of April, and young birds are first seen about May 1.

The eggs of the mocking-bird are four or five in number, and are subject to extreme variations. The ground color may be gray, grayish-green, or even buff, irregularly speckled and blotched (sometimes one style of marking, sometimes the other, and often both mingled) with rusty brown and lavender tints. The shape is not slender but the smaller end is considerably pointed. In size the eggs range from 1.25 inches to .90 of an inch in length, and in breadth from .72 to .67. An average of a large number of specimens I find to be 1.01 by .72. In spite of these variations, the egg once recognized is not easily mistaken afterwards.

9. THE CAT-BIRD.

MIMUS CAROLINENSIS (L.) Gray.

Blackbird (Bermudas).

The cat-bird is one of the most common and conspicuous of all our birds. It breeds in summer over the *whole Union except the Pacific coast*, northward to the Saskatchewan. Among the earliest to show itself in the Northern states, it immediately resorts to the thickets along the edges of the woods, and to the quiet gardens of country villages.

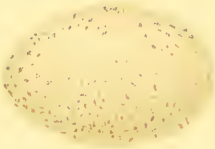
The cat-bird mates about May 1, in the Middle and Western states, and considerably later in the territories, and the pair soon begin to look for a nesting place, with much care and de-



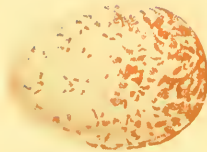
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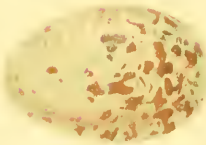
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liberation. The site selected is usually a brier, a thorn-apple, or a bush in the centre of a thicket or hedge, seldom far from a settlement. "The injudiciousness of the selection is not always foreseen, and a nest is often nearly completed before the mistake is discovered. In this predicament, instead of 'making the best of a bad bargain,' the birds totally ignore the site for another better suited to their taste." The situation finally decided upon, both birds work diligently during the cooler hours of the morning and evening for five or six days in the construction of their domicile. "When a suitable article has been found," says Thomas Gentry, "the bird does not fly immediately to the nest and adjust the piece, but indulges in short flights from one object to an adjoining one, carefully surveying the premises all the while, until within a few paces of the nest, when she rapidly flies thither, and having satisfactorily adjusted it goes off in quest of other materials." The pair do not seem to be annoyed by the presence of human witnesses to their work.

A platform of twigs and slender sticks or weeds is usually first built, on which rests the body of the nest. The main structure is composed of finer twigs, strips of bark, leaves, straws, pine-needles, shavings, and other stuff, more or less firmly put together. The inside measures about 3 1-2 inches in diameter, and as many in depth, and is closely lined with black fibrous roots, and sometimes with fine dry grass, particularly if built near the seashore. Usually compact, this nest is sometimes very bulky, and entangled among the branches of the bush in which it rests. One which I found near Norwich, Conn., was hung between two small bushes in such a way that it had no more direct support than that which a slender spray from each bush afforded; but the voluminous mass of crooked sticks underneath it offered so many hooked ends and projections that the nest was very secure. Another is described as carelessly made, and bearing a close resemblance to the nest of the Maryland yellow-throat, and was presumed to be the work of young or indolent birds. A third deviation, on the contrary, showed superiority of workmanship. The outside of this cosy and beautiful nest was "composed of wool, raw cotton, strings, fragments of lamp wick, a slight intermixture

of tangled silk, fragments of lichen, . . . held *in situ* by strands of silk. Upon this basis was built a superstructure of fine rootlets, intermingled with patches of wool."

After the completion of the nest a short time elapses before any eggs are laid,—this happening about the third week of May in the Northern states generally,—and then only one is deposited each day, for four or five days. The eggs are very dark emerald green, highly polished, and about .91 of an inch long, by .70 broad. There is small chance of confounding this with any other American bird's egg, certainly after it has been seen once. Dr. C. C. Abbott informs me that, at Trenton, N. J., he discovered a nest of purely white cat-birds' eggs, and leaving it, found that all hatched at the proper time into perfect young. Similar instances are known in the case of several other species laying dark eggs, sometimes only one or two clear white examples accompanying others of the normal color in the same clutch.

Incubation is protracted twelve or thirteen days. Meanwhile the male remains near by, solicitous for his mate's welfare, only leaving her when hunger compels him to hunt. His enemies are chiefly serpents which have a fondness for his eggs and young. Should one of these glide into the bush, the birds instantly attack it with the greatest fury, flying into its very jaws.

10. THE BROWN THRASHER.

HARPORHYNCHUS RUFUS *Cabanis*.

Brown, Red and Ferruginous Thrush; Red Mavis; Corn Planter (New Jersey);
French Mocking-bird (Louisiana).

The brown thrasher inhabits the *eastern United States*, extending north to the Red River; west through Nebraska, Dakota and Colorado; and south to the Rio Grande, beyond which the type is replaced by other races. It winters in the southern United States and breeds throughout its range.

The nest of this bird has a peculiar charm for me, for it was the first one that I distinctly remember to have found, and it was priceless to me. That first nest was sunk in the grass of

swampy woods, but this situation I soon found to be not the only one affected by the thrasher. He is an inhabitant of the out-of-the-way orchards and the edges of the woods, where his "querulous smack" is heard among the first-comers in the spring. In such a locality he builds his nest. It may be on the ground or sunk into it, on a brush pile, on the end of a fence-rail, in the dense centre of a hawthorn or a hedge (never fail to look into every thorn bush), or twenty feet up in the fork of a sapling.

Early in March, in Florida and Louisiana, the birds having paired begin to look about for some such place for a homestead. In Pennsylvania this does not happen until early in May; and when the brown thrashers have reached New England, by the middle of that month, they seem already to be paired off and immediately begin nesting. "After the selection of a suitable site both birds set diligently to work until the nest is completed, which is the result of four or five days' steady labor." If placed above the ground, the nest is composed outwardly of a layer of twigs, sometimes with many dry leaves underneath, then leaves and strips of cedar and grape-vine bark, or broad grasses and fibrous roots firmly woven into a broad and flattish structure. It is not so loose as the cat-bird's, so bulky as the blue jay's, or so ragged and disreputable-looking as the king-bird's, nor has it hardly any mud in its composition. If on the ground, or sunk into it—like that first proud discovery of mine, or a very handsome one I found under a tiny evergreen bush on a side-hill in Connecticut last year—the nest will be found constructed almost entirely of interwoven broad grasses securely bound together, and with the edges overcast in the best style of basket-finishing. Perhaps its firmness is due to the previous condition of the materials, which, having been moistened with water and plastered with mud, become so agglutinated as to require great effort to detach them from the fabric. Its thickness is also great. This strength and trimness give it an indefinable character not easily mistaken by the experienced eye.

Occupation closely follows the completion of the nest and lasts through a week, three to five eggs being laid. Their color is greenish, or dirty white, over which is thickly sprinkled a pep-

per-and-salt of reddish-brown. These minute dots tend to aggregate at the great end, around which they sometimes form a perfect wreath. Their length varies from .98 to 1.12 inches, with a mean of 1.05; their breadth ranges from .75 to .87 of an inch, with a mean of .82. Two broods are raised each season.

In the duties of incubation it is probable that the males frequently share, although some observers say that the female alone sits on the eggs. Thirteen or fourteen days are required to hatch them, the time depending somewhat upon the weather. Both parents watch over each other and their charge with great care and anxiety, wreaking instant vengeance upon all intruders. Like the cat-bird, the thrasher is often called upon to resist a dreaded enemy—the black-snake—which coils himself around the beautiful structure and devours the callow young in spite of the frenzied parents, who fight so recklessly as often to fall a prey to their own temerity. I myself have seen it. The terrible beauty, the black, shining folds, the easy gliding movements, the erect head, jewel-eyes, tongue “playing like subtle flame,” bring to mind the great myth of the Tempter and his intrusion into that first home long ago, and make us wonder whether, after all, the woman was really to blame for yielding under the terrible fascination of such a presence.

When the nest is taken the thrashers utter a guttural, whining complaint, and follow the person who carries it away. The mother’s call to her little ones consists of tender, solicitous whistling, followed by a few smacking clucks, not very loud. The male rarely sings to his mate close to the nest, fearing to attract attention. They are intolerant of any tampering with their eggs, and readily detect imposition. Dr. T. M. Brewer removed three eggs from one of their nests and left three robins’ eggs. In a few moments the female approached, gave the contents of the nest a hasty survey, and immediately flew off. She returned in a short time in company with her mate, and both flew to the nest, apparently in the greatest rage, took each an egg in their claws and dashed it against the ground at the distance of more than a rod from the nest, the female repeating the same with the other egg. This done, they continued to vent their rage on the broken eggs and afterward forsook the nest.

Not more than one brood is usually raised in the northern states, although beginning so early, but at the south two are brought up in a season.

The young are fed upon the larvæ of various beetles and other insects, and eat an enormous quantity of these grubs, with a desert of small, soft berries. Their bellies become distended until they almost burst and lose all semblance to the bodies of birds. Yet, whenever they hear the mother's call, or an imitation of it, they will open wide their gaping, yellow mouths for more. It is some days, however, before they learn their parents' voices. They breed well in aviaries, and the young are raised upon the same food as mocking-birds.

The Texas Thrasher (Var. *LONGIROSTRIS*, No. 10a) is a dark race, inhabiting eastern Mexico, and northward to the eastern bank of the Rio Grande. Mr. George H. Sennett, of Erie, Pa., has enlightened us greatly as to its habits, which until lately were little known, and which are found to resemble closely those of the eastern bird except in greater shyness. At the mouth of the Rio Grande their nests were numerous in April. They were situated in a variety of places—cactuses, Spanish-bayonet plants, chaparral, and most commonly in the dense undergrowth among the heavy timber. Its usual position is in the very heart of the tree or plant selected, and like most nests of this region is not capable of being detached from the thorny bushes without falling to pieces. Brewer's History of North American Birds asserts that the nests of this species "are usually a mere platform of small sticks or coarse stems, with little or no depression or rim, and are placed in bushes, usually above the upper branches." Mr. Sennett's trustworthy observations correct this. He found none without a lining, either of grasses, Spanish moss, fine roots, or bark; there was a marked depression in every nest, the depression varying from one to two and a half inches. The lowest was four feet from the ground and the highest some eight feet; none were in an exposed position "above the upper branches." Mr. Sennett thinks this nest cannot ordinarily be distinguished from that of the mocking-bird or that of the next species, either by structure or position. The usual clutch is four eggs, which are hardly dis-

tinguishable from those of *H. rufus*. The typical egg has a ground-color of the faintest greenish-white and is speckled all over with russet and brown, the dotting being amassed so as to form a cap over the larger end. Several sets were obtained by Mr. Sennett with the ground-color yellowish-white, and so thickly speckled as to have a general color of ochre; one set is nearly pure white, speckled thickly only in the form of a wreath at the larger end, otherwise very sparsely and faintly marked. The largest egg was 1.12 by .84 of an inch, and the smallest 1.01 by .75; the average length was 1.07, and breadth .78. Their shape is round and blunt.

11. THE CURVE-BILLED THRASHER.

HARPORHYNCHUS CURVIROSTRIS (*Sw.*) *Cab.*

This species, called "curve-billed" by way of emphasis, for the bills of all this genus are greatly bowed, is distributed from western Texas to the Colorado river. As mentioned above, its nest is similar to the mocking-bird's. In Durango, Mexico, Lieut. Couch is said to have found their nests as early as February, but near Brownsville, Texas, the mean date is not much before May 1, while the two sets found by Capt. Charles Bendire, U.S.A., in Arizona, were on July 18 and Aug. 20. This is a remarkable disparity, and Capt. Bendire's eggs were probably those of a second laying. The ordinary breeding-place is a secluded thicket, clump of chaparral, dense cactus or como tree, upon the pulpy fruit of which it feeds. In such position it finds the most perfect protection. One nest found by Mr. Sennett at Hidalgo, April 17, was beneath the roof in the broken side of a thatched outhouse in the very heart of the village, and he writes:

A more exposed place for human view could not be found, nor was there in the village a yard more frequented by children; yet I could not imagine a safer retreat from its more natural enemies—hawks, jays, etc. The female was shot as she came from the nest; and with little difficulty I took the nest entire, with its complement of four beautiful, fresh eggs. The average size of the nest was about that of an ordinary four-quart measure, although, from its irregular shape, it would not set into one. Its depth outside was fully six inches, with an inside depth

of two, so that when the bird was on, though only six feet from the ground, nothing but its head and tail could be seen. The nest was composed of twigs from the size of a lead-pencil down, and lined with dry grasses. This description will apply to the several others found, with this difference: some were smaller, and in this instance greater care was taken to intertwine the sticks, so that it would hold well together.

The shape of the eggs is like that of the brown thrush's, only longer. The ground-color varies from a pale to a rich pea-green. The markings are minute dots of brown, evenly and finely dusted over the entire surface. The largest egg out of twenty measures 1.18 by .80 of an inch, the smallest 1.03 by .79. The length ranges from 1.20 to 1.03, averaging 1.12 of an inch. The breadth varies from .82 to .72, averaging .79.

A race from eastern Arizona has been named Var. PALMERI, No. 11a, by Mr. Ridgway, in honor of Dr. Edward Palmer, who discovered it near Camp Grant, Arizona. Its nests are placed in choya and cholla cacti, and other low bushes, as Capt. Bendire, who took forty-three of them near Tucson in 1872, tells me, and are very large for the size of the bird, measuring 9 inches in height by 6 inches in width. The nest is of symmetrical form, is composed externally of a mass of thorny sticks, like an enclosing case, which are so arranged as to guard the sides of the nest while the open top is protected by the living branches of the cactus itself. Inside, it is lined with mesquite grass, flax-like fibres and fine rootlets. The cavity is deep. Capt. Bendire secured one nest, which, in addition to the case of thorny sticks around the rim, had the curved thorns of the Turk's-head cactus placed all around, the sharp points turned upward and outward so that it was impossible to put in the hand without pain. This was the most elaborate structure, by far, that he met with. The birds began breeding about May 9, and the last eggs were taken August 5. Never more than three eggs, and often only two, were found in one nest; they were of the oblong tapering shape of those of *H. curvirostris*, from which, either in size or colors, it would be difficult to certainly distinguish them.

11*b*'s. BENDIRE'S THRASHER.

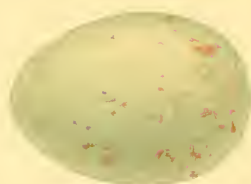
HARPORHYNCHUS BENDIREI Coues.

This is not common anywhere in *Arizona* except at Tucson, where, in 1872, Capt. Chas. Bendire discovered it and found fourteen of its nests. In a letter to the author Capt. Bendire relates that the first nest he found, May 16, was on a dry, barren plain, between Tucson and Rillito creek. It was placed in a cactus, but was almost the only one found in such a situation, they being more generally discovered in mesquite trees, or, occasionally, in an ash or walnut, from five to thirty-five feet from the ground, and preferably in the river bottoms,—differing notably from the curve-bill, which chooses bushes. The nest is flat and much like that of the curve-bill, but slightly smaller. There are usually only three eggs, occasionally four; their shape is oval, blunt or only slightly tapering at the small end; their size, an average of 1.03 by .73; color, "greenish-gray with pale reddish-brown and lavender markings, generally scattered over the whole surface." Dr. Brewer has noted the similarity of these eggs to those of *Pyrrhuloxia sinuata*; among the thrashers, they remind me most of those laid by *H. cinereus*. Fresh specimens have been found as late as July 19.

12. THE CAPE ST. LUCAS THRASHER.

HARPORHYNCHUS CINEREUS Xantus.

As its name indicates, this species is confined to the peninsula of *Lower California*, where Mr. Xantus found it breeding among the cacti along the desert shore near Cape St. Lucas. These thrashers had young fully fledged by April 4, and continued breeding until the middle of July. The general position of the nest was on shrubs or low trees, and most usually on a cactus plant. Their nests were flat platform-like structures having a very shallow depression in the centre. The eggs are greenish-white profusely marked with spots of mingled purple and brown. In some specimens the spots are yellowish-brown, while in others the markings are much lighter. They average 1.12 by .77 of an inch in dimensions, and somewhat resemble those of the eastern mocking-bird.



13. THE CALIFORNIA SICKLE-BILL.

HARPORHYNCHUS REDIVIVUS (*Gamb.*) *Cab.*

A songster almost equalling the eastern mocking-bird in "liquid mellowness" of tone, the music of this bird is confined to the coast region of *southern California*, where it resides the year round in the dense growth of thorny shrubs on the hillsides.

In general character its nest is a rough, rudely-constructed platform of interwoven sticks, coarse grass and mosses, with a very slight depression lined with pieces of bark, fibrous roots and hair. It is usually very untidy, but occasionally is more elaborately made. Its outside is an interweaving of leaves, stems and mosses, and its lining fine, long, fibrous roots. There are usually three, but sometimes four eggs. Their size is about that of a robin's, but the outline is more blunt. They have a faint, grass-green ground, sparsely spotted with very obscure olive and russet-brown markings, not unlike those laid by *Turdus ustulatus*.

Var. *LECONTEI*, No. 13*a*, of this thrasher, is to be found in small numbers about the lower valleys of the Colorado and Gila rivers, where its habits resemble those of the typical sickle-bills. Its nest is said to be very similar to that of *H. redivivus*, but of the eggs I am ignorant.

14. THE CRISSAL THRASHER.

HARPORHYNCHUS CRISSALIS *Henry.*

Of the rare crissal, or red-vented thrasher, very little is yet known. In its habits and architecture it appears to be identical with the California mocker. It ranges through the *Colorado and Gila deserts*. Capt. Chas. Bendire appears to have been most fortunate in finding its nests, taking six in March, 1872, on the Rio Rillito, southern Arizona. "The nest," he writes, "is externally composed of dry sticks, some of which are fully a quarter of an inch thick; the lining consists exclusively of dry rotten fibres of a species of wild hemp, or *Asclepias*; in none of the nests did I find any roots, leaves or hair. The

inner diameter of the nest is about three inches, with a depth of two inches. Taking it altogether it is not very artistically constructed. None of the nests were more than three feet from the ground. In two cases, I found nests in a dense bushy thicket of wild currant, twice again in willow bushes, and in another instance in an iron-wood bush." A nest found by Dr. E. Palmer, in southern Utah, June 8, was similar, but a little larger.

The usual number of eggs, strangely, is only two, and laying begins about the middle of March. The eggs are somewhat elongated in shape, with a tendency to be pointed at the smaller end; an average measurement makes them 1.10 inches long by .82 of an inch broad. In color they are perfect, immaculate, robin-green and, in the total absence of markings, differ remarkably from all other members of this genus. Three broods are said to be raised and the young are fed on insects.

FAMILY SAXICOLIDÆ — STONE-CHATS.

· 15. THE WHEAT-EAR.

SAXICOLA CENANTHE *Bechstein*.

Stone-chat; White-rump; White-tail; Fallow-smack; Chacker; Chack-bird; Clodhopper; etc., etc. (Great Britain.)

This bird is a straggler from the *British Isles*, where in many districts it is commonly and familiarly known. The nest, sometimes very neat and well-constructed, is formed of moss and bent grass, and lined with hair, feathers, fine grass-stalks, etc., is often quite on the ground and with no bush near; sometimes at the foot of a low bush, or in the bush itself, or in the crevice of an old wall, but very near the ground. It is thus often hard to find. The eggs are five or six, of a pale blue-green ground, very sparingly freckled with dull reddish-brown, and chiefly near the large end, where a zone is sometimes formed. Although it has been proved, pretty satisfactorily, to nestle casually in Labrador and Greenland, the bird hardly comes sufficiently into our scope to merit a long description.

16. THE BLUEBIRD.

SIALIA SIALIS *Haldeman.*

Our familiar sky-blue friend is to be met with over all *eastern North America*, north to Lake Superior, and west to Colorado.

His natural nesting-place is some cranny in a dead tree. He is therefore found loitering about the outskirts of the woods, and he delights in a tract of burned forest. In such scenes he and his mate go house-hunting long before most other small birds have thought of conjugal responsibilities, — in the first sunny days of March. She assumes the direction, and it usually is not long before they are suited, for the woodpeckers have been there years before them, chiselling out holes now left vacant; or the snapping off of some old limb has opened the way to a snug cavity. Any kind of a cranny seems to serve in a pinch. I have known bluebirds to build in a broken tin water-spout under the eaves, between the blind and sash of a little-used window, in a deep fork between the limbs of an apple-tree, or to steal the neat mud house of the eave swallow; and they eagerly settle in boxes and gourds hung up in the garden, whenever they are not driven away by pugnacious wrens or English sparrows. Sometimes objection is made, and frequent combats are recorded between the bluebirds and such sparrows, martins, wrens and even woodpeckers, as deem themselves to have been injured by the former, — who are not always as gentle in the breeding season as they might be, — or are themselves the attacking parties. Contrary to what I should expect, it appears that the bluebird is usually victorious, even whipping such professional fighters as the English sparrows, and birds as strong as the small woodpeckers. The house wren is his most inveterate and successful enemy. This tiny buccancer will often take forcible possession of the bluebird's snug house, rake out all the materials and keep it himself; but sometimes the owner defends himself most successfully. Mr. Gentry relates that a pair of great-crested flycatchers had taken possession of an empty tomato-can placed on top of a post, constructed their nest and laid their eggs. At this crisis a pair of bluebirds came upon the scene and, coveting the cosy

quarters, sought to expel the rightful owners. The flycatchers resisted, and the property-owner shot the female bluebird, thinking to put an end to the disturbance. The male instantly flew away, but returned in half an hour with two females and renewed the contest, gaining the victory. The flycatchers, however, did not retire until they had thrown out the nesting materials, a portion of which they afterward carried away to use elsewhere. After the defeat the bluebird selected a partner from his allies, and the discarded female retired. The proprietor, perceiving a strong predilection upon the part of the bluebirds for the can, determined to annoy them awhile, fastened a lath across the entrance and watched the result. The birds went to work, and by their persevering efforts the piece was soon dislodged. After that the brood was raised in peace and were fed almost exclusively upon the larvæ of two species of turnip or cabbage butterfly (*Pieris*), and the wingless bodies of *Spilosoma*, a moth destructive to the grape.

Into her chosen tenement the female conveys enough of a peculiar kind of grass, which turns dark red when it dries, sometimes mixing with it a little hair, to carpet thickly the bottom of the cavity. This is all the furniture, and she seems to attend to all the details of its preparation, while the male sings and caresses her. In the northern states this bed is finished and the first eggs are deposited by the middle of April; in the south much earlier. Mr. Gentry discusses the question why the bluebirds seek cavities as nesting places; and concludes that it is because such situations best secure the requisite warmth and safety for their young. He thinks it probable that in primitive times hollow trees were occupied more generally than at present by all birds, just as now they are constantly used as hospices by our winter denizens during inclement weather. The argument is that the bluebird learned to build in cavities by first using such places for shelter during cold spring storms; and, perceiving their comfort and convenience, came to regard them as appropriate quarters for nesting. Thus what was to their ancestors merely accidental, has now become intuitive and habitual to the race. Protection is also thus afforded against rapacious birds which would quickly catch sight of the bright plumage of the female in an exposed nest.

As no dampness is to be dried, laying begins immediately upon completion of the nest. The eggs are usually five, sky-blue in color, without blemish, and measure about .80 by .65. I once found in Lorain county, Ohio, a nest of five eggs all of which were pure lustrous white, like a woodpecker's, and several other similar instances have come to my knowledge since. It has been questioned whether they would have proved fertile; I am inclined to believe they would. The period of incubation is eleven or twelve days, the male occasionally relieving his partner in the duties of incubation. When not thus engaged, he is very attentive to her slightest wishes, and often cheers the monotony of her task by a soft, agreeable warble. He is also now very jealous. Not a bird is permitted to trespass upon his premises; even individuals of the same species are treated with the same incivility. If you surprise the female on her nest she makes no attempt to escape as long as you do not touch her, but waits until you have withdrawn yourself some distance before she flies from the hole. The young, when hatched, are fed alternately by each parent. Their food consists of earthworms, flies, young of beetles, moths and butterflies with various other things added as they grow. When the young birds are nearly able to shift for themselves, they are intrusted to the care of the male, while the female busies herself in preparing for the second brood. The old nest is cleaned and refitted and she again sits, depending upon her devoted mate for the maintenance of both herself and the brood, which sometimes are not fairly off his hands before the second family of young are hatched. Three broods are sometimes raised.

17. THE CALIFORNIA BLUEBIRD.

SIALIA MEXICANA Swainson.

This species replaces our eastern bluebird west of the Rocky Mountains, where it is found from *Washington Territory to Mexico*. Dr. Cooper states that it prefers knot-holes in the woods to boxes in gardens, but will breed in crannies about the house and barn and become very tame. It merely lines the hole, using fine dry grass. Near San Francisco, Mr. Hepburn found a

pair had taken possession of a white-bellied swallow's nest, and had actually covered up the swallow's two eggs with their grass bed. The unspotted eggs are slightly deeper in their pale blue than those of *S. sialis*, which they also excel in size, measuring .87 by .69 of an inch on the average. But the differences, if any, between the eggs of *S. sialis* and this and the following species, are not such as would appear in an engraving ; and I have therefore omitted figures of eggs of the two latter. Two broods are said to be brought out, the first being hatched very early

18. THE ROCKY MOUNTAIN BLUEBIRD.

SIALIA ARCTICA Swainson.

The home of this bird is among the ridges and open table-lands of the whole length of the *Rocky Mountains*, where it is not uncommon from 7,000 feet upward, during the breeding season. It resembles its eastern and western congeners in all particulars. In May and early June it builds its nest, choosing some deserted woodpecker's hole, a hollow limb, a hole in the rocks, a bank, or the shaft of a mine ; and is gradually adapting itself to civilized accommodations. An insignificant bed of dry grass constitutes the nest, and four to six eggs are laid, which average about .85 by .63 of an inch, and are not with certainty to be distinguished from those of the other species. Capt. Bendire observes that there is much variation in their color in Oregon, some being of much brighter tint than others. Two broods are raised annually. Both parents feed the young, and exhibit great anxiety for their safety, chirping and uttering a plaintive cry. In the north, after the close of the breeding season, these bluebirds assemble in flocks to feed on the open plains.

FAMILY CINCLIDÆ—DIPPERS.

19. THE WATER OUZEL.

CINCLUS MEXICANUS *Swainson*.

American Dipper; Water Turkey (Nevada).

This strange little bird is found in the high mountains of western North America, from *Alaska to Mexico*. It finds food for itself and young on the bottom of swift alpine streams, and half-walks, half-swims about under the water to obtain it. I remember watching these birds near Mt. Lincoln, Colorado, and again among the lofty Wind River peaks, with a degree of interest which few other birds could arouse. It is not very timid. The near presence of men at work in a saw-mill or at their gold-cradles does not seem to alarm it. Many delightful biographies of this bird have been written, as also of its European brother which it closely resembles, but they must be passed by.

The dipper's nest is a splendid piece of bird-architecture. There are many descriptions extant and the nests themselves are not scarce in public collections, although the eggs seem to be.

The nests are variously situated, but always in a nook or crevice near the water. They are elegant balls of green moss, "round and bossy in outline, with a neatly arched opening near the bottom, somewhat like an old-fashioned brick oven, or Hottentot's hut." Dr. Cooper describes one: "It was built under the shelving roots of an immense arbor-vitæ tree that had floated over and rested in a slanting position against a mill-dam. The floor was made of small twigs, and bare; the sides and roof arching over it like an oven, and formed of moss projecting above so as to shelter the opening. This was large enough to admit the hand, and the inside was very capacious." It contained young on July 5,—the second brood in the same nest that summer. About half a mile from Mystic Lake, Montana, in 1872, W. H. Holmes noticed a dipper repeatedly fly through the falling water of a cascade, and after diligent search found behind the waterfall a nest on a narrow shelf of rock so near the fall that the outside was constantly wet with spray, while the interior was dry and warm. The birds entered it by a small

lateral opening in the lower half of the nest. Mr. James Stevenson gives some entertaining particulars concerning a dipper's home he visited in Berthoud Pass, Colorado :

One of the first things that attracted my attention was its manner of diving down into the water and then darting back and perching itself on the summit of its mound-like dwelling, where it would shake the water from its feathers and distribute it over the nest, apparently for the purpose of keeping the moss moist and in a growing condition, thereby increasing its strength and dimensions. The entrance to its little house was also carefully arranged; the archway was quite perfect, and the moss around it was so directed in its growth as not to obstruct the entrance, which was situated on one side near the bottom of the nest. The operation of sprinkling the nest was repeated daily. An examination of the nest, which is in the museum of the Smithsonian Institution, together with the preceding facts, would induce one to believe that the performances of this little bird were for the purpose of keeping the outer lining of its nest green and growing, that it might keep its miniature dwelling in repair, while rearing its family, without the aid of a brick-layer, plasterer or carpenter, showing that among the feathered tribes there are mechanics as well as musicians.

But the most complete, and at the same time most beautifully-written account we have of the breeding habits of the dipper is by Muir, in his richly illustrated essay entitled "The Humming-bird of the California Water-falls," printed in Scribner's Monthly for February, 1878. After a charming picture of the nest, Mr. Muir continues :

No harsh lines are presented by any portion of the nest as seen *in situ* ; but, when removed from its shelf, the back and bottom and sometimes a portion of the top, are found quite sharply angular, because it is made to conform to the surface of the rock, upon which and against which it is built; the little architect always taking advantage of slight crevices and protuberances that may chance to offer, to render his structure stable, by means of a kind of grappling and dovetailing.

In choosing a building spot, concealment does not seem to be taken into consideration at all; yet notwithstanding the nest is so large, and so guilelessly exposed to view, it is far from being easily detected, chiefly because it swells forward like any other bulging moss-cushion growing naturally in such situations. This is more especially the case where the nest is kept fresh by being well sprinkled. Sometimes these romantic little huts have their beauty enhanced by tasteful decorations of rock-ferns and grasses, that spring up around the walls or in front of the door-sill, all dripping with crystal beads. Furthermore, at certain

hours of the day when the sunshine is poured down at the required angle, the whole mass of the spray enveloping the fairy establishment is brilliantly irised; and it is through so glorious a rainbow atmosphere as this that some of our blessed ouzels obtain their first peep at the world. Ouzels seem so completely part and parcel of the streams they inhabit, they scarce suggest any other origin than the streams themselves; and one might almost be pardoned in fancying they come direct from the living waters like flowers from the ground,—a kind of winged water-lily. At least, from whatever cause, it never occurred to me to look for their nests until more than a year after I had made the acquaintance of the birds themselves, although I found one the very day on which I began the search. In making my way from Yosemite to the glaciers of the adjacent Alps, I camped in a particularly wild and romantic portion of the Nevada cañon where, in previous excursions, I had never once failed to enjoy the delighted company of my favorites, who were attracted here, no doubt, by the extraordinary abundance of white water. The river, for miles above and below, consists of a succession of small falls from ten to sixty feet in height, connected by flat, plume-like cascades that go flashing from fall to fall, free and channelless, over waving folds of glacier-polished granite. On the south side of one of the falls, that portion of the precipice, which is bathed by the spray, presents a series of little shelves and tablets caused by the development of planes of cleavage in the granite, and the consequent fall of masses through the action of the water. 'Now *here*,' said I, 'of all places, is the most charming spot for an ouzel's nest.'

Then carefully scanning the fretted face of the precipice through the spray, I at length noticed a large, yellowish moss-cushion, growing on the edge of a level tablet within five or six feet of the outer folds of the fall. But apart from the fact of its being situated exactly where one acquainted with the lives of ouzels would fancy an ouzel's nest ought to be, there was nothing in its appearance visible at first sight, to distinguish it from other bosses of rock-moss, similarly situated with reference to perennial spray; and it was not until I had scrutinized it again and again, and had removed my shoes and stockings and crept along the face of the rock within eight or ten feet of it, that I could decide certainly whether it was the nest I was so eagerly seeking, or a natural growth.

In these moss huts, three or four eggs are laid, white, like foam bubbles; and well may the little ouzels, hatched from them, sing water songs for they hear them all their lives, and also before they are born. I have oftentimes observed the young just out of the nest making their odd gestures, and seeming in every way as much at home as their experienced parents,—like young bees in their first excursion to the flower fields. No amount of familiarity with people and their ways seems to change them in the least. To all appearance their behavior is just the same on seeing a man for the first time, as when seeing him every day.

FAMILY SYLVIIDÆ — KINGLETS.

20. THE ALASKAN WILLOW WREN.

PHYLLOPNEUSTE BOREALIS *Blasius*.

A single specimen of this little bird was obtained on Norton Sound, *Alaska*, by Charles Pease, in 1866. "We have no information in reference to its habits. As it bears a very close resemblance to the willow wren of Europe (*P. trochilus*), it is quite probable that its general habits, nest and eggs will be found to correspond very closely with those of that bird." It also inhabits northeastern Asia adjacent to the coast.

21. THE RUBY-CROWNED KINGLET.

REGULUS CALENDULA *Lichtenstein*.

Not much is known of the habits of this bird in the breeding season, although it is found abundantly at varying points in *all* parts of *North America*. In the Rocky Mountains it breeds among the most elevated forests. Allen found young in July near Mount Lincoln, Col.; Bendire gives it as breeding at Camp Harney, Oregon; Ridgway, among the peaks of northern Utah; and Henshaw in Arizona. It is also supposed to breed in northern New Jersey, in western New York, in Maine, and at the Bay of Fundy. In western New York a nest which contained young was reported to have been built in the fork of a tree. Males and females have both been observed in summer about Philadelphia, and Mr. Gentry thinks it nests on the wooded heights along the Wissahickon. Dr. Coues, in his *Birds of the Northwest*, considers that he has sufficient evidence to show a breeding-range throughout the mountains of the West, from 9,000 feet upward, thence trending eastward along the northern boundary of the United States to Maine and Labrador, and probably sending a spur southward along the Alleghany Mountains. Northwestward it reaches Alaska.

Our first real information was furnished by J. H. Batty, who found a nest near the Buffalo Mts. in Colorado, on June 21, 1873, which contained five young and one egg. The nest was on the branch of a spruce-tree, about fifteen feet from the ground, and

was so large "that it could scarcely be got into a good-sized coffee cup." It is described as "a loosely woven mass of hair and feathers, mixed with moss and some short bits of straw." The egg, Mr. Batty describes as much like that of the house wren, which causes a doubt as to its identity. Both parents were assiduously bringing larvæ of insects to the young, whose appetites were unappeasable. Mr. Henshaw also reports finding a neatly finished nest on a mountain near Fort Garland, Col. It was built on a low branch of a pine, and the male was singing directly overhead: but, although he waited some time, Mr. Henshaw did not see the female. "The nest was a somewhat bulky structure, very large for the size of the bird, externally composed of strips of bark, and lined thickly with feathers of the grouse. Of the eggs of this kinglet nothing further was known until June 21, 1878, when W. E. D. Scott observed at Twin Lakes, Col., a female of this species fly with small bits of grass to a low branch of a pine tree, and on looking found a nest nearly finished, and agreeing with previous reports.

"On the 25th," he writes, "I took this nest, containing five fresh eggs. It was built at the very extremity of the limb and was partially pensile, though the bottom rested on some of the leaves just below. Like most nests of this region it was composed in part of sage brush, but as only the smallest twigs were used, the entire structure is extremely soft and delicate. It is very bulky in proportion to the bird, and very deep. Inside it is lined with fine grasses and a few feathers. The dimensions, as follows, will give an idea of the size, external and internal: Outside—four inches deep, three inches in diameter at top, and but little smaller at bottom; inside—three inches deep, two inches in diameter at top, and narrowing a very little. The eggs, which are large in proportion to the bird, are a delicate cream color before being blown and white after."

22. THE GOLDEN-CRESTED KINGLET.

REGULUS SATRAPA *Lichtenstein.*

Little more can be said with reference to the breeding of this species, within the United States, than of the other. Its range

is nearly as extensive, but more *northerly* than that of the ruby-crown. In 1872, T. Martin Trippe recorded that the young were to be met with in the highest parts of the Catskill Mountains in July, showing that they had bred there; but not until 1875 was its nest discovered, and to H. D. Minot of Boston belongs the credit. He had several times observed parent birds in a certain forest in the White Mountains, and on the 16th of July detected them in the act of conveying food to their young, and tracked them to their nest. "This hung four feet above the ground, from a spreading hemlock bough, to the twigs of which it was firmly fastened; it was globular, with an entrance in the upper part, and was composed of hanging moss, ornamented with bits of dead leaves, and lined chiefly with feathers." It contained six young birds, but no eggs.

Various writers have inferred that this kinglet raises two broods in a season, since it stays so long about its breeding haunts. Nuttall and Cooper both found it feeding full-fledged young on the Columbia river May 21, and Audubon observed the same in Labrador in August. Maynard found it common in thick woods at Lake Umbagog, Me., in June; says it breeds there, probably in the masses of pendent moss, and, judging from dissection, lays its eggs about June 1; no nests were discovered however. He describes the nuptial song as "a series of low shrill chirps, terminating in a lisping warble." Harold Herrick puts it down positively as breeding on the Island of Grand Menan, and Dr. Brewer elsewhere in Maine. Mr. Allen met with young attended by parents the third week in August, 1876, on Mt. Monadnock, N. H.; H. D. Minot mentions its nesting two successive seasons among the white birches at Bethlehem, N. H., and C. F. Goodhue reports that it spends the summer on Mt. Kearsarge, near Salisbury, N. H. Mr. J. K. Lord asserts that these birds were abundant on Vancouver's Island and the adjacent coast, where he found them building pensile nests suspended from the tips of high pine branches, in which they laid from five to seven eggs. He does not describe the eggs, which was hardly to be expected, perhaps, considering the half-use he seems to have made of his opportunities.

Herr F. W. Baedeker has figured the egg in the "Journal für

Ornithologie" (1856, p. 33, Pl. I, Fig. 8), and also in his large work on the eggs of the birds of Europe, from one taken in Labrador. "The plate indicates a rather roundish egg, though the two specimens figured differ noticeably in size and shape; they are spoken of in the text as 'niedliche kleine Eierchen mit lehmgelben Fleckchen auf weissen Grunde,' and compared with those of other species illustrated on the same plate."

The periods mentioned by various authors when newly-fledged young have been seen would lead to the inference that more than one brood is raised annually.

"*Regulus cuvieri*," described by Audubon from a specimen taken near the banks of the Schuylkill River, has remained unknown to ornithologists ever since, and is surmised to be not different from the gold-crest.

23. THE BLUE-GRAY GNATCATCHER.

POLIOPTILA CÆRULEA *Scater.*

This little sylph of the woodland wanders southwardly *across the continent*, on the Pacific coast reaching northward to latitude 42°, on the Atlantic slope to southern New England, and in the interior northward to Iowa and central Michigan; southward it ranges to Central America and the West Indies, breeding throughout all this area. Reaching the Middle States rather early in the season it quickly mates and selects a site for its exquisite home. This is usually among the twigs on a horizontal branch of a forest tree, from ten to sixty feet above the ground,—preferably the latter height. The nest-building is begun in Texas about April 10; in the Ohio valley early in May. In West Virginia, where they were abundant, I found them working at it on May 8, both parents seeming very busy; in Michigan, eggs are taken about June 10.

The nest is very elaborately constructed, with thick, warm walls of soft materials, which, although slight and perishable, like very fine, wiry grass, husks of buds, stems of old leaves, withered blossoms, down from milk-weed pods and the stalks of ferns, are strong and elastic. It is two inches or more deep, and the top narrower than the base, as though the rim had been

“puckered to prevent the eggs being rocked out by some too-rude breeze.” The outside is artfully made to resemble the limb upon which the nest is saddled, and so guard against observation, by being coated with yellow, green and gray wood-lichens, firmly pressed into the walls and further kept in place by a network of gossamer. The lining is of yellow and white plant-down, lichens and horsehair, often the last alone, or sometimes downy feathers, the quills of which are skilfully thrust into the wall of the nest, so that only the soft tips can be felt. Being no larger than a tea-cup, and looking precisely like a scar on the limb, this nest is not an easy one to find; but its perfection costs the birds a full week of labor. The eggs are four to six in number, shortly oval in form, somewhat pointed; white in color, spotted and blotched with varying and blending shades of reddish brown, lilac and slate. The egg varies greatly in the amount of speckling, which, however, is pretty evenly distributed. Blown specimens are frequently faint bluish- or greenish-white. Their average dimensions are .58 by .46. These flycatchers are said to sit fourteen days, but not to rear more than one brood each season if their nest is undisturbed. Mr. Ragsdale notes that half the nests he has met with in Cooke County, Texas, where the bird is abundant, are destroyed before completion, most of them being totally obliterated. He attributes this to the battles which take place between the flycatchers and some intrusive cow-bird, in the course of which the fragile structure is demolished. It is certain that this nest is a favorite hospice for the cow-bird’s egg.

24. THE BLACK-HEADED GNATCATCHER.

POLIOPTILA MELANURA *Lawrence.*

An inhabitant of *Arizona, Southern California and Mexico*, where it builds its nests among the interlacing tendrils of a vine, or interweaves it with the smaller branches of some pendient parasitic plant. They are structures of great beauty and delicacy. The external portion is composed of various blended vegetable materials, fine hempen fibres of plants, strips of delicate bark, silken fragments of cocoons and downy cotton-like

substances, all very closely impacted and felted together somewhat after the manner of the humming-bird's. The whole is warmly lined with a silky fabric of the soft down of various plants; or with exceedingly fine grass and a few feathers. Although so delicate, the walls are firm and enduring. The four eggs, measuring just half an inch in length, are of an oblong-oval shape, and pale greenish-white, sprinkled over the entire surface with fine dottings of purple, reddish-brown and black. These dots are as dull in color, but smaller, and more numerous, than those on the eggs of *P. cerulea*.

25. THE ARIZONA GNATCATCHER.

POLIOPTILA PLUMBEA *Baird*.

The Arizona or lead-colored gnatcatcher is peculiar to *Arizona and New Mexico*. Its habits are judged to be the same as those of the other gnatcatchers, but little is positively known.

FAMILY CHAMÆIDÆ — GROUND TITS.

26. THE GROUND TIT.

CHAMÆA FASCIATA *Gambel*.

Ground Wren; Fasciated Tit.

The little ground wren seems to be confined exclusively to the coast country of *California* from Ft. Tejon to the shore, and from San Diego to Sacramento. It is not rare, and frequents damp places and shrubby undergrowth. My correspondents find its nests completed at San Diego about the last of April, and placed in shrubs and vines two or three feet high. They are composed of straw and twigs mixed with feathers and firmly interwoven. A nest collected near San Francisco is a compactly built, neat and warm structure. Its thick walls are made wholly of strips of inner-bark, a few weed-stems, grass-flowers, and some stray twine; but all through it are mixed bits of sheep's wool, gleaned by the birds from thorny bushes, which fill up every interstice and felt the whole firmly together. The brim

is well rounded and incurved. The cavity, which is about 2 inches in diameter and 1 1-4 deep, is lined very smoothly with horsehair only.

The color of the three or four eggs is precisely that of the bluebird's, but these eggs are smaller, measuring only .75 by .50, and far more pyriform.

FAMILY PARIDÆ—TITMICE.

27. TUFTED TITMOUSE.

LOPHOPHANES BICOLOR *Bonaparte.*

This lively bird belongs to the *eastern United States*, moving north not beyond the Connecticut valley in the east and Texas and Nebraska in the west; southward it reaches to Florida. It is resident throughout its extent, and is more familiar and prominent in winter than in summer, although always more retiring than the chickadee.

Perhaps in the same manner as the bluebird, the tufted tit has come to build its nest in holes in trees, or in old woodpeckers' galleries; yet often chisels out a hole in hard wood for itself.

At the bottom of this cavity, upon a shapeless, though soft and warm bed, the eggs are laid; in Virginia by the middle of April, and in Ohio and New Jersey about May 1. Generally choosing some remote forest tree for their home, the birds conceal its location with great care, but occasionally come into the orchard to spend the summer. I have even heard of one case where they attempted to nestle in a garden bird-box, but were driven away by bluebirds. The six or eight eggs are rounded-oval in shape, measure .75 by .56 of an inch, and are white, densely sprinkled with fine rust-colored dots, with a few larger markings of lilac.

A single brood is brought out in a season. In July the young birds are fledged and the whole family hunt together during the fall and winter. Possibly this long and careful tuition on the part of the parents contributes to the hardy character and good sense that seem to me to distinguish this bird.



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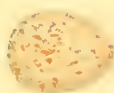
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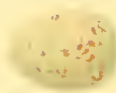
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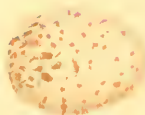
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28. THE CALIFORNIAN TUFTED TIT.

LOPHOPHANES INORNATUS (*Gamb.*) *Cassin.*

Plain Titmouse; Gray Titmouse.

This replaces the species just described, from western *Texas and Colorado to the Pacific*. It is abundant in New Mexico and Arizona, and its habits are like those of the eastern species. All thus far known of its nidification is embraced in a note by Dr. Heerman, who found the bird occupying a deserted woodpecker's hole; and in the recent short account by Dr. William A. Cooper (Bull. N. O. C., III, p. 69), of a nest and eggs found April 4, 1877, near Santa Cruz, Cal. The bird was very cautious about disclosing the position of its nest, but an examination showed that it "was placed in a hollow in the end of a limb of an oak, five feet from the ground, the mouth of the hole very small. . . . The nest is composed outwardly of grasses, the inner portion of fur of rabbits and other animals, besides a few hairs and feathers. It measures 7.50 inches in diameter outside, 2.50 inside; depth 2.50 outside, 1 inside.

"The eggs, four in number, had been incubated about five days. The ground color is white, marked over the whole egg with minute, irregular spots of a pale reddish color. The most spotted egg has a perceptible pinkish appearance. Measurements, .68 x .53, .68 x .52, .64 x .52, .64 x .52. I anticipate finding, in additional sets of the eggs of this species, deeper colored and larger markings, with considerable variation of size and shape, besides a larger number of eggs."

The female was sitting on this nest, and would not leave it, "fighting even unto death." The figure in the plate was kindly drawn for me by Mr. Cooper from one of these eggs.

29. THE TEXAN TUFTED TIT.

LOPHOPHANES ATRICRISTATUS *Cassin.*

Black-crested Titmouse.

Along the *Rio Grande* this titmouse is not rare, and has been noticed as far east as San Antonio. It has the habits of its eastern congener. Dr. Heerman and other early explorers told us that it built its nest in the hollows of trees, making it of fine dry

grasses, feathers, wool, mosses, etc., and laid from 12 to 16 eggs; and we learned little more until Mr. Sennett found it very common near Hidalgo, Texas, but was unable to obtain eggs. This was in 1877; the following year he had better success, which he describes to me in the ensuing letter:

Arriving at Lomita Ranche, on the Lower Rio Grande, April 8, 1878, one of the first familiar birds to greet me was this titmouse. It was one of the very few birds found in numbers last season whose eggs I did not obtain, the nearest to it being discovery of nest with young. It was essential to find their nests without delay on account of their commencing to breed earlier than any other species found in the locality. Orders were given to assistants and Mexicans to shoot no birds of this species, but to search diligently the trunks and stubs of trees for their nests. In a few days, several nests were found, but, to my disappointment, all contained young. I was upon the ground some ten days earlier than last year; but the season being also earlier I was placed in about the same predicament as then, as regards the finding of eggs of this species. After such disappointments a naturalist can imagine the pleasure I received, when, on April 20, my assistant, Mr. Sanford, placed upon my table a nest, five young and a perfect egg, together with the parent bird caught on the nest. The chicks I preserved in spirits, while the egg, being infertile, was easily prepared and, with the nest, is in my collection. This, then, I believe, is the first thoroughly identified egg brought to our notice. The bird caught on the nest was a male, and other males were shot having bare and wrinkled bellies, thus showing that both sexes share in incubation and the care of the young.

The nest was some six feet from the ground in a limb of a half-dead willow which was leaning on some brush, and was discovered by the birds flying into it. It was situated in the excavated hollow of the limb, some ten or twelve inches from the opening. It is composed chiefly of vegetable wool, mixed with which are strips of soft inner bark and now and then bits of snake-skins, the whole being much firmer and thicker than is usual with birds that build in hollow stubs. Of the other nests found with young and left undisturbed, all, with one exception, were situated higher—the distance varying from four to twelve feet from the ground. I found them to occupy usually the abandoned holes of the Texas woodpecker (*Picus scalaris*), but sometimes in split forks. They prefer living trees to dead ones, and in every case of my experience the opening had to be enlarged, sometimes with great difficulty, before examination of the nest could be had. The localities mostly selected for nesting are groves or open timber free from undergrowth, whether in the old lagoon-beds which receive the overflow from the river or on the driest

knolls. They do not avoid human habitations, as two nests were found on the ranche in ebony trees near buildings much frequented.

The parents guard their treasures well and make a great ado when the nest is invaded; but not until they see that their nest is actually being examined do they give any cry of alarm or intimation of uneasiness save by their presence. One nest near the house was laid open with broad cuts of the axe, and, it being shallower than usual, as the chips split off the young were fully exposed as on a shelf. Still the old ones reared them safely until I saw them take wing. Common as is this bird on the entire lower Rio Grande, wherever any respectable growth of timber exists, yet the eggs must always remain rare on account of their being so difficult to find.

The usual number of eggs which this titmouse lays in a clutch, I must put at six, as all the nests found contained that number of young, except one, which had five. Until proof to the contrary is forthcoming, we must naturally suppose that this species does not differ materially in its habits of nidification from its near relative *Lophophanes bicolor*, which is said to bring forth only one brood each year.

The egg preserved by Mr. Sennett is round-oval; but one end being larger gives it the appearance of being more rounded than the other. The ground-color is clear dead white. Distributed unevenly over the whole surface, and not very sparingly, are flecks and blotches of fawn of various shades, the sides having rather more than either end. Its length is .60, and its breadth .48 of an inch.

30. THE BRIDLED TIT.

LOPHOPHANES WOLLWEBERI *Bonaparte*.

Striped-headed Titmouse.

This is a bird of *New Mexico and western Texas*, whose nidification as yet is unknown; but probably is just like that of the other titmice.

31. THE CHICKADEE.

PARUS ATRICAPILLUS *Linn.*

Black-capped Titmouse.

Found in some of its varieties everywhere *east of the Rocky mountains*, and northerly to Hudson's bay and Alaska.

The typical chickadee occurs only north of the Ohio and Po-

tomic rivers, and not west of Kansas and Iowa. South of Canada it is resident throughout the year, and breeds in large numbers, but in out-of-the-way positions where it hides its habitation with great skill. Thus it was never my good luck to find a chickadee's nest, but John Burroughs, the most delightful writer about birds in America, describes in his little book, *Wake Robin*, how he found one in the Catskill region of New York state. It gives us a good idea of how hard a prize it is to secure. He says: —

I recently discovered one of these nests, in a most interesting situation. The tree containing it, a variety of the wild-cherry, stood upon the brink of the bald summit of a high mountain. Gray, time-worn rocks lay piled loosely about, or overtopped the just-visible byways of the red fox. The trees had a half-seared look, and that indescribable wildness, which lurks about the tops of all remote mountains, possessed the place. The parent birds attracted my attention by appearing with food in their beaks, and by seeming much put out. Yet so wary were they of revealing the locality of their brood, or even of the precise tree that held them, that I lurked around over an hour without gaining a point on them. Finally, a bright and curious boy who accompanied me secreted himself under a low projecting rock, close to the tree in which we supposed the nest to be, while I moved off around the mountain-side. It was not long before the youth had their secret. The tree, which was low and wide-branching, and overrun with lichens, appeared at a cursory glance to contain not one dry or decayed limb, yet there was one a few feet long, in which, when my eyes were piloted thither, I detected a small round orifice. As my weight began to shake the branches the consternation of both old and young was great. The stump of a limb that held the nest was about three inches thick, and at the bottom of the tunnel was excavated quite to the bark. With my thumb-nail I broke in the thin wall, and the young, which were full-fledged, looked out upon the world for the first time.

Then each one of the young "with a significant chirp as much as to say, 'It is time we were out of this,'" scrambled to the edge and launched off upon its untried wings, contemptuously saluting the abandoned nest, with its excrement.

While the chickadee seems to prefer such wild places as this, in New England "a hollow post of a fence in the midst of open cultivated fields, a decayed stump near the side of a public highway, a hollow log in a frequented farmyard, and



Colinus virginianus (Gmel.)
Eggs of the Wild Turkey

even the side of an inhabited dwelling, are localities these birds have been known to select in which to rear their young.

. . . On one occasion a pair had built their nest over a covered well which connects with the dwelling by a side door through which water was drawn at all hours of the day by means of buckets and a rope, the wheel for which was in close proximity to their nest. They manifested, however, no uneasiness and even after the young were ready to fly, the whole family would return to the place for shelter at night, and during inclement weather. They may thus gradually become almost domestic."

Audubon witnessed a pair actually dig out for themselves a hole about three inches deep, carved obliquely downward, in the hard wood of a crab-apple. Both sexes worked in turn, and Audubon watched them a long time. Since then many instances of their digging an original domicile have been recorded.

The only effort at nest-making is to pad the interior more or less elaborately with matted bits of decayed and living moss, pieces of dried grass, hair, a little wool, and a small quantity of wood-dust, the last evidently from the bottom of the hole. The nests are of the same thickness in every part, and neatly and strongly put together, the grasses and other materials which are interwoven often giving them much firmness even after removal. Occasionally, however, a very slight and careless bed of bits of grass, fir and wood-dust is all that is found.

The eggs are seven or eight in number,—one case of eleven in a single suite has been reported. They are white, with reddish-brown dots and small marks, sometimes gathered into a ring around the larger end, and sometimes equally distributed over the entire surface; average dimensions .58 by .46 of an inch. The period of incubation is about ten days, and the general opinion is that only one brood is raised during the season; Audubon and Wilson, speaking for the south, say two, the first brood appearing about June 1, and the second late in July. I knew of a nest taken in Chester county, Pennsylvania, on June 10, which the collector wrote me "was probably for a second brood." About Boston the nest is completed by May 15, and

Minot affirms that two broods are sometimes reared. In central Michigan dates sent to me are May 2, 14, 15 and 20, and June 2; yet in central New York I am assured that they often nest by the first of April. The conclusion seems to be that two broods are raised in many cases, if not as a rule.

The chickadees' solicitude for the safety and happiness of their eggs and young is a remarkable trait of the whole family. They resist to the last extremity any invasion of their home. This is true even before human foes, where most birds yield without a struggle. Dr. Brewer tells of one chickadee whose nest was exposed in the top of an old stump in Brookline, Mass. "The mother refused to leave until forcibly taken off by the hand, and twice returned to the nest when thus removed, and it was only by holding her in the hand that an opportunity was given to ascertain that there were seven young birds in the nest. She made no complaint, uttered no outcries, but resolutely and devotedly thrust herself between her nestlings and the seeming danger. When released, she immediately flew back to them, covered them under her sheltering wings, and looked up in the face of her tormentors with a quiet and resolute courage that could not be surpassed."

Both parents keep busy all day long in carrying insect-food to their brood; and when able the whole family continue together during the winter, traversing the woods "in regular progression from tree to tree, tumbling, chattering and hanging from the extremities of the branches."

Variety *SEPTENTRIONALIS* (No. 31*a*), the Long-tailed Chickadee, ranges from Kansas and Missouri to the Rocky mountains. B. F. Goss saw it breeding abundantly at Neosho Falls, Kan., where it nested in decayed stumps, hollow trees, branches, logs, etc., after the manner of *atricapillus*. The excavation is usually 10 or 12 inches, and even more, in depth. The nest is warmly made of a loose felt composed of the fur and fine hair of small quadrupeds, feathers, and the finer mosses. The eggs, usually five, occasionally eight, 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" (Dr. Brewer). Specimens of this species just ready to lay their eggs were shot the first week in June at Lake Winnipeg.

Variety *CAROLINENSIS* (No. 31*b*), the little Southern Chickadee, replaces the common northern form in the Atlantic and Gulf states, south of a line from Washington to St. Louis, breeding from one end of this extent to the other. It begins in Florida as early as February; eggs are deposited in Georgia during the last half of April, and in West Virginia early in May. When the wood is sufficiently soft, as wild plum, sassafras and the like, the bird digs out its own nesting-place; but more frequently it takes possession of a suitable deep natural cranny, or an old woodpecker's or nuthatch's hole. This may be in a stump close to the ground, or in a high dead limb, but is usually in wet woods. At Carson City, Nevada, Ridgway found that in the absence of trees these chickadees nest about the houses, in caves and over porches.

The nest in the cavity is a firmly compacted cup of a felt of cow-hair, hare's fur, various shreds of cotton, wool and pieces of plants; it is about two inches deep by two in diameter. Six or eight eggs are laid. These are claimed to be slightly larger than those of *atricapillus*, although the bird itself is smaller. Like the latter's, these eggs are of a pure crystalline whiteness, profusely spotted with reddish-brown.

I "am" thus particular in regard to this southern "variety" of the chickadee, because many ornithologists consider it a different and tenable "species." So far as the eggs are concerned, all supposed distinctions between them and those of the type vanish when a large series of each is compared.

Variety *OCCIDENTALIS* (No. 31*c*), the Western Chickadee, hails from Oregon and northward, frequenting the wooded banks of streams. Dr. Cooper observed its nests near Puget sound, hollowed out of rotten tree-trunks. The eggs are as yet unseen.

32. THE MOUNTAIN CHICKADEE.

PARUS MONTANUS *Gambel.*

White-browed Chickadee.

This chickadee occurs throughout the *Rocky mountains*.

The first recorded discovery of its nest was made by Captain Charles Bendire, on June 8, 1876, on the summit of Cañon City mountain, southeastern Oregon. The home of the bird was a hole in an old pine stump, and at the bottom of the hole lay a single fresh egg on some finely powdered wood, for there was no nest. The egg he described as clear white "moderately spotted and blotched with pale reddish-brown, but not thickly." Size .58 by .49 of an inch.

Since then Mr. L. Belding relates that he discovered a nest of this species, built at the bottom of a seam in a very rotten stump at Marysville, Cal. "The top of the seam was two feet from the ground, the bottom about a foot below the entrance. The bird had slightly and irregularly enlarged the passage to the nest, which was composed of fibrous roots lined with wool gathered from the bushes where sheep had grazed, and contained seven white eggs." Concerning the discovery of this nest Mr. Belding writes:

I visited the nest daily for some time, and finally found the female sitting. As I neared the stump I was somewhat startled by a loud hissing noise, and looked in at the nest expecting to find a snake, but discovered only the owner, who, with wings outspread, mouth open, and eyes glistening, hissed almost continually. I desired to see the nest, and tried to drive her from it by violently striking the stump, but she was not to be dislodged so easily, and I left her, hoping to find her not at home next morning. Upon my next visit, the day after, she greeted me again with hisses and other demonstrations of anger; and after watching her several minutes, during which time she kept up her attitude of defiance, I again left her mistress of the situation. The next morning she saluted me as before, but being by this time determined to examine the nest I inserted a stick at which she advanced, pecking and hissing vigorously. She fought long and well, but might finally prevailed, and she slipped out, as she could have done at any time, if so inclined, and flew to a neighboring tree, from which she watched me with much interest and indignation. She returned to her nest soon after I had left it. After

the rough treatment of this occasion, she would invariably leave the nest at my approach, doubtless hearing my footsteps, as she could not possibly see me. Some days after this, I found a pair of these birds building in a low stump which stood in a meadow, but I did not remain in the neighborhood long enough to learn the number of eggs or test the courage of the female while incubating.

33. THE HUDSONIAN CHICKADEE.

PARUS HUDSONICUS *Forster.*

These little fellows are *northeastern* birds, rare as far south as Massachusetts. Their characteristics are much the same as those of the black-cap, and they are quite as self-sacrificing and intrepid in defending their homes. They breed from central Maine northward, nesting early in June. Audubon describes a nest which he found in Labrador:—

The nest was placed at the height of not more than three feet from the ground, in the hollow of a decayed low stump scarcely thicker than a man's leg; the whole so rotten that it tumbled to pieces on being touched. I cautiously removed the woody enclosure, and took possession of the nest, which I obtained in perfect order. It was shaped like a purse, 8 inches in depth, 2 inches in diameter inside; its sides about half an inch thick. It was entirely composed of the finest fur of different quadrupeds, but principally of the great northern hare, so thickly and ingeniously matted throughout that it looked as if it had been 'felted' by the hand of man.

A nest examined by Dr. Brewer, near Halifax, N.S., had been cut through the living wood of a beech tree, not more than two feet from the ground. The excavation was horizontal for about two inches in, then turned abruptly downward, widened from one and one-half to three inches, became seven or eight inches deep, and was lined with feathers and fur.

The eggs of this species measure .56 by .47, are of a rounded oval shape, and somewhat sparingly marked, on a white ground, with a few reddish-brown spots, usually grouped in a ring around the larger end.

• 34. THE CHESTNUT-BACKED TITMOUSE.

PARUS RUFESCENS *Townsend.*

Inhabits the Coast and Cascade ranges of the *Pacific Coast*, more rarely eastward to northern Rocky mountains.

Choosing a decayed crevice, sometimes pretty deep, in some broken branch or other convenient part of a tree, this titmouse furnishes it far better than most birds which nest in holes consider necessary.

A nest found at Santa Cruz, Cal., by J. S. Francis, and now in the collection of J. S. Howland, of Newport, R. I. is one of the few yet known. It is four inches broad by two high, but the cavity of the nest is small, and is much at one side of the centre. The heterogeneous materials seem merely to have been massed together, no interweaving being apparent. They consist mainly of shreds of reddish-tan-colored inner bark of the spruce or hemlock, very much frayed out. This gives a burnt-brown hue to the whole affair. Mixed with this are fragments of leaves, some soft grass, stems and bark of weeds, rootlets, hair, feathers, etc., etc., and at the base many pieces of snake-skin. The interior is simply a cup hollowed by pressure of the birds' feet and body, the rim of which is defined and kept in shape by the stiffness of a few horse-hairs circularly laid. The whole substance of the nest is so elastic and soft that no special lining is necessary. It was found on April 24, 1875, and contained five fresh eggs. Nests taken by Wm. A. Cooper in the same region are substantially similar.

The eggs of this titmouse are slightly larger than those of the chickadee, and more elliptical in outline. The ground-color of blown specimens is shining white; and the markings, which are somewhat more crowded around the thickest part of the egg, are fine dots of obscure reddish-brown, and a few of still more obscure lilac in some specimens. The distinctness and number of the spots vary in different eggs. Size of five eggs: .64 by .52; .63 by .50; .62 by .51; .61 by .50; .61 by .49 of an inch.

35. THE LEAST BUSH TITMOUSE.

PSALTRIPARUS MINIMUS (*Towns.*) *Bp.*

This also is a bird of the *Pacific coast*, where it is resident in the mountains, breeding along the cañon streams, and also coming into the village gardens. It makes an astonishingly large nest for such a mite of bird life,—a purse six to nine inches deep, a beautiful specimen of which is before me, collected at Santa Cruz, Cal. It is made of moss, shreds of grass, leaves, inner bark and lichens, and having much down within, but no feathers. The walls are very thick, compact and matted. This structure hangs by the contracted rim of the mouth at the top — where the elastic aperture is hardly half an inch wide—from a forked twig only a few feet above the ground.

One given Audubon by Nuttall was composed externally of moss, lint, lichens, and fibrous roots, so interwoven as to present a smooth surface, with a few stems of grasses and feathers intermingled. The lining was of willow-down and a great quantity of feathers. Hanging this purse among the twigs at the extremity of a branch, the bird makes concealment by weaving into it, or grouping around it, the pendent leaves. The entrance is sometimes at the side rather than at the top.

The eggs run from six to nine, and differ from those of all the rest of the family in being *spotless white* with a smooth but not shining surface; they measure about .57 by .42 of an inch. Dr. Cooper mentions finding a newly built nest at San Diego, Cal., as early as March when the birds had separated into pairs, though the flock did not seem to scatter far during the breeding season; again, he found eggs ready to hatch in the same locality on May 9, and various dates in April are recorded. Nuttall says they had hatched in Oregon by the middle of that month; yet Dr. Cooper found eggs fresh at San Francisco on May 15. Perhaps two broods are raised. These tits are fearless and unsuspecting in their ways.

36. THE LEAD-COLORED BUSH TITMOUSE.

PSALTRIPARUS PLUMBEUS *Baird*.

An inhabitant of the *Rocky mountain region*, as far east as the foot-hills of eastern Colorado, north to Green river, Wyoming, northwest to southeastern Oregon. The nest and eggs are undescribed, but probably are much like those of *P. minimus* and may be looked for among the piñons and cedars on the mountains. Perhaps this species will turn out to be only a variety of the preceding.

37. THE VERDIN.

AURIPARUS FLAVICEPS (*Sund.*) *Bd.*

Yellow-Headed Titmouse.

The less elevated portions of the *Colorado valley*, New Mexico, and the Rio Grande, are the home of this pleasant little bird. Dr. Heerman found it breeding abundantly at Fort Yuma, Mr. Xantus in Lower California, Dr. Cooper in the Mohave valley, and Sennett and Merrill at the mouth of the Rio Grande. The former writers all agreed in finding the spherical, twig-and-grass-built nest not far from the ground, suspended among the outer branches of thorn-bushes, and having the very small entrance on the under side. The mass of the nest sometimes is as large as a man's head, and very rough exteriorly, but lined with down and feathers.

Mr. George B. Sennett's experience at Hidalgo, Texas, is very instructive, and deserves to be quoted at length from his interesting paper in the Bulletin of the United States Geological Survey, Volume IV, Number 1.

My first knowledge of the existence of this bird in the vicinity was the finding of a new nest on April 28. [1877]; but it contained no eggs, and was not recognized at the time. The next day I went to the nest, found one egg in it, and saw both parents. While the female was darting in and out of the thicket, evidently alarmed at my close proximity to her treasure, the male was flitting from tree to tree, on the topmost

branches, singing as hard as he could. I watched them both for at least half an hour, when they disappeared.

Allowing five days to complete their complement of eggs, I again visited the nest. I cautiously approached and shook the bush, but no bird flew out of the nest. Thereupon I inserted my finger in the small opening on the side of the nest, and I could feel three eggs, and what I thought were some loose feathers. Imagine my surprise and fright, upon withdrawing my finger, at something flying out of the nest, directly into my face. It was the female. A few cries of alarm and responses from her mate, and they were out of sight before I could reach my gun. Again carefully examining the nest I very plainly felt four eggs. I wanted the birds as well as the eggs, and decided to leave them until another day, when I would secure all. Fatal mistake! for, when it was next visited, the female flew out of the nest before we reached it, was fired at, and missed. I, however, shot the male, and then went for the nest, but lo! it was empty — not the least vestige of an egg! Nothing, in my opinion, could have removed the eggs but the bird itself. It was owing, in all probability, to the disturbance and fright of the previous visit. But why was she back in the nest? About this time three eggs were discovered in another nest, and when visited the day after they were also gone. We were very careful in examining lest we should disturb the eggs. Can it be possible that with the least touch the parent bird abandons her eggs? Two nests that we found had been torn open from above, evidently by some jay or other robber. Out of the six new nests found between April 28 and May 10 we were only able to obtain one egg, and that was probably an infertile one as the balance of the clutch had hatched and taken their departure. One nest was brought me on May 1 with three young about ready to leave.

Their nests are simply wonderful, far excelling, to my mind, all other bird architecture of our fauna. Think of the size varying from four to ten inches in diameter: then think of the size of the bird, but little larger than a humming-bird! The shape is like a bottle, or, better, like a retort, with the mouth at one side and inclining downward. I found the nest built on and around one (in one instance two) horizontal branch. The body is composed of thorny twigs interwoven with wood-moss, grass and bark. The lining is of the softest down and feathers, not loosely thrown in, but woven into a sort of matting, covering not only the whole of the interior body of the retort, or nest proper, but also the neck to the very mouth. The distance from the mouth to the egg is sometimes six inches. The place selected is usually the extremity of a branch of an exposed bush, and easily approached. The highest nest was six feet, the lowest less than three feet, from the ground. There they swing, free to every "norther" until they fall to pieces from decay. The only locality in which we found their nests was open chaparral, on

that high ground where the cactus and a thorny, leafless bush, the junco, abound, and where are scattered at intervals clumps of trees of respectable growth, among which is the dark green ebony. The birds, though occasionally seen, are by no means abundant.

The eggs are laid early in the season,—by the middle of March in some localities, as might be anticipated from the warmth of the climate; but undoubtedly two, or perhaps even more, broods are reared, since I have a note of fresh eggs taken in Arizona, June 16. Four to six constitute a suite. They are of small size, measuring about .60 by .45 of an inch on the average, and somewhat slender and pointed, like the shape of a swallow's egg. The color, however, recalls more nearly some of the warblers' eggs, it being pale greenish-blue, speckled profusely around the thickest portion, and sparsely elsewhere, with fine spots of golden brown; but the amount of speckling varies. Incubation is said to consume ten days; and when two weeks old the young are ready to leave the nest.

FAMILY SITTIDÆ—NUTHATCHES.

38. THE WHITE-BELLIED NUTHATCH.

SITTA CAROLINENSIS Latham.

Carolina or Common Nuthatch.*

This familiar bird ranges over all the *eastern United States* and British Provinces, westward to the lower Missouri river and northward to Nova Scotia; but is less plentiful on the Atlantic coast than farther inland.

It breeds everywhere, and early in the season, all northern records indicating early May as the proper time to get fresh eggs.

The nuthatches sometimes excavate a hole in the solid wood for themselves; one ten inches deep is described by C. F.

* Besides insects, they feed upon various hard fruits, such as nuts and acorns—whence, it is said, is derived the curious name "nuthatch," equivalent to "nut-pecker," and perhaps altered from "nut-hacker."—*Elliott Coles*.

Goodhue of Webster, N. H. Usually, however, they look for one already prepared in the trunk of a tree, in a hollow rail in a fence, or in a crevice in the wall of an out-building. In any case, more or less work of construction is necessary, and Dr. Brewer tells us that then both sexes labor together, alternating the work of cutting, while the unengaged one carries away the chips and attends upon its mate. These cavities are sometimes considerably over a foot deep and enlarged at the bottom. They are lined with a soft and warm nest of hair, feathers, cotton and other matters, loosely conglomerated. Audubon's statement that they build no nest may prove true in the South.

In Mr. E. W. Nelson's valuable pamphlet on the Birds of Northeastern Illinois is an entertaining anecdote of how a pair of nuthatches lost their labor in one instance. The birds had chosen a knot-hole in a large oak about twenty-five feet from the ground, and began house-furnishing on May 10. The hole was large enough to admit Mr. Nelson's hand and several inches deep, but nearly filled with the remains of a squirrel's nest. The birds worked steadily for about a week, lining the cavity with small fragments of dry leaves and pieces of rabbits' fur; but just as the nest was finished a pair of flying-squirrels seized the premises, and the birds were obliged to move elsewhere.

Nuthatches' eggs measure .80 by .62 of an inch; their ground color is white (roseate before blown) which is nearly everywhere covered with dots, spots, and blotches of reddish-brown and shades of purple; the latter sometimes in large proportion.

The constant attention of the male to the female while she is sitting, and his assiduous efforts to lighten her cares and cheer her vigil, are very pretty. He brings her food constantly, always remains close by, keeps calling to her, and is not satisfied unless she frequently comes to the entrance of the burrow to receive his caresses or choice bits of food. On the other hand, the female is equally devoted to her brood, reckless of danger to herself. Mr. Brewster, having discovered a nest in a partly decayed apple-tree, Maynard relates, enlarged the entrance that he might introduce his hand and remove the bird. She struggled vigorously to escape, but, as soon as she was

liberated, returned to her eggs. She was taken out several times but invariably entered her domicile the moment she regained her freedom. Even when thrown into the air she did not fly away, and when Mr. Brewster went away she was on the nest. Before able to fly the young crawl out of the nest, and take lessons on the tree-trunk, returning to the parental roof at night. In the southern states they are said to raise two broods in a season.

Variety ACULEATA, No. 38 *a*, the Slender-billed Nuthatch, is the western representative of the eastern form, replacing it beyond the Missouri river. Its nidification does not vary from the type, as it builds in holes of trees (at inaccessible heights, Dr. J. K. Lord said), constructing a shallow nest of vegetable substances, lined with hair or feathers. The five or six eggs, laid early in June, are not different from eastern examples.

39. THE RED-BELLIED NUTHATCH.

SITTA CANADENSIS *Linn.*

Canada Nuthatch.

An inhabitant at one season or another of the wooded portions of *nearly all North America*, breeding preferably where coniferous trees prevail, especially in the west, and frequenting higher latitudes (or altitudes) in summer, than at other seasons when it is partially migratory or nomadic.

I will give two instances of its nesting in widely separated regions: the first is from Audubon:

I found it building its nest 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 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 the season.

The other account is by Mr. Henshaw:

In the pine woods near Fort Garland, southern Colorado, I found it

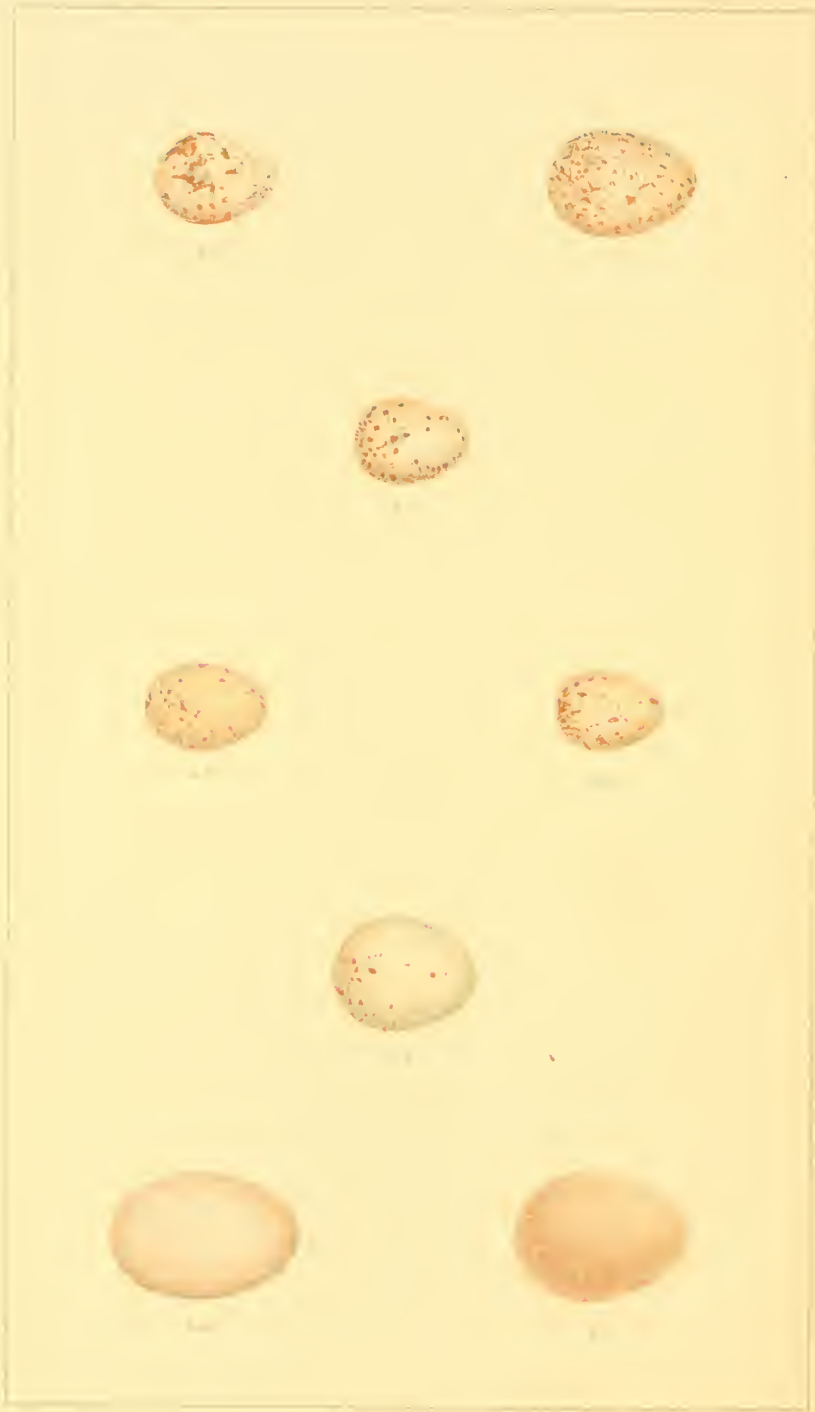


Illustration of eggs showing color and spotting patterns.

PLATE 10

breeding in June, and, though less abundant than either the pygmy or slender-billed varieties, it was still by no means rare. Its habits, while differing in no notable degree from those of its allies, are possessed of even more of the energy and restless activity which belong to the whole tribe; and at this, the nesting season, the males especially were busy from morning till night roving about among the pines and aspens, engaged in hunting not only on their own account, but also for their mates engaged in the cares of incubation. In these duties, however, both sexes take part, and the females were occasionally found abroad while their place on the nest was filled by the males. The single nest examined was found in a pine stub, a few feet from the ground. The hole was excavated in the rotten wood to the depth of five inches, no especial care having been taken to render this smooth and symmetrical, and was thoroughly lined at bottom with fine shreds of pine bark. The eggs, five in number, were far advanced toward hatching; color grayish-white, thinly spotted with reddish dots confluent at the larger end.

The grayish-white color of these eggs was no doubt due to their age and condition. The four to six fresh eggs are only distinguishable from those of *S. carolinensis* by their smaller size, averaging about .61 by .49 of an inch; the difference is appreciable on comparison. The surface is generally pretty evenly speckled. Two broods are occasionally raised in New England, the first, early in the spring, and the same hole is often occupied repeatedly, while near the nests other holes are usually to be found, not so deep, "probably used for one of the birds to occupy while the other is sitting," as is the case with most woodpeckers.

Although, ordinarily, a bird of the woods rather than of the gardens, a pair were found feeding unfledged young in a hole in a tree standing in one of the principal streets of Evanston, Ill. This was on the last of April, and the nest would not have been discovered had the young not thrust their heads out of the orifice and clamored too loudly for food.

Mr. R. F. Pearsall informs me of a curious fact in this connection. He found a nest of this nuthatch at Grand Menan on June 10, 1878, containing fledglings. It was about ten feet from the ground in a maple stub, and half an inch below the entrance was a deposit of resinous gum, an eighth to a quarter of an inch thick, extending downward for two inches; this was sup-

posed to be the result of a gradual accumulation from the feet of the parents who must alight there, with feet smeared from constant walking on the trunks of the gummy conifers, very many times a day. Such accumulations may prove useful as a guide to the eye in searching for the nests of this nuthatch in pine-wood regions.

Since the last paragraph was in type, I have seen a confirmation of its facts in an excellent communication to the Nuttall Club's Bulletin (Vol. III, p. 196) by Mr. Manly Hardy of Brewer, Me. Mr. Hardy seems not to believe, however, that the pitch is an accidental accumulation. "I think that more nests would be found" he remarks, "if people did not mistake them for holes of the downy woodpecker, which are of the same size, though rounder. Audubon speaks of their being placed four feet from the ground; but while this is sometimes the case, they are oftener ten to fifteen feet from the ground. It is easy to tell even an old nest from that of either a downy woodpecker or black-capped titmouse, as the woodpecker lays directly upon fine chips, without any nest, and the titmouse makes a nice nest of fur and feathers, and neither place any pitch round the holes, while the nuthatch makes its nest of short fine grass and protects with pitch outside the hole."

40. THE BROWN-HEADED NUTHATCH.

SITTA PUSILLA *Latham*.

A bird of the *southern states*, and mainly confined to the pine regions. In Florida, it begins nesting in February, but Mr. N. C. Brown was unable to get eggs in central Alabama before April 22. Starting thus early, the bird is able to raise two or three broods in a season. The nest is usually excavated by the birds themselves in a rotten stub or dead tree at varying heights, but, as a rule, low down. Both sexes work together with great diligence, it is said, carrying the chips to some distance before dropping them. It takes them a good while to complete the cavity, and so ardent and unsuspecting are they while at work,

that Maynard says he has frequently stood within a few feet of them without their noticing his presence. The entrances to the nests are not always regular round holes. In a letter from Mr. R. M. Mitchell, who made a special study of the nidification of this species, he tells me that all he ever saw had a doorway "as though a piece of bark of irregular shape had been broken out, and a cavity made in the decayed sap-wood behind." The tunnel sinks to varying depths, — sometimes three inches, sometimes ten or more. The nest proper is composed of thin pieces of pine bark and rotten wood, mixed with hair, fine woolly vegetable substances and downy feathers; the latter materials forming the lining. Maynard mentions the soft fibrous substance growing about the base of the leaves of the saw-palmetto as a favorite material for their nest-making.

Fresh eggs are so delicate that it is very difficult to clean them. The ground-color is chalky white, marked with cinnamon, reddish-brown and pale lavender spots, nearly covering the large end, and also distributed over the entire surface. The shape is oval, and the average measurement is .57 by .48 of an inch. The eggs are thus only a trifle larger than the humming-bird's.

Like the other nuthatches, these little fellows are vigilant and brave in defending their nests, especially from the woodpeckers. They go about in pairs, and the young birds of the first hatching keep together, noisy and active, until joined by the second family. Their food seems to be entirely the eggs and young of insects.

41. THE PYGMY NUTHATCH.

SITTA PYGMEA Vigors.

Californian Nuthatch.

Resident from the Rocky mountains to the *Pacific coast*, from Vancouver southward into Mexico, and abundant in the forests up to timber-limit, this "pygmy" greatly resembles the preceding species, of which it is perhaps only a variety, and

its method of nidification is the same. The eggs are five or six in number, pinkish-white, dotted with reddish. Average specimens would not be distinguishable with certainty from those of *S. canadensis*, but appear rather narrower, measuring about .62 by .48. The young are seen first in June; and from the circumstance of finding newly-feathered birds much later in the summer, Dr. Coues presumes that two broods are raised each season, which statement is fully substantiated by Mr. Henry Henshaw. Capt. Bendire adds, that in eastern Oregon the hole in the tree is usually partly filled with small sticks, and on these the nest of fine strips of juniper bark, lined with feathers, is placed. Some one else has asserted that only dust and chips, in the bottom of the hole, form a bedding for the eggs. This may vary with latitude and altitude.

42. THE BROWN TREE-CREEPER.

CERTHIA FAMILIARIS *Vieillot.*

This shy, gentle, little bird is the same as the European creeper. In England it nests, generally speaking, in a hole in a tree, with only a very minute aperture. Rarely the nest is outside the tree, but screened from observation by a casual dislodgment of bark, or in some similar way. Our creeper is found in the forests over *all of North America*. Its migrations are limited, and accordingly it is one of the first birds to appear in the spring, and to get about its family duties. Wilson speaks of having known the female to begin to lay by April 17, but does not mention the locality to which he refers. The most southern point of which I have positive knowledge of its breeding is Trenton, N. J. No doubt the heights of the Alleghanies may prove a means of extending its southward residence in the interior, as they do that of many other birds. It inhabits the loftier plateaus of the Rocky mountains, where its presence and the situation of its nest are often disclosed by its "thin, wiry, long-drawn note." At Mount Graham, Arizona, Henshaw found young still in their first plumage as late as Aug. 3, and,

though able to feed and care for themselves, they were still accompanied by their parents who were intensely devoted to their welfare. The latter half of May is the time to search for their nests in New York and New England.

Not having been provided with the tools for digging out a hole for himself, the brown creeper takes advantage of a shattered limb, a hollow branch or an entrance wrought by squirrels or woodpeckers; and Mr. J. A. Allen found a nest in the public square at Springfield, Mass., tucked away underneath a projection of bark. This was unusual in all respects, for the creepers almost invariably remain in the depths of the woods. A still more anomalous case, — if there be no mistake about it, — is recorded by Gregg in his Catalogue of the Birds of Chemung County, New York, wherein he states that “the nest of this species is built of dry twigs attached to the sides of some perpendicular object. “I discovered one,” he adds, “on the attic of a deserted log house; the nest rested upon the inner projection of the gable clapboard, and was cemented together with a gummy or gelatinous substance.” But I doubt the correctness of this.

Taking some sort of a hole or cranny to be the normal and usual position, the bed it contains may be described as a loose aggregation of soft materials, among them plenty of feathers, not interwoven, but simply collected with regard to no other requisite than warmth.

The eggs are 5 to 7 in number, opalescent, pearly white, marked with small dots and occasionally a few streaks of two shades of reddish-brown. They measure a little larger than a wren's, — about .55 by .43, but, barring the lesser size, are not certainly distinguishable from those of the chickadee. The young come forth with great caution, creeping about long before they venture upon the wing.

43. THE CACTUS WREN.

CAMPYLORHYNCHIUS BRUNNEICAPILLUS (*Lafr.*) *Gr.*

Brown-headed Creeper Wren.

The habitat of this long-named little bird is the arid and desolate region stretching from the *Rio Grande to San Diego*, and northward into Utah and Nevada. South of the Gila river it is very abundant, but in Lower California, it is replaced by *C. affinis*. These wrens are fond of the dense shrubbery, and go in little companies or families, the brood probably remaining together during the fall and winter. On the Colorado desert its nests are frequently to be met with, laid flat between the forks or on the branches of the cactus. They are in the form of a purse as large nearly as a peck-measure, composed of fine grasses well interwoven, and are lined with feathers. The entrance is in the form of a covered passage six to ten inches in length. Dr. Heerman says that he often used to open these nests and examine the feathers of the lining for the sake of finding what birds were in the neighborhood; among other results, he thus ascertained the extreme western limit of the blue partridge. Dr. Cooper mentions a nest that he saw on the barren mountains west of the Colorado valley which was built so openly (adapting it to the warmer climate, as he supposed) that the young could be plainly seen through the walls.

The five eggs are pale delicate salmon color, often so thickly and uniformly speckled with ashy and darker salmon-colored spots as to give a rich cast to the whole surface. They are oval and slightly pointed in shape, 1.02 inches long by .68 broad. These wrens have been found breeding as late as Sept. 13, and as early as February 26, fledged young and fresh eggs being taken side by side on the same day.

44. THE CAPE CACTUS WREN.

CAMPYLORHYNCHUS AFFINIS *Xantus*.

Allied Creeper Wren.

There is little difference between this and the preceding. It is restricted to the peninsula of *Lower California*, and is exceedingly abundant at Cape St. Lucas, breeding in immense numbers, where its structures are placed almost exclusively in the cacti and prickly pear bushes. The nests are large balls or bags of grasses and twigs not different from those of the other species. The eggs vary from 1.05 inches to 1 inch in length and from .70 to .65 of an inch in breadth; and, like those of the preceding, have a reddish-white ground, uniformly and thickly dotted with reddish-brown and tints of purple.

45. THE ROCK WREN

SALPINCTES OBSOLETUS (*Say*) *Cab.*

Occurs from the *Plains to the Pacific*; in Mexico and Lower California; northward into Montana; and eastward into Iowa. It haunts the confused piles of broken rocks so characteristic of the western mountains, and is abundant, but like the rest of its ilk also goes into the towns to reside, rearing its young under the tiled roofs of the houses, and in the stone walls and wood-piles of the gardens. It breeds from Montana to Mexico. At Idaho, Colorado, in the heart of the Snowy Range, many nestle, mostly between 6,500 and 9,500 feet of altitude. Although it chooses other convenient localities, — a chink between the logs of a cabin, for instance, — its favorite spot is a natural cavity in a bank or ledge of rocks, or the bare ground under an overhanging stratum. The nest is merely a mass of sticks or a pile of grasses, lined with various soft substances, such as thin bark, horsehair, bits of wool or feathers; and is usually but slightly hollowed and artfully concealed. The variety of rock wren which inhabits the Island of Guadaloupe, off the

coast of Lower California, is said ingeniously to barricade the entrance to its nest with an artificial wall of pebbles, leaving an aperture only just large enough to pass.

As to the period of laying, there is also great diversity. Dr. Cooper's Fort Benton nest contained nine eggs in June; Capt. Bendire found fresh eggs at Camp Harney, Oregon, May 9; in New Mexico, Mr. Henshaw took a nest containing three young and one egg June 17, and another with four nearly fledged young, July 28; Dr. Cooper found young birds in May at San Diego, and on Guadaloupe Island the eggs are laid early in April. There seems no doubt that two broods are reared.

The eggs vary greatly in shape and proportions, and four to eight constitute a clutch. — usually seven. They are polished, crystal-white, spotted, chiefly in a wreath about the larger end, with distinct reddish-brown dots, usually massed at the large end or wreathed around it. They bear little resemblance to any other eggs of this family, unless it may be those of the winter wren.

The behavior of the owners when one is in close search for a rock wren's homestead, as described by Capt. Bendire, is worth mention, as showing how all their wren-instincts work together toward the concealment of their cryptic property.

A pair had a nest within eighty yards of my house, for which I looked almost daily, but they reared their young to almost full size before I found them, and although I reached more than once within a foot, the old birds seemed perfectly unconcerned, perched on a rock within a few feet of me, flipping their tails up and down, as if in derision at my vain attempts to find their nest.

Concerning the race of this wren on Guadaloupe Island, we have the following information from Dr. Edward Palmer:

Their general habits are not peculiar. April 5, 1875, a female was taken, with the nest and eggs. The nest was built on the ground beneath a rock, which sheltered it from the prevailing winds; it was lined with goats' hair and contained two fresh eggs; a third, nearly ready to be laid, was found on opening the bird. Another nest, containing three eggs, was found in the crevice of a large rock some five feet high. The fissure was about eighteen inches deep; and, being more capacious than

was necessary for accommodation of the nest, was divided by a partition, which the bird had built across it, leaving an interior space for the nest and an aperture just large enough for the birds to pass with ease. This partition, which effectually blocked up the passage to the nest, was composed of pebbles. A third nest was discovered so far under a large solid rock, and with so small an entrance, that it could not be secured. The passage to this nest was also blocked with small stones.

46. THE CANON WREN.

CATHERPES MEXICANUS, VAR. *CONSPERSUS*.

White-throated Wren.

This wren, lately separated from its more southern type, the Mexican wren, is confined to the *south middle region* of North America, and is at home in the mountain gorges and caves: but it also enters towns without reserve, and makes use of the conveniences of man's erection wherever its food is present. It is not uncommon at San Antonio, Texas, where it breeds. In respect to the Mexican typical race, from which the variety does not much differ. Mr. Sumichrast writes that it nests in houses, in ruined walls or among the roof-tiles, skilfully constructing its home of spiders' webs. In the wilderness it chooses much the same building-sites as the rock wren, and makes much the same sort of a nest. The eggs are said to be four in number. One specimen before me measures about .50 by .60, is regularly ovate in outline and not pointed, as the books say it ought to be. The color is pure white, touched not numerously, except in the shape of a small cap over the butt (and there not very thickly) with minute points of brownish-red and purple tints. It is a very delicately patterned egg.

47. THE GREAT CAROLINA WREN.

THRYPOTHORUS LUDOVICIANUS (*Lath.*) *Bp.*

Mocking-Wren.

This wren, celebrated for its mocking powers, belongs to the *southeastern states*, and northward into the valley of the Ohio

river, and has been recorded as straggling northeastward to Massachusetts in summer.

It is mainly a constant resident wherever found, and is an early breeder. In Florida its eggs are to be obtained in March; in the Carolinas it mates in March, nests in April, and the first of its two or three broods is abroad early in May if not sooner. Mr. Allen found the young flying at this time even in Kansas. In West Virginia and about Philadelphia the young are fledged by the last week in June. In the woods, its nest is almost impossible to find, being artfully concealed in some odd place. The bird does not so readily approach dwellings as the other wrens, but sometimes takes possession of niches between the boards or among the rafters of some out-house. Mrs. Mary Treat, however, tells of a pair which after a careful survey of the premises pitched on the piazza, the most frequented part of the house, as the site of their home. Boxes nailed up for its use are also occupied. In the woods these wrens choose a snug retreat in damp pastures, settling in the midst of some dense vine or bush, or in the hollow of a stump. When the great fronds of the palmetto fall off, the bases of the dead leaf-stalks adhere, leaving pockets between them and the trunk of the tree, often roofed over with a fibrous *débris* impervious to water. These "boots," as the cavities are called, form very snug nesting-quarters. Into some such place the wrens put a great quantity of fibrous, leafy, or grassy material, gathering any trash convenient, and thus build a rather bulky nest, more or less like a ball, with a side entrance. The lining is of fur, hair and feathers. The whole is sometimes five or six inches in depth. Now and then, when situation favors, the nest is not arched over. They are exceedingly sensitive to being disturbed, and will generally abandon an uncompleted nest, merely upon the suspicion that it has been discovered.

The adventures of the pair, referred to above, are thus pleasantly and instructively detailed by Mrs. Treat:

No room in the house was so much used as the piazza. Easy-chairs were scattered about for the use of the family and for chance visitors;

a table also stood here for the daily mail, where we read and discussed the questions of the day. And here this persistent, wide-awake couple chose to erect their domicile. They commenced building in a corner on the plate just under the roof.

Unlike the house wren, they do not use sticks in the construction of their nest, but an abundance of the softest material they can get. We had brought from the woods a quantity of a beautiful fern-like moss which we had stripped from decaying logs, and had placed it on the ground beneath one of the trees. This moss, so light and spongy, was just the thing for the little builders — ever so much better than the long gray *Tillandsia* which they had been using. They would alight upon it and chatter over its merits, and both seemed agreed as to its excellent qualities as a building material.

They worked harmoniously together for several days, the male stopping every now and then to express his happiness in a loud, prolonged strain of music. But the female proved very fickle-minded. All at once without any apparent reason, she changed her mind with regard to the location of the domicile, and chose the other end of the piazza, near where we most frequently sat. Evidently the male did not like this. She had already changed the location several times, and he had quietly submitted, but now he seemed to be reasoning with her, and was determined not to yield to this new whim of hers, and she was as fully bent on having her way. He continued work where they had commenced, and she persistently went on in the other corner. Occasionally he prevailed upon her to come and inspect his work, and with heads close together they would chatter over it. Then he would drop down upon the railing of the piazza, throw up his head and express his delight in rapturous songs. But it was of no use; he could not win her back, neither could she prevail upon him to assist her in the other corner; they would meet upon the ground, and chatter over the moss, and then fly with it to their respective corners, looking askance at one another.

The female worked very diligently for more than a week, while the male, with less to do, devoted half his time to song and vain attempts to lure her back. It was May when they finished building; and now the male, fairly beaten, yielded gracefully. He accompanied her to her cosy nest, and lovingly chattered over the pearly treasure deposited there; he seemed to forgive her then and there, and no longer visited the other nest, and henceforth was a most devoted partner.

While the little proprietors were away, I took occasion to examine their work. I found both corners filled in with a large quantity of material, and in one side of this abundant mass was the soft symmetrical nest. The eggs were nearly or quite white. The nest that the male completed was more beautiful than the female's, and how she could have refused such cosy quarters is a mystery.

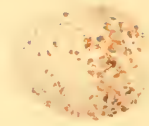
Six or seven eggs are deposited, which are nearly round, but vary among themselves, averaging about .73 by .60. They are white or pinkish white, profusely but pretty evenly dotted with purple, slate, reddish-brown and red. Sometimes the ground color is quite hidden; and in some eggs there is a denser wreath about the larger end.

In houses the birds become very tame, but in the woods they are, as Dr. Coues expresses it, "very private about their domestic arrangements, and generally slip off quietly if they have an unwelcome caller. They keep the young ones about them for a few days after they leave the nest, and during this period they are in a state of perpetual panic." The extraordinary fecundity of these wrens is shown by Mr. Charles Dury, who records that at Cincinnati the first brood was following the male about on April 25, the female, meanwhile, being actively constructing a second nest under the stable rafters, in which she soon deposited eggs and began sitting, cheered by the loud and happy notes of the male, who had by this time got rid of his noisy brood. In due time five more wrens appeared, and the hard-worked parents supplied the insatiable appetites with spiders, bugs and larvæ of every description until early in July when they left the nest under the protection of the male. The female immediately set herself at work on another large nest, where five eggs were laid and she sat a third time.

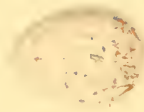
The Variety *BERLANDIERI*, No. 47*a*, is found in the valley of the Rio Grande, where, with Bewick's wren, it is common. Thence this extends westward. Mr. Sennett described this bird as breeding at Hidalgo, Texas, near the ground, seldom higher than five feet, in hollow trees, stubs, and even dead limbs lying on the ground. By May 1, the young were about with the parents; at the same time perfectly fresh eggs were taken. Three suites of eggs were secured, all from the same locality, where there seemed to be a colony breeding, many having families of young. Two of the sets were alike in color and markings. Of these, one (a set of five) was taken May 1 from an opening four feet from the ground, in a hollow tree; the other (a set of four) was taken May 7 from a rotten tree



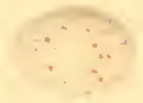
45.
Catherpes mexicanus
var. *conspersus*



44.
Thryothorus ludovicianus



46.
Thryothorus bewickii

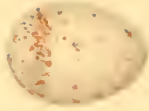


70.
Anorthus troglodytes
var. *hyemalis*

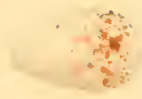


72.
Cistothorus stellaris

Edw. Armstrong & Co. Lith. & Print. Philad.



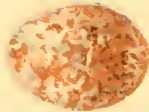
52
Aniotalta varia



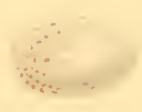
53.
Parula americana



56
Necessorys spraguei.



59
Pratonotaria cinerea.

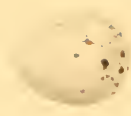


59 bis
Parula nigrilora

Lith. Armstrong & Co. Riverside Press Cambridge



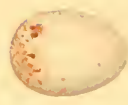
60.
Helminthorus vermicorvus



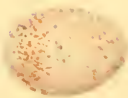
62.
Helminthophaga pims.



63
Helminthophaga cheysopetra



65
Helminthophaga lucio



66
Helminthophaga variniv



67.
Helminthophaga ruficapilla.

Lith. Armstrong & Co. Engraved Press. Cambridge.

lying on the ground, the nest being only two feet from the ground. A typical nest was composed of grasses, leaves, and a few stems, and lined with horsehair, a few feathers and pieces of snakeskins. It measured four inches in outside diameter by two inside.

In regard to the eggs Mr. Sennett sends a note of his experience, to which I concur. "The eggs," he observes, "vary in color and markings from those of the great Carolina to those of Bewick's wren, but in size come much nearer to the former. Those sets with the white ground-color, resembling in that respect Bewick's, average .72 by .57 of an inch; while the eggs with the pinkish ground, coming nearer to the style of the great Carolina's, average .74 by .58."

48. BEWICK'S WREN.

THRYOTHORUS BEWICKII (*Aud.*) *Bp.*

Long-tailed House Wren.

This, also, is a somewhat *southern* species reaching in the east only as far north as central New Jersey, but in the interior states even to Minnesota where it breeds. It is not uncommon anywhere, but its nest and eggs are rare. For several years these wrens have bred upon the premises of Dr. Charles C. Abbott at Prospect Hill, Trenton, N. J. The following interesting notes communicated by Dr. Abbott to *Science Gossip* (London) for May, 1875, are probably a correct representation of its habits everywhere.

On the 15th of July a pair of Bewick's wrens appeared in and about one of my outbuildings, and in a day or two, having fixed upon a suitable spot for their nest, commenced carrying the materials necessary for its construction. As they were not at all timid, I had abundant opportunities of watching them while so employed, and I must admit that their *modus operandi* was very damaging to the poetry of birds' nests. After the first few strands of long, tape-like grass had been arranged upon the beam, the birds came together to the spot, each carrying a blade of grass or other equally flexible material. The female then sat in the unfinished nest, while her mate wound loosely about her the

materials they had brought. This was repeated until the foundation of the nest, about an inch deep, was completed, when the female ceased carrying materials, but waited for her mate's return with such soft materials as he could find for the lining of the nest. This was simply placed upon the nest loosely, and not at all adjusted. When a considerable quantity had been piled up, the female "burrowed" into it, and turning round and round, succeeded in treading down a comparatively smooth depression in the floor of the nest, and the larger strands were rudely arched over her, but did not really form a roof. In three days the nest was completed, and was nothing better than any child could have made with the same materials by wrapping, winding and slapping it over his fist. Not one particle of ingenuity was displayed at any time. On the fourth day the first egg was laid, and on this day a cat succeeded in catching the male bird. As the female did not seem to miss him very much, and it was this mishap which made the subsequent study of the nest and the female bird possible, I thanked the cat for her interference. The widowed wren wandered about quite as usual, constantly uttering a very cheery chirp, and gathering up a goodly quantity of insects every day. One egg was laid each day, until four had been deposited, when she commenced sitting. The fourth egg was pure white; the others of the usual hue and markings. An interesting physiological feature of the case might be profitably discussed, but will here be but briefly referred to. This species of wren usually lays from seven to nine eggs, and hatches them all. Did the influence of the male only reach to the third, or possibly the fourth egg? Of the four eggs laid, the last one did not hatch, and I judged from its contents that the yolk had been imperfect. Again, did the death of the male bird indirectly cause the shell of the fourth egg laid to be wholly colorless? The season was too advanced to make any experiments during the remainder of the summer. After the young were a day old, the parent bird was seldom seen except for a moment at a time, when it would dart into the workshop through a knot-hole, carrying a beetle-larva or caterpillar; and, giving it to them, off she would go again, usually to the roof of another building, and there chirp and fairly scream, fluttering about in a distressed manner, as though determined to make the passers-by believe she had a nest anywhere except in the spot really occupied. This habit was so marked in all its features as to attract the attention of the whole family; and when the workshop, which was continually visited for a few moments at a time during the day, was occupied on her arrival with food for her young, she would dart out as rapidly as she came, and go through her accustomed antics on a distant roof, the while retaining the food for her young in her bill. By the 12th of August the young had left the nest, and in a day or two they left the neighborhood."

Dr. Gerhardt met with nests of this species in northern Georgia, generally built in holes in stumps. In one instance the nest was five inches long, four in diameter and two deep, with walls of great thickness. In southern Illinois it is said to quite replace the house wren in all its relations to man. In southern Texas, Sennett found it building in a great variety of places, from a brush-fence to the thatched roof of his workshop, where they were very tame. A nest found on April 18, 1878,—a trifle late apparently,—he describes to me as only a matted collection of various substances, such as hair, leaves, feathers, cottony vegetable fibres and fine bark, the dense brush-fence in which it was ensconced being sufficient to protect so frail a structure."

The eggs are pinkish white thickly covered with lilac and reddish-brown splashes and dots almost wholly about the larger end; with a few slate-colored lines on the majority of specimens. They vary considerably, but, in general, resemble those of a titmouse or creeper, except that the markings are darker and the size greater. The eggs measure from .70 by .52 to .64 by .50, being slightly larger than those of the house wren; Texan birds are of less size.

In the southwest, Bewick's wren changes its plumage somewhat and is known as Variety *LEUCOGASTER*, No. 48*a*,—the White-bellied Wren; on the coast of California and southward, another variety (*SPILURUS*, No. 48*b*) is found. Neither of these differs essentially from the typical form. In the *Birds of California*, Dr. J. G. Cooper wrote that the latter variety constructed an open nest low down in a bush; but afterwards he corrected this statements remarking that this case was "an unusual departure from their common habits, and was very probably an old nest built by some other bird, this species generally building in cavities of trees, brush-heaps, etc., but now apparently growing more familiar. . . A pair built in a stable [near San Francisco] and had young when discovered in April."

49. THE HOUSE WREN.

TROGLODYTES AEDON, *Vieillot.*

Common Wren; Wood Wren.

The familiar house wren is to be found in every part of the *United States east of the Rocky mountains*, although, like many other common species, it is far more abundant in some localities than in others.

It arrives in Pennsylvania in April, is seen in Massachusetts about the second week in May, and reaches central Michigan, where it is rare, about May 5. The wrens seem to be mated when they reach the north, and proceed immediately to pick out their homes. A whole volume might be given to anecdotes of the curious places they have chosen to build in; Dr. Brewer has written most pleasantly about it:

The hollows of decaying trees, crevices in rocks, or the centre of meshes of interlacing vines, are their natural resorts. These they readily relinquish for the facilities offered in the society of man. They are bold, sociable and confiding birds, and will enter into the closest relations with those who cultivate their acquaintance, building their nests from preference under the eaves of houses, in corners of the wood-shed, a clothes-line box, olive-jars, martin-boxes, open gourds, an old hat, the skull of an ox placed on a pole, the pocket of a carriage, or even the sleeve of a coat left hanging in an out-building. In the spring of 1855, a pair of these wrens nested within the house and over the door of the room of the late Robert Kennicott, where they raised their broods in safety. They built a second nest on a shelf in the same room, which they entered through a knot-hole in the unceiled wall. At first shy, they soon became quite tame, and did not regard the presence of members of the family. The male bird was more shy than his mate, and though equally industrious in collecting insects would rarely bring them nearer than the knot-hole where the female would receive them. The female with her brood was destroyed by a cat, but this did not deter the male bird from appearing the following season with another mate, and building their nest in the same place. Another instance of a singular selection of a breeding-place has been given by the same authority. Dr. Kennicott, the father of Robert, a country physician, drove an old two-wheeled open gig, in the back of which was a box, a foot in length

by three inches in width, open at the top. In this a pair of wrens insisted, time after time, in building their nest. Though removed each time the article was used, the pair for a long while persisted in their attempts to make use of this place, at last depositing their eggs on the bare bottom of the box."

Mr. Gentry says he found one case in which the wrens had dug out a pewee's nest of mud and moss, and piled their rude structure into it; and another in which they had filled up an oriole's pouch-nest, their rough lumber protruding on all sides through the oriole's finely woven felt. It is their delight to seize upon the gallery of a woodpecker, fill up the cavity with sticks and successfully defy the owner; or to steal into a bluebird's or martin's snug room in a garden bird-box, and, having dragged out the grass furniture, to substitute their own rude materials, barricading the entrance so very rapidly and so effectually that the disconsolate bluebirds are obliged to go elsewhere. Two or more pairs settled near each other are at constant war, for the wren considers every other bird a trespasser on his property.

As soon as the nest is ready (and in spite of its srough exterior it is warmly furnished with grass, etc., within), the female lays her eggs, each day, until six to nine have been deposited; but if they are taken away one by one she will lay twice that number before stopping. The eggs are oval in some and almost perfectly round in other examples, .65 to .60 long by about .55 wide in dimensions, dusted with brownish brick-color and a few purplish dots so completely, as to hide the white background. They are among the most easily recognized of all eggs. During the ten days which the female sits, any intrusion upon her privacy is resented with the most vehement expressions of anger. When not defending his mate, the male is singing to her, or busy in providing her with food. In the northern states the first fledglings appear about June 1. The young are soon able to crawl out of the nest, but for a long time are objects of tender and assiduous care on the part of the parents whom they follow about. According to Prof. M. C. Read, who has paid much attention to the food of young birds, and who

communicated his observations to *Science News* for Nov. 1, 1878, these wrens feed their young almost exclusively with small, smooth larvæ, taken from the undersides of the leaves of currant bushes, brambles, etc., the average being five worms in two minutes. Robert Kennicott ascertained that a single pair of wrens carried to their young about 1,000 insects a day. Two broods are reared yearly.

Birds bred at the extreme north of this species' range appear to represent the wood wren, *T. americanus* of Audubon.

Westward to the Pacific, from Dakota on the north and Texas on the south, the house wren assumes a somewhat paler, grayer plumage and is known as Variety PARKMANNI, No. 49a. As with the eastern form, it is safe to look for its rude nest anywhere that a wren goes, such as in cavities hollowed out by birds or animals, knot-holes, broken limbs, auger-holes, cracks and corners in out-houses and woodpiles, spaces under the loose bark of a tree, or a fold in a bunch of skins. Such a crevice is usually filled with a mass of twigs in the centre of which is a bed of sheep's wool and feathers arching over the eggs. The first eggs are laid about May 1 around San Francisco, and in Colorado and Oregon, a month later; two and sometimes three broods are raised. The eggs are not fairly distinguishable from those of *T. aëdon*; but are perhaps slightly more slender, and the spots seem finer and of a pinker tint of reddish-brown.

It is notorious that during the summer season the males of both species usually busy themselves in building several nests in places where they seem quite unnecessary. This has always been attributed to a sort of whim or desire for occupation, or to a judicious foresight; providing thus against a possible destruction of the first nest. Dr. Coles, discoursing upon this industrious propensity with characteristically graceful pen in his *Birds of the Colorado Valley*, remarks:

The birds seem to be afflicted with an *insanabile construendi cacoëthes* (to borrow a simile from Juvenal), which impels them to keep on building after they have built enough for any practicable purpose. Their notion seems to be, that whatever place they select, be it large or small,

must be completely filled with a lot of rubbish before they can feel comfortable about it. When they nest in a knot-hole, or any cavity of inconsiderable dimensions, the structure is a mass of sticks and other trash of reasonable bulk; but the case is otherwise when they get behind a loose weather-board, for instance, where there is room enough for a dozen nests: then they never know when to stop. I witnessed a curious illustration of their "insane" propensities in one case where a pair found their way through a knot-hole into one of those small sheds which stands in the back-yard, with a well-worn path leading to the house, showing its daily use. (It should be premised that a wren likes to get into its retreat through the smallest possible orifice. If the entrance be small enough, there cannot be too much room inside; and when the hole is unnecessarily large it is often closed up to the right size.) Having entered through a nice little hole, into a dark place, the birds evidently supposed it was all right inside, and began to build in a corner under the roof, where the joists came together. Though annoyed by frequent interruption, the indefatigable little creatures, with almost painful diligence, lugged in their sticks till they had made a pile that would fill a bushel, and I cannot say they would not have filled the whole shed had they not been compelled to desist; for they were voted a nuisance, and the hole was stopped up. The size of the sticks they carried in was enormous in comparison with their own stature; it seemed as if they could not lift them, much less drag the crooked pieces through such a narrow orifice. These coarse materials, it will be remembered, are only the foundation of a nest, as it were; their use in places where there is no real occasion for such a mass of trash is evidently the remaining trace of primitive habits.

In central California, however, Dr. Cooper has observed a remarkable fact in connection with this habit on the part of Parkmann's wren, which, he thinks, might also be found true in the case of the eastern wrens, especially in the southern states where the summers are long. Watching the wrens in his garden, Dr. Cooper assures us that their labor is not all thrown away, or simply a means of amusement, for at least one extra nest is sometimes used for the purpose of raising an additional family by a single pair of wrens simultaneously with the first brood! In 1876, a pair arrived at Haywood, Dr. Cooper's home, on April 20 (unusually late), and lost no time in building a nest in a bird-house on a pole. As soon as this nest was

finished, the male began to build in another bird-box close by. Dr. Cooper continues :

The female rarely assisted in this work, though I occasionally saw both there, and in due time the second nest was finished. Soon after the young in the first nest were hatched, and although needing much attention, the old birds still frequented the new nest, and I began to suspect that one of them was sitting on eggs there. This suspicion was soon verified by hearing the young, and seeing them fed. In this case each parent must have been sitting at the same time on a nest, perhaps taking turns, during the week that elapsed before the first hatching. The day after the first brood of six left its house, they reappeared at evening under the lead of the female, and all roosted there, the male meanwhile continuing to feed the other brood, and singing at almost every visit to them, from which circumstance I distinguished him. The next day, however, he seems to have taken charge of the fledged family and led them away to the groves, out of the reach of town cats, as after that the songless female alone attended to the remaining brood.

This is certainly very interesting and strange; and it is worth while to inquire whether true also of the marsh wrens and some other species in which the male is known to build a sham nest.

50. THE AMERICAN WINTER WREN.

ANORTHURA TROGLODYTES var. HYEMALIS (L.) Coues.

Our winter wren is a variety of the common wren of Europe. It is not uncommon over nearly the *whole of North America*, but eludes notice. In the "gloomy and tangled" forests of Pennsylvania, near Mauch Chunk, Audubon caught a glimpse of a winter wren, and tells in his graphic style how excitedly he watched it.

After much exertion and considerable fatigue, I at last saw it alight on the side of a large tree, close to the roots, and heard it warble a few notes, which I thought exceeded any it had previously uttered. Suddenly another wren appeared by its side, but darted off in a moment, and the bird itself, which I had followed, disappeared. I soon reached

the spot, without having for an instant removed my eyes from it, and observed a protuberance covered with moss and lichens, resembling the excrescences which are often seen on our forest trees, with this difference, that the aperture was perfectly rounded, clean, and quite smooth. I put a finger into it and felt the pecking of a bird's bill, while a querulous cry was emitted. In a word, I had, the first time in my life, found the nest of a winter wren. . . . Externally, it measured seven inches in length and four and a half in breadth; the thickness of its walls, composed of moss and lichens, was nearly two inches; and thus it presented internally the appearance of a narrow bag, the wall, however, being reduced to a few lines where it was in contact with the bark of the tree. The lower half of the cavity was compactly lined with the fur of the American hare, and in the bottom or bed of the nest there lay over this about half a dozen of the large downy abdominal feathers of our common grouse, *Tetrao umbellus*.

Audubon afterwards came upon a similar nest at Mohawk, N.Y., the six eggs containing large embryos early in June. One found by W. F. Hall at Camp Sebois, eastern Maine, 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 feathers and the fur of hedge-hogs. The shape was that of a pouch, the entrance being neatly framed with sticks, and the walls very strong, thick and firmly compacted. Its hemlock framework had been made of green materials, and their agreeable odor pervaded the whole structure. There is evidence that they also breed near Ithaca, N. Y.

The latest intelligence, however, comes through Mr. Ruthven Deane's article in the Nuttall Club's Bulletin for January, 1879. While collecting birds at Houlton, Me., Mr. James Bradbury showed Mr. Deane a nest under the roots of a fallen tree. It was embedded in the earth which remained attached to the roots, and could only be detected by crawling under the thick brush which surrounded the tree; even then, on looking up, all that could be seen was an aperture just large enough to admit the tiny birds. The nest was unfortunately deserted, in an almost finished condition. It was composed of hemlock twigs, moss, and a few bits of lichens compactly woven together. Early in

June another nest was found containing six young a few days old; this was sunk into the thick moss which enveloped the trunk of a fallen tree. A bunch of ferns grew out of the moss near the entrance of the nest, and the startled flight from them of one of the parent birds caused the discovery of its home. On the 8th of August, 1878, Mr. Bradbury took a third nest of the winter wren, which contained four eggs; and Mr. Deane presents the following account, the quotation being the description furnished him by Mr. R. R. McLeod who visited the locality before the nest was removed:

“The nest was in a place which does justice to the name *Troglodytes* for it was away under an upturned cedar-root in the dark. The tree had blown over somewhat, and in the roof made by the earth and roots she had excavated a hole and made her nest, where but the least glimpse of light could have reached it. A little spring flowed over the rocks beneath, on which the tree stood, and only by watching the bird with a feather in her mouth was the nest discovered. Mr. Bradbury put his head and shoulders under the roots and the wren fluttered past his face, and diligent search revealed the treasure.” The nest, which is in the possession of Mr. H. A. Purdie, is now before me, and presents a beautiful bit of bird architecture. It differs from the one already described, by having the top open, similar to that of *Sayornis fuscus*, though possibly the bird had some natural crevice through which to pass before reaching the nest. It is composed mainly of very compact green moss, with a few hemlock twigs interwoven, and is lined profusely with feathers of the Canada jay, blue jay, and other species, which arch over the eggs so as almost to conceal them. The average measurement of these eggs is .65 by .49 of an inch. The ground-color is pure white, and marked with fine spots of reddish-brown and a few blotches of a darker shade. In one specimen the markings are very small and faint, and free from any blotches. This was undoubtedly a second brood, and one egg was far advanced in incubation.

The winter wren's eggs are six or eight in number, equally pointed at both ends, average about .66 by .51, and are crystal-white, scantily dotted with bright reddish-brown. On some specimens the markings are evenly distributed: while on others they form a wreath about the large end. These eggs resemble those of the chickadee.

The winter wren in Russian America is known as Variety

ALASCENSIS, No. 50a. It occurs irregularly all along the Alaskan mainland and islands. The nest is placed deep down in crevices of rocks, and is thus rarely found, although the birds are generally plentiful. A nest sent to the Museum of Comparative Zoology, obtained in June, is 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. The hairs are rather coarse and white, three to four or five inches in length, and appear to be hairs of the polar bear." In some situations the nest is globular, or roofed over, with a small side-entrance. Eight to twelve eggs are laid. The two in the above-mentioned Museum, collected by Mr. W. J. McIntyre, measure respectively .68 by .51 and .60 by .50 of an inch. Their general color is dull white with a very few minute dots of reddish, so few and small as easily to be overlooked.

51. THE LONG-BILLED MARSH WREN.

TELMATODYTES PALUSTRIS (*Wils.*) *Bd.*

"This wren is a sociable — I had almost written gregarious — bird, nesting usually in company with many of its kind, and sometimes in colonies numbering several hundred, evenly settled throughout some eligible reedy tract. Its nesting is an interesting matter, on account of the size and conspicuous appearance of the structures it builds, the method of their construction, and their frequently astonishing numbers. Most wrens are famous builders, indefatigable in constructing, with infinite labor, nests that seem to us preposterously large in comparison with the small stature of their owners, and the marsh wren is no exception to the rule. But while other wrens build mainly in nooks and odd out-of-the-way places, where there is opportunity to indulge their whims respecting the plan of their houses, the marsh wrens have little choice, and must stick pretty closely to a particular order of architecture. Living as they do in vast tracts of reeds, or of marsh grasses resembling reeds in most respects, both the site of the nests and the materials of which

they are composed must be much the same. These wrens, then, construct a bulky globular nest, roofed over, with a little hole in one side, of the tops of coarse grasses or reeds; it is lined with finer material of the same description, and the whole affair is hung upon the upright stems of growing reeds, several of which usually pass through its walls. The home of the marsh wren is thus secure against inundation during any ordinary rise of the waters over which it hangs, while the shape of the structure keeps the eggs and young from falling out when the reeds are swayed by the wind. I have already alluded to the great numbers of such nests which may be found within small areas. The number is sometimes out of apparent proportion to the size of the colony, and it is supposed that the building mania is so strong, that many nests are built which are never occupied, just for the fun of the thing. It might be difficult to prove this, yet I see nothing improbable in the supposition. During the incubation of the female house wren, for instance, the male often busies himself unnecessarily in dragging trash into various odd nooks even if he does not construct a regular nest, and the same instinct might easily be pushed a little further, in the case of the marsh wren with the result just alluded to."

Such is Dr. Coues's theory, the idea being that the nervous, energetic little creatures keep on building while the females are incubating, to amuse themselves, or because they have nothing particular to do and cannot keep still.

A different reason has been assigned by Mr. W. E. D. Scott. After giving the circumstances of finding nine nests in various stages of completion in a little patch of reeds on the New Jersey coast known to be inhabited by only two pairs of wrens, all constructed between June 17 and 27, and only two of which were occupied, Mr. Scott asks what possible use all these extra nests, representing so much actual work, could be to those two pairs of wrens. In this case he thinks the explanation of Dr. Coues inadequate, since all these nests "were begun and apparently deserted while the female was still laying, and not incubating." Mr. Scott believes either that they built, and at a certain stage abandoned, the work as not to their mind; or that,

disturbed by any of their various enemies, notably blackbirds, meadow-mice and crows, they abandoned each nest as they found it to be discovered, until finally successful in their attempts. To support this theory of abandonment of nest-building, Mr. Scott gives several instances of its occurrence, under his eye, in other species of birds. Maynard contributes the suggestion that possibly the unoccupied nests may serve the purpose of throwing an enemy off the track: and offers, as supporting evidence, the fact that the birds are as solicitous when a spurious nest is approached, as when their actual home is threatened. Mr. Nelson's observations on this habit, as noticed by him near Chicago, and recorded in his *Birds of North Eastern Illinois* (*Bulletin Essex Institute*, VIII, p. 97), are well worth reading.

Probably all these hypotheses are true to a greater or less extent, and further, as Wilson suggested, probably some of the nests counted may be last year's.

This marsh wren's nest is superior to that of almost any other bird for durability, warmth and convenience. "This is formed outwardly of wet rushes mixed with mud, well intertwined, and fashioned into the form of a cocoanut. A small hole is left two-thirds up for entrance, the upper edge of which projects like a pent-house over the lower to prevent the admission of rain. The inside is lined with fine soft grass, and sometimes feathers; and the outside, when hardened by the sun, resists every kind of weather. This nest is generally suspended among the reeds above the reach of the highest tides, and is tied so fast to every part of the surrounding reeds as to bid defiance to the winds and the waves." Thus Wilson described it, and, perhaps because perfection has been reached, these birds vary their architecture but slightly. Occasionally, their nest is placed in bushes close to the ground, or in tussocks of sedges, and Mr. Samuels thinks the round entrance is always on the south side. On entering or leaving, it has been said, the sedges are carefully readjusted so as not to disturb the natural appearance of the surroundings. Mr. Gentry found one nest much like that of a Maryland yellow-throat, and lined

with fine vegetable matters instead of with feathers. Mud is not always a component part of the nest.

These wrens begin nesting immediately upon their arrival, which happens in the middle of May at Philadelphia, and somewhat later northward. They rear two broods in a season, constructing a new nest for the second. The time of nesting, however, appears to be late and very irregular.

The eggs are six to nine in number, oval or spheroidal in form, .65 by .50 in dimensions, and of a rich dark chocolate color resulting from an almost entire confluence of blotches. Sometimes a lighter ground-color is smirched with the darker pigment and some specimens have a washed-out appearance with but few dark spots. Dr. Coues relates that "runts" sometimes occur. "Such are doubtless not fertilized, and correspond to the little eggs that fowls and pigeons often drop at the close of their season, indicating that their power is exhausted. I have seen the same thing in the case of the barn swallow, and it is probably not an infrequent occurrence."

In favorable places west of the great plains, as about the tule lakes in northern Utah, Variety *PALUDICOLA*, No. 51*a*, is exceedingly numerous and closely resembles the eastern bird in every particular. In southern Colorado, Henshaw found it depositing its first eggs in the middle of June; Ridgway took them at Salt Lake June 2. Five was the largest number in any one nest.

52. THE SHORT-BILLED MARSH WREN.

CISTOTHORUS STELLARIS (Licht.) Cab.

Eastern United States breeding from Texas to Manitoba and Massachusetts. It is nowhere common, however, and in many large districts is never found. It is an inhabitant of low fresh-water marshes and rank grass-plats. It is shy and its home is hard to find. The nest reposes in the midst of a tussock of coarse high grass, the tops of which are ingeniously interwoven into a hollow globe with a small aperture in the

side. 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, and lined with "the linty fibres of the silk-weed, or some other similar material." As with the long-billed marsh wren, and some others, the male of this species often constructs several nests; perhaps one of these is used by the female for a second brood before the first are able to fly, they being then left to the sole care of the male, but this is not well ascertained. Nuttall conjectured that two females sometimes occupy one nest.

The eggs, contrary to precedent, are pure opaque white. They are rather small for the size of the bird, excessively fragile, elongated-oval, and about .62 by .46 of an inch in dimensions. Frequently ten will be counted in a single nest, but it is doubtful whether all these hatch. Two broods are brought out annually.

[Pl. VIII, Fig. 52.]

FAMILY ALAUDIDÆ — LARKS.

53. THE HORNED LARK.

EREMOPHILA ALPESTRIS (*Forst.*) *Boie*.

Desert Lark, Shore Lark, Prairie Lark; Sky Lark (Labrador); **Chip-chupsue** (Hudson's Bay); **Ortolan** (Nova Scotia); **Snow Lark** (Southern Illinois); **Snow-Bird** (Colorado).

This is our only representative of the important Old World family of Larks, although we have other birds miscalled so, the *Anthus ludovicianus* and the *Sturnella magna* for example. Including all its races, the horned lark wanders over the whole of North America, but *E. alpestris* proper,—which is identical with the European bird of the same name,—is confined in summer to the *Arctic regions*, particularly those adjacent to Greenland, and thence sparingly southward as far as the edge of the United States.

Audubon's charming account of its home-life cannot be improved, and has been well confirmed :

"The shore-lark breeds on the high and desolate tracts of Labrador, in the vicinity of the sea. The face of the country appears as if formed of one undulated expanse of dark granite, covered with mosses and lichens, varying in size and color; some green, others as white as snow, and others again of every tint, and disposed in large patches or tufts. It is on the latter that the lark places her nest, which is disposed with so much care, while the moss so resembles the bird in hue, that, unless you almost tread upon her as she sits, she seems to feel secure, and remains unmoved. Should you, however, approach so near, she flutters away, feigning lameness so cunningly that none but one accustomed to the sight can refrain from pursuing her. The male immediately joins her in mimic wretchedness, uttering a note so soft and plaintive that it requires a strong stimulation to force the naturalist to rob the poor birds of their treasure.

The nest, which is embedded in the moss to its edges, is composed of fine grasses, circularly disposed, and forming a bed about two inches thick, with a lining of grouse-feathers and those of other birds. In the beginning of July, the eggs are deposited. They are four or five in number, large, grayish, and covered with numerous pale-blue and brown spots. The young leave the nest before they are able to fly, and follow their parents over the moss, where they are fed about a week. They run nimbly, emit a soft *prep*, and squat closely at the first appearance of danger. If observed and pursued, they open their wings to aid them in their escape, and, separating, make off with great celerity. On such occasions, it is difficult to secure more than one of them, unless several persons be present, when each can pursue a bird. The parents, all this time, are following the enemy overhead, lamenting the danger to which their young are exposed. In several instances, the old bird followed us almost to our boat, alighting occasionally on a projecting crag before us and entreating us, as it were, to restore its offspring. By the first of August, many of the young are fully fledged, and the different broods are seen associating together, to the number of forty, fifty, or more."

The *alpestris* form also breeds about Hamilton, C. W., and in western and central New York, of which several instances have lately come to light. (See Bull. Nutt. Orn. Club, III, 54.)

Thus much for the species in the northeast. In the west and southwest differences of climate, etc., have produced changes of plumage which separate the shore larks there into two geo

graphical races. those from Kansas westward, south of, say, the Platte river, being known as Variety *CRYSOLEMA*, No. 53*a*; and those north of the Platte, from Wisconsin westward, coming into Variety *LEUCOLEMA*, No. 53*b*.

For the purposes of oölogy, we may take both these varieties as one, since their nidification presents no tangible distinctions. The western horned larks, therefore, may be said to breed from Michigan and Illinois westward to the Pacific coast, northward perhaps to Alaska, and southward throughout the highlands of Mexico. Over much of this region the species is nearly stationary, and it is exceedingly abundant on the dry plains.

The western larks appear to nestle very early in Illinois; "sometimes the last of February, and regularly during March and April, the first set of eggs is deposited, and early in May the fully fledged young commence to appear." Dates in my possession for that state are March 4, April 15, May 24, and July 2, the latter with embryos; for central Michigan I have the dates April 29, May 1 and 2; for Wisconsin, April 15; in Iowa, Mr. Allen shot fully fledged young, May 25. On the contrary, records from the Utah basin, the high northern plains and the Pacific slope, show no eggs found earlier than June, except J. K. Lord's mention of their early nesting on the Columbia, with second broods in July.

Their favorite resorts are the dry and gravelly plains, or, east of the Mississippi, open pastures and stubble fields. There they scratch a hollow in the ground in some suitable spot, and line the cavity with a rude bed of grass and weeds, making an inartistic nest, with walls an inch thick and no special lining.

The ground-tint of the eggs is a varying grayish clay-color, which is thickly, minutely, and uniformly flecked with light brown; but in some specimens there is a decided agglomeration of the spots into blotches forming a wreath about the larger end, with touches of purplish intermingled. Perhaps it is true that Labrador eggs (as, indeed, might be expected) are larger than western specimens, but in respect to markings there is no appreciable difference.

After the foregoing was written, I was favored by Mr. Thos. S. Roberts, of Minneapolis, Minn., with so very interesting a letter concerning this bird's habits in his region, that I feel bound to spare space for its full insertion :

Minneapolis, Minn., Oct. 19, 1878.

DEAR SIR :—

During the early part of winter the shore-larks leave this locality ; but just as soon as warmer suns and milder days lay bare patches of broken ground here and there, a few of the most venturesome return. This is occasionally in the latter part of January, but usually in February. Once having come they are not easily driven back, and brave many a heavy snow-storm and arctic wind. During such seasons of severe weather they gain their subsistence along the roads, and seem to endure life rather than to enjoy it. Their spring-like song sounds sadly out of place with the thermometer ten or fifteen degrees below zero.

At the first appearance of real spring weather, the larks become more numerous, their singing more frequent, and the love-making begins. By the time the sun's rays have gained sufficient power to melt the snow from southern exposures, a few of the most eager birds have arranged matters and are looking about for a suitable building site. This is usually selected in some bare, exposed spot, on the prairie or in an abandoned field, where a nest would seem the least likely to be placed ; no sheltering dead weed or tuft of grass is sought, but instead a place where the nest will be protected by its very openness. One of these early nests I found on April 4, 1877, while there was still much snow on the ground. It was on the southern slope of a little knoll, where the surface had thawed out two inches or so deep. A cup-shaped cavity had been scratched in the earth, in the midst of some old cow-manure : as yet only the rim and upper part of the nest had been completed, the bottom and lower sides being merely modelled. One bird, evidently the female, was at work upon it, while the other sat near by singing. On the morning of April 7, the nest was completed and contained two eggs : on the 9th, four eggs were in

the nest, and this proved to be the full set in this instance. It is probable that the nest was completed on the 5th, and that one egg was laid each day until the four were deposited. On the 11th, the bird was sitting; on the 18th, I found that one egg had just hatched, which made nine days from the laying of the last egg until the first one hatched; by the 19th two more were out and on the 20th the fourth egg was hatched.

When the bird first comes from the egg, the long down on the body, being damp, is matted together in close strings, and the body is nearly bare; but, quickly drying, the bird is soon enveloped in a soft, fluffy, yellowish covering. The down grows in patches and lines upon the top and back of the head, back, sides, and wings. On the 20th, the eyes of these young birds were closed; but, by the 25th, all four had them fully open, and their plumage proper had developed very rapidly, so that they began really to resemble young shore larks. Only one of them showed any inclination to open its mouth for food when disturbed. Taking one upon the palm of my hand, I found that it had gained considerable strength, and could nearly stand upright, but was unable to balance itself,—falling over backward. On April 28, they were still in the nest, but more than filled it, so that one had to sit out on the edge. As the wind was blowing hard, they sat very close, with their heads drawn well down and facing the direction from which the gale came. They paid no attention to my approach, or even to being gently poked, beyond shrinking a little closer to the ground. Their instinct told them that if the strong wind caught them unawares, they might suffer a rough tumble. On the 29th they were gone, and the only one to be found was started by the dog some hundred yards from the nest. I had stepped nearly upon it, without its starting. It was unable to rise up on wing, but ran and fluttered along, crying loudly, which brought the parents immediately. They showed great concern for a moment, but, upon the fledgling being taken in my hand, left the place entirely. The young bird could run very rapidly, but could not stand still well. Its note was a loud *peep*.

The shore lark breeds most abundantly in April, May and

June, but in mild seasons begins nesting even earlier. The winter of 1877-8 was mild here, as elsewhere, and the spring opened nearly a month earlier than usual. On March 18, of this year, I found a nest in a sheltered locality containing three young birds, about a day old. The pair must have built their nest in the first week of March. On the 13th of the same month, two other nests contained incomplete sets of eggs. On the 21st, one nest was found unfinished and another containing three young birds. These occurrences seem singular, but the nature of the weather at that time justified them, and they only serve to exemplify the readiness of this bird to nest at the first possible opportunity.

The lark is essentially a prairie-breeding bird. Sandy places where the grass is short, or almost absent, are favorite resorts, and often a barren, loose sand-knoll will be the home of several pairs. In accordance with its common habit of frequenting roads for a large portion of its food, the nests, four times out of five, are placed near the roadside and almost always in the centre, or beside a deposit of dry and bleached cow-ordure. I attribute this situation to a protective instinct; since the color of the weather-dried manure resembles very closely that of the upper surface of the female. As a rule, this bird avoids building under any sheltering vegetation. The nest is sunk in the ground to the rim; or, in most cases, it might be more properly described as a shallow, cup-shaped cavity lined with grass, small bits of weeds, fine roots and similar materials. The lining of the nest is finer grasses, pappus-bearing composites, and occasionally a few feathers; the lining however, does not seem to be a particular matter. The sides are thick but are so loosely constructed that it is very difficult to move the structure from its cavity, and next to impossible to preserve entire the natural shape.

The eggs of the shore lark are from three to five in number. Usually but three are laid early in the season, while five is the usual clutch in May and June. The ground-color is dull or olivaceous-white, densely marked all over with dots and blotches of dull brown. Some specimens have a very few irregular

black lines and dots about the larger end, resembling those on an oriole's egg. The average dimensions of thirteen eggs are: length, .84; breadth, .61. In one specimen the maximum length (.87) and the minimum breadth (.56) are combined.

The shore larks are most indifferent birds about the safety of their nests, feeding and singing in a visitor's presence with the utmost unconcern, or leaving the vicinity entirely. While they have eggs, we have never known them to exhibit any anxiety, and the difficulty of finding the nest is thus greatly increased. When surprised upon the nest, they fly silently away and do not return while any one is about. When they have young, however, they will occasionally make a considerable demonstration at being disturbed. At such times they fly about the nest, alighting here and there, and passing close by the intruder, uttering all the time cries of distress. Before incubation fully begins, the bird is easily driven to desert her nest by a slight disturbance from a passing vehicle or animal, or almost any trifling interference.

Judging from the length of the season during which the lark breeds and from the expedition with which it disposes of its young, there can be little doubt that two broods are raised in a season; and I am inclined to believe that sometimes three are brought out. For a short-time after leaving the nest, the oddly marked young are accompanied by their parents. Later, several broods join together and the little company may be seen scurrying about over the prairies.

During the mating and nesting season the habits of this bird present several interesting features. One such is the manner in which the male delivers his love-song. Rising from the prairie the exuberant bird mounts by successive leaps spirally upward and upward, until almost lost from view. Listening carefully we find that he is pouring forth his short song again and again, hovering meanwhile a mere speck against the sky. After a few minutes, folding his wings closely, the singer drops head foremost, almost perpendicularly, and seems about to dash against the ground when he catches himself on outspread

wings, at the last instant, and gently alights, or skims along a short distance over the prairie to drop down perhaps on the very spot from which the ascent was made. I have seen them soaring thus as early as February 10.

This letter is compiled from notes, and is as near an accurate account of the breeding of the horned lark in this vicinity, as observed by my father and myself, as I can make it.

Hoping that the facts may be of service to you, I am,

Yours respectfully,

THOMAS S. ROBERTS.

[Pl. VIII, Fig. 53.]

54. THE YELLOW WAGTAIL.

BUDYTES FLAVA (L.) Cuv.

This bird, a common species of the Old World, was added to the North American fauna, in 1866, by its discovery in *Alaska*. Many years ago, Dr. Edward Adams found the bird common at Michelaski. He first met with them on June 5, and took their nests on the 12th. Mr. Bannister has seen them breeding in the vicinity of St. Michael's, Norton sound, but I am not aware that he has published any narrative of their habits. To compile an account of their nidification in Europe, beyond stating the mere fact that they nestle on the ground, is unnecessary. Furthermore, they may be found to differ materially on this side of the ocean.

55. THE TITLARK.

ANTHUS LUDOVICIANUS (Gm.) Licht.

The titlark wanders over the *whole continent* from Guatemala to Greenland. We are familiar with its winter appearance, but of its habits in summer and particularly its nesting, we are not so well informed. Except among the snow-fields on the summits of the mountains of the west, where elevation

supplies the same conditions as increase of latitude, the titlark is not known to breed south of the *Arctic regions*. It will not surprise me, however, if it shall hereafter be proved to do so, since it has already been reported as breeding in western New York occasionally, and Dr. C. C. Abbott, a most competent observer, assures me that he has seen the bird in New Jersey in May. Audubon's oft-quoted account of its nidification reads as follows :

I found it breeding abundantly on the Labrador coast, on moss-covered rocks, as well as in the deep valleys, but never at any great distance from the sea. The nests were usually placed at the foot of a wall in the rocks, buried in the dark mould, and beautifully formed of fine bent grass, arranged in a circular manner, without any hair or other lining. Both birds incubate, sitting so closely that on several occasions I almost put my foot upon them before they flew. The first nest that I found was on the 29th of June, when the thermometer ranged from 51 to 54 degrees. The eggs were six in number, five-eighths of an inch long and six and one-quarter twelfths in breadth, being rather elongated, though rounded at both ends; their ground color of a deep reddish-chestnut or reddish-brown, considerably darkened by numerous dots of a deeper reddish-brown and lines of various sizes, especially toward the large end.

Dr. Elliott Coues also met with it in Labrador, and obtained two nests in July placed in cavities in the ground on the side of a steep rocky chasm. They were built upon a staging of dry grass, keeping them above the wet, and were constructed of coarse dried grass loosely arranged, and without lining; the exterior diameter was about six inches, the interior three inches, with a depth of two inches. One nest contained five, the other four, eggs, averaging thirteen-sixteenths of an inch long, by nine and one-half sixteenths broad; of a dark chocolate color, indistinctly marked with numerous small spots and streaks of blackish. The parents do not leave the nest until nearly trodden on, then the one that is incubating flutters up with loud cries of distress that soon bring the mate, and the pair hover anxiously overhead, at times approaching within a few feet, or even alighting close by, all the while crying out in

the most beseeching and plaintive manner." No attempt to deceive by feigning lameness was noticed, but several pairs breeding near one another were usually aroused, and joined their cries with those of the afflicted parents.

In central Colorado, according to T. Martin Trippe, the titlark arrives early in May, and by June has ascended to the summit of the range, and begins nesting almost as soon as the grass comes up, incubation beginning in the first and second weeks of July. The nest is placed under the shelter of a projecting stone, and is very neatly constructed of coarse grass externally, lined with fine grass, and is about three and one-half inches in diameter.

The eggs are usually five in number; the ground color dark brownish-purple, almost hidden by spots and splashes of purplish-black. Eggs from different nests vary somewhat in the intensity of color, some being much lighter and grayer than others, but the general aspect is always quite dark. As one approaches their nests the parents hover silently about, in deep anxiety.

The European Meadow Pipit (*Anthus pratensis*, No. 55 *bis*) is occasionally taken as a straggler into Greenland, and may now and then breed among the heather there.

[Pl. VII, Fig. 55.]

56. THE MISSOURI SKYLARK.

NEOCORYS SPRAGUEI (*Aud.*) *Sclater*.

Sprague's Lark, or Pipit; Missouri Lark.

This is a true bird of the plains and particularly numerous on the upper *Missouri and Yellowstone* where it breeds; but, its nest, like that of other prairie birds necessarily building on the ground, is exceedingly difficult to find, exposing nothing which can catch your eye. You may see a pair hovering over the same spot day after day in "painful agitation,"

and yet fail to find the nest you know is there, after repeated and thorough examination of the ground. Hence our knowledge of it until very recently has been based almost exclusively on the discoveries of Mr. J. A. Allen, who in 1873 secured a nest on the Yellowstone of which he gave the following account :

The nest, as described by Audubon, was placed on the ground, and neatly formed of dry fine grass. It was thinly arched over with the same material, and being built in a tuft of rank grass, was most thoroughly concealed. The bird would seem to be a close sitter, as in this case the female remained on the nest till I actually stepped over it, she brushing against my feet as she went off. The eggs were five in number, rather long and pointed, measuring about .90 by .60 inches, of a grayish-white color, thickly and minutely flecked with small blotches of purplish-brown, giving them a decidedly purplish tint. In color the eggs thus somewhat resemble those of the titlark. (Pl. Fig. 56.)

FAMILY SYLVICOLIDÆ—WARBLERS.

57. THE BLACK-AND-WHITE CREEPER.

MNIOTILTA VARIA (*Linn.*) *Vicill.*

Varied Creeper; Black Creeping Warbler.

Entering the United States in great numbers in February and March, it rapidly becomes spread everywhere *eastward of Arkansas* and the Missouri river, and northward into the British possessions. Some nevertheless remain and breed in the southern states, which is contrary to the rule among the majority of our warblers.

It is one of the earliest of our singing-birds to make its nest, completing it, in New England and Ohio, about the second or third week of May. The situation will be found so chosen that an overhanging rock, a log, the branching roots of a tree, or herbage of the preceding year affords protection. The ordinary site is in some wooded, or bushy spot. Placed flatly on

the ground, the materials of which the nest is constructed are strips of inner bark of various trees, within which are matted leaves, mosses, cotton from ferns, etc., etc., with a lining of hairs. Some nests are arched over, much like an oven-bird's (*Siurus auricapillus*), which generally it greatly resembles in size and loose appearance. Mr. Augustus Fowler, at Danvers, Mass., found one placed in a tuft of moss, in a moist, bushy pasture where it was nearly concealed in a cavity, the moss having grown over it, till it was almost covered. Undoubtedly the above-described method is the almost invariable practice of these creeping-warblers. Therefore, Audubon's statement that in Louisiana the nest was built in holes in trees, and composed of moss and other soft substances, has been discredited; but Dr. Coues is authority for the assertion that they have been known to breed so at Washington, D.C., and more lately H. D. Minot asserts that he has found two nests so situated near Boston.

"The eggs," says Dr. T. M. Brewer, "vary in shape from a rounded to an oblong oval, and in size from .69 to .75 of an inch in length, and from .51 to .53 of an inch in breadth. Their ground-color is a creamy white, to which the deep red markings impart an apparently pinkish tinge. They are marked more or less profoundly with bright red dots, points and blotches. These vary in number and in distribution. In some they are very fine, and are chiefly confined to the larger end. In others they are larger, more diffused, and occasionally there are intermingled marks and blotches of slate-color. The effect of these variations is, at times, to give the appearance of greater difference to these eggs than really exists, the ground-color and the shade of the red marking, really presenting but little modification." I should call five eggs the usual complement; and often two broods are reared during a single season.

Mr. John Burroughs, in his inimitable language, has described the behavior of these warblers when their home is invaded:

A black-and-white creeping warbler suddenly became much alarmed as I approached a crumbling old stump, in a dense part of the forest. He alighted upon it, chirped sharply, ran up and down the sides and

finally left it with much reluctance. The nest, which contained three young birds nearly fledged, was placed upon the ground at the foot of the stump, and in such a position that the color of the young harmonized perfectly with the bits of bark, sticks, etc., lying about. My eyes rested upon them for the second time before I made them out. They hugged the nest very closely, but as I put down my hand they all scampered off with loud cries for help, which caused the parent birds to plow themselves almost within my reach. (Pl. Fig. 57.

58. THE BLUE YELLOW-BACKED WARBLER.

PARULA AMERICANA (*Lin.*) *Bonap.*

This beautiful warbler has a summer residence from *West Virginia to Nova Scotia*, and westward even to the foothills of the Rocky mountains; it is commonest in the latitude of Massachusetts and northward during the summer, but also breeds in Illinois, Virginia and New Jersey; Audubon's mention of finding its home in Louisiana is undoubtedly an error.

The nest of this warbler is hollowed out of a bunch of "Spanish moss,"—the long, gray fibrous lichen which hangs from trees in many New England swamps. "With great skill," remarks Dr. Brewer, "do these tiny architects gather up, fasten together, and interweave, one with the other, the hanging ends and longer branches. By an elaborate intertwining of these long fibres they form the principal part, sometimes the whole of their nests. These structures are at once simple, beautiful, ingenious and skilfully wrought. When first made they are somewhat rude and unfinished, but as their family are gathered, the eggs deposited, incubated and hatched, a change has been going on. Little by little has the male bird busied himself, when not procuring food for his mate, in improving, strengthening and enlarging the nest. These same acts of improvement are noticed with the humming-birds, vireos and a few other birds."

The nests are sometimes constructed on the sides of trunks of trees when covered with long mossy lichens, and in such cases consist only of an interweaving of the moss above and

below a very small opening, within which a cup-shaped flooring has been matted out of the same material. To such a nest you must be guided by the bird itself, for it is effectually concealed. The nests are more frequently found, however, hanging from low branches, and when thus pensive are generally imperfectly circular in shape, with an entrance on one side and rarely with any lining. An exceptional one found by Deane and Brewster at Stoneham, Mass., was in appearance much like that of a Baltimore oriole's, except that it was composed of interwoven moss, being hung in a drooping spray of hemlock, entirely open at the top, and not in the least purse-shaped. The whole structure was so frail that the eggs could easily be seen through the walls. Mr. B. J. Peckham of Westerly, R. I., who appears to have had more than ordinary opportunities for studying this bird, gives the following interesting experience:

In 1876 I removed a nest from a large oak situated on a ledge. In the winter the tree was cut down, and the next spring they used the moss on some low barberry bushes within a few feet of the former tree. The nest when completed hung within three feet of the ground; but they never used the nest, for they immediately built a second on another barberry bush which grew out of the side of an almost inaccessible ledge. They now for some cause deserted the second nest, and built in a small maple near by. I never found them nearer the ground than eight feet nor in bushes barring these two occasions. The second week in June, 1877, I found two more on an oak surrounded by water, so that had the limbs not overhung a bank, I could not have secured them. One contained four eggs, the other four young so nearly fledged that when I visited it a week later, they had disappeared. The nest was attached to a limb three inches thick and hung down about six inches. The external diameter three inches. I would say, among all the nests that I have found not one was placed in the fork, as I have seen stated, but were suspended from the under side of the limb, and braced by attaching the long thread-like moss to other branches. One nest was fastened in five different places. Without one exception the nests were all situated over or in close proximity to water. Some nests of this species have a single hole in its side; others have two—the entrance and a small hole in the rear for their tail to project.

Seeming already to be mated on their arrival from the south late in May, they immediately begin to search for a proper place

to build, but it is about the second week in June before their eggs are laid. They are firmly attached to chosen localities and endeavor to build again and again in the same tree. The eggs, four or five in number, are clear white, sparsely spotted with markings of reddish-brown, slate, purple and lilac. In some, blotches of the first predominate; in others, the last three shades, usually forming a confluent ring around the larger end. They measure .62 to .70 in length and .49 to .57 in breadth. When the nest is disturbed the parents make little complaint.

(Pl. IX. Fig. 58.)

58bis. SENNETT'S WARBLER.

PARULA NIGRILORA *Coues.*

This new warbler, discovered by Mr. George B. Sennett on the *lower Rio Grande* in 1877, has a very limited range, so far as known, in the immediate vicinity of the mouth of that river, and probably southwestward. All the information obtained that year was a published note by Dr. J. C. Merrill, U. S. A., who found its nest, July 5, about five miles from Fort Brown. "It was placed in a small thin bunch of hanging moss, about ten feet from the ground, in a thicket; was simply hollowed out of the moss, of which it was entirely composed, with the exception of three or four horsehairs; entrance on side; contained three young, about half-fledged."

Largely induced by the hope of finding out more, Mr. Sennett repeated his trip to Texas in 1878, and was not disappointed. He has kindly communicated to me observations in manuscript in advance of his own publication, and I am able to make up a tolerably full history of the species. Mr. Sennett says:

I found these warblers not uncommon; and, by the middle of May, was made anxious by finding that dissection of females showed their eggs to be only just developing, while my time of departure was near. But on May 17, my Mexican guide, Pancho, brought in the most interesting and peculiar nest I had seen in that locality, together with one broken egg, which was none other than that of this new warbler;

but my hopes were thus brightened only to be cast down, for no other nest was found in spite of the most untiring and intelligent searching.

This warbler must arrive on the Rio Grande in March, but the great majority do not breed until June. The site selected (and little time need be wasted in choosing it) is one of the thousands of tresses of *Tillandsia* (Spanish moss), which everywhere drapes the trees, or among the dense tufts of a mistletoe-like orchid which attaches itself in similar abundance to partially dead branches. The orchid containing the nest before me was firm in texture, and grew upon the drooping end of a Brazil-wood tree about ten feet from the ground. The nest itself was simply a cavity formed by spreading the gray leaves of the orchid and digging into its very centre from the side, making a cavity some two inches wide and deep, with a narrower opening. The bottom and sides of this grotto are lined with short cottony wood-fibres, forming an elegant matting for the eggs. The whole orchid could be packed in a cigar-box, and is firm and secure; yet how easily was it adapted to a bird's home!

The egg, like the nest, betrays a close affinity to that of *Parula americana*. It has the same spots of lilac and brown forming a broad band near the larger end, while, here and there over the whole surface, a fleck of the same color appears on a dull white ground. The single egg taken measures .67 of an inch long by .46 broad. I confidently expect this bird to be found in wooded districts north of the Rio Grande valley and possibly north of the Nueces. That this form has not been met with in Mexico by the several field-ornithologists who have visited that region seems strange, yet the diminutive size of the bird and its frequenting the tops of the tallest trees, would assist greatly in its concealment.

(Pl. IX. Fig. 58bis.)

59. PROTHONOTARY WARBLER.

PROTONOTARIA CITREA (*Bodd.*) *Ed.*

Golden Swamp Warbler; Prothonotary.

The home of this delicate bird is the swamps from Central America northward. It is found most abundantly throughout the *Gulf states*, but extends its migrations north to Kansas, Missouri, southern Illinois and Indiana, and occasionally to Pennsylvania and Maryland. Indeed, it is probable that its

maximum abundance during the breeding season is reached about the junction of the Ohio and Mississippi rivers.

The freshest and most complete observations are given us by Mr. William Brewster in an admirable essay in the Nuttall Club's *Bulletin* for October, 1878 (Vol. III, p. 153), and I cannot do better than to condense it, since I have had no personal experience with the bird, advising all my readers to turn to the original article.

Mr. Brewster's locality was Mt. Carmel, southern Illinois, and the time was April, 1878. The first warm days brought a host of warblers and among all the gay revellers none were more conspicuous than the beautiful prothonotaries.

Day by day their numbers rapidly increased, until by April 27 all had apparently arrived. We now found the prothonotary warbler to be, in all suitable localities, one of the most abundant and characteristic species. Along the shores of the rivers and creeks generally, wherever the black willow (*Salix niger*) grew, a few pairs were sure to be found. Among the button-bushes (*Cephalanthus occidentalis*) that fringed the margin of the peculiar long narrow ponds scattered at frequent intervals over the heavily timbered bottoms of the Wabash and White rivers, they also occurred more or less numerously. Potoka creek, a winding, sluggish stream, thickly fringed with willows, was also a favorite resort, but the grand rendezvous of the species seemed to be about the shores of certain secluded ponds lying in what is known as the Little Cypress Swamp. Here they congregated in astonishing numbers and early in May were breeding almost in colonies. In the region above indicated two things were found to be essential to their presence, namely, an abundance of willows and the immediate proximity of water. Thickets of button-bushes did, indeed, satisfy a few scattered and perhaps not over-particular individuals and pairs, but away from water they are almost never seen.

Mating began almost immediately after the arrival of the females, and the "old, old story" was told in many a willow thicket by little golden-breasted lovers. The scene enacted upon such occasions was not strikingly different from that usual among smaller birds: retiring and somewhat indifferent coyness on the part of the female; violent protestations and demonstrations from the male, who swelled his plumage, spread his wings and tail, and fairly danced around the object of his affections. Sometimes at this juncture another male appeared, and then a fierce conflict was sure to ensue. The combatants would struggle together

most furiously until the weaker was forced to give way and take to flight. On several occasions I have seen two males, after fighting among the branches for a long time, clinch and come fluttering together to the water beneath, where for several minutes the contest continued upon the surface until both were fairly drenched. The males rarely meet in the mating season without fighting, even though no female may be near. Sometimes one of them turns tail at the outset; and the other at once giving chase, the pursuer and pursued separated by a few inches only go darting through the woods, winding, doubling, now careering away up among the tree-tops, now down over the water, sweeping close to the surface until the eye becomes weary with following their mad flight. During all this time the female usually busies herself with feeding, apparently entirely unconcerned as to the issue. Upon the return of the conqueror her indifference, real or assumed, vanishes, he receives a warm welcome, and matters are soon arranged between them.

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The nesting of the prothonotary warbler affords the most interesting phase of its life history. Audubon's account of its nest, "fixed in the fork of a small twig bending over the water," seems in the light of our present knowledge open to serious doubts. At least, it is not the mode of nidification used in the places where it is best known at the present day. Mr. B. F. Goss of Neosho Falls, Kansas, first brought to light the fact that in that locality the bird invariably nested in holes of trees or buildings. Since his discovery of the first nest in 1863, others similarly situated have been found by Dr. Palmer and Mr. Robert Ridgway, at the Kiowa Agency, Indian Territory, and at Mount Carmel, Ill. The first nest collected the past season was found by Mr. Ridgway on April 27. It contained four fresh eggs. This was probably an exceptionally early date, as nearly a week elapsed before any other eggs were taken; and, indeed, the greater proportion of a large number collected between May 8 and May 12 were freshly laid. At least forty nests were examined altogether, about one-half of which contained eggs. To give an account of all the various situations in which these nests were placed would entail a description of nearly every conceivable kind of hole or cavity that can be found in tree-trunks. The typical nesting-site, however, 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, although, as above stated, it was oftentimes left high and dry after the eggs were laid.

Of the many exceptions to the above-described typical site, I will here notice only two of the most marked. A nest discovered May 8,

was built in a sort of pocket-shaped cavity in the side of a large cypress stump. The hole descended vertically in the inside of the shell-like wall, the central heart of which had crumbled away. Another, found by Mr. Ridgway, was built in an extremely rotten snag which stood on the edge of a road: the eggs or sitting parent could easily be seen by any one riding by. This nest was several hundred yards away from water.

In the construction of the nest the female labors somewhat desultorily. Fresh green moss enters largely into its composition, and although this substance is readily obtained, a week is sometimes consumed in building the simple little affair. Most of the materials are gathered in the immediate vicinity from half-submerged logs or the nearest dry ground. The male almost always accompanies his partner on her trips to and from the nest, making a great show of hunting up choice bits of material, but apparently never succeeding in finding any to his mind. He usually precedes her on her return, enters the hole to investigate the condition of affairs, pops out his golden head to assure her with a soft chirp that all is well within, and then gives way to allow her to enter, clinging against the bark outside to cheer her labors with his song and await her reappearance. Sometimes, however, both birds remain inside together, although how much assistance the male renders in house furnishing I cannot say. Probably his presence is only tolerated, and he is perhaps often accused of being a nuisance.

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. The deeper nests are of course the more elaborate ones. One of the finest specimens before me is composed of moss, dry leaves, and cypress-twigs. The cavity for the eggs is a neatly rounded, cup-shaped hollow, two inches in diameter by one and a half in depth, smoothly lined with fine roots and a few wing-feathers of some small bird.

The number of eggs constituting a full set varies to an unusual degree; two nests were found, each of which contained seven eggs, while in another instance a nest, which from its position could not possibly have been molested, had only one, nearly ready to be hatched. 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 $.73 \times .59$ and $.67 \times .58$. 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. (Pl. IX. Fig. 59.)

60. WORM-EATING WARBLER.

HELMINTHERUS VERMIVORUS (*Gm.*) *Bp.*

The shy worm-eater spreads itself in summer over the eastern United States *south of New England* and west to Missouri and Kansas, being most abundant in the valleys of the Alleghanies, where well-shaded brooks wind their way between the thickets.

As in the two preceding cases, Audubon erred in his description of the nidification of this warbler. The nest is not placed in bushes but on the ground, occupying a hollow on some hillside much like the nest of the oven-bird (*Sirrus*), and, like that, concealed by the twigs and dead leaves strewn about. The structure itself is only a clumsy conglomeration of dead leaves and other materials to be had close by, lined with pine-needles, the fine thread-like stalks of the hair-moss, or similar soft and flexible substances. These nests are embedded below the level of the surface of the ground and are easily passed over by the sharpest eyes, unless the female, forced from her sitting, accidentally betrays the position at your very feet. In the latitude of Philadelphia the eggs are laid about June, or a little later; while Mr. Eugene Bicknell, who informs me that he has known of many pairs nesting at Riverdale in the northern edge of New York City, gives June 5-10 as the proper time to seek for fresh eggs.

The eggs are elliptical and crystal-white, spotted (in varying profusion in different specimens) with minute dottings of a bright red-brown; at the larger end these dots are crowded, and mingled with cloudings of lilac-brown. They are large, meas-

aring from .70 to .78 of an inch in length by .56 to .60 in breadth, and remind one of the eggs of the nuthatch.

The young are fed on smooth caterpillars, grubs and spiders, and the parents manifest intense anxiety when any danger threatens, often feigning lameness "with intent to deceive."

(Pl. X. Fig. 60.)

61. SWAINSON'S WARBLER.

HELMINTHERUS SWAINSONI (*Aud.*) *Bp.*

The home of this very rare swamp-warbler within our limits, so far as known, is the coasts of *South Carolina, Georgia and Alabama*. Its habits seem to resemble those of the prothonotary, but nothing is known of its nidification.

(Pl. X. Fig. 61.)

62. THE BLUE-WINGED YELLOW WARBLER.

HELMINTHOPHAGA PINUS (*Linn.*) *Baird.*

Habitat, *eastern United States*, northward to Massachusetts and Minnesota, westward to Iowa, Kansas and Texas, and southward through eastern Mexico to Guatemala.

The nests are rare in cabinets. Mr. Ridgway collected several at Mt. Carmel, Ill., one of which contained five eggs on May 8. These examples are described as placed on the ground among shrubbery, and built loosely of broad thin strips of inner-bark of the basswood, etc., lined with interlaced fine grass stems. Mr. S. N. Rhoads reports a similar nest at West Chester, Pa., taken June 10. "It was built in the midst of a clump of tall swamp grass, on the outskirts of a forest where there was a good deal of weedy undergrowth not over two feet high. The nest rested slightly on the ground and was quite bulky for the size of the bird; the cavity was nearly three inches deep by two inches in width. The structure was composed externally of beech and oak leaves of the preceding year, which seemed to have been carelessly strewn and stuck

in as if to form a barricade around the brim. The lining consisted of fine strips of grape-vine and inner-bark of the oak, together with some straws. This nest contained four young birds about two days old." Since that date Mr. Rhoads has written that several nests have been taken in Chester and Delaware counties, of Pennsylvania, where they seem to breed regularly.

The eggs of this warbler measure about .66 by .50 of an inch, and are white, sparsely sprinkled with red lish-brown dots, mainly towards the larger end. They are well described by one collector as "just the size of those of *Chrysomitris tristis*, but less pointed." Two broods are stated to be raised in a season, in the warmer states, the first appearing late in May and the second early in July. (Pl. X. Fig. 62.)

62bis. LAWRENCE'S WARBLER.

HELMINTHOPHAGA LAWRENCII, *Herrick*.

Two specimens of this novelty have been taken in *northern New Jersey*; but no information in regard to breeding habits has been obtained thus far. (Pl. X. Fig. 62b.)

63. THE GOLDEN-WINGED WARBLER.

HELMINTHOPHAGA CHIRYSOPTERA (*Lin.*) *Bd.*

This pretty warbler has a summer distribution through the *eastern United States* into New England and Canada, and westward to the plains, but is everywhere rather uncommon, though, according to Mr. H. A. Purdie, it occurs in considerable numbers in eastern Massachusetts.

Some recent narratives of the nidification of these warblers have given much new information. It appears that they arrive in Massachusetts (nearly their northern limit) during the second week of May, soon pair, and begin to build their nests, eggs being laid from the 5th to the 12th of June. The same dates are true of the Great-Lakes region. In Virginia the time is a

fortnight, and in Georgia three weeks earlier. Situations chosen are the edges of the woods and the damp hillsides, but nearness to a road does not prove an objection. The female seems to be the architect.

Newton township, near Boston, Mass., appears to have been a good breeding ground for these warblers. There, in 1869, Mr. C. J. Maynard discovered a typical nest minutely described in his *Naturalist's Guide*. Like all previously recorded, it was placed on the ground, on a small piece of green moss, "partly overshadowed by some ferns and rank weeds; but these must have grown after the nest was built," so that there was no attempt at concealment. "The nest is composed outwardly of large oak-leaves of the previous year, and grape-vine bark, and is lined, not very smoothly, with fine grass and a few horse-hairs. It is large for the size of the bird, quite deep, and slightly smaller at the top than in the middle. The whole structure is not nearly as neat as would be expected for so small and elegant a bird, and reminds one strikingly of the nest of the Maryland yellow-throat. The dimensions are: depth externally 3.15 inches, internally 2.20; diameter internally in the middle 2.25, at the top 1.90; diameter externally 3.50."

This seems to have been an extraordinarily capacious nest, for of several others from the same state, none present so large dimensions, although all agree closely in structure. Two nests in the Smithsonian from Racine, Wis., taken by Dr. P. R. Hoy, in June, without their outer wall of leaves, are built of fine grasses, neatly bent and woven: one is lined with white horse-hair, the other not. A large bulky nest from Georgia (Dr. Gerhardt) is chiefly composed of leaves, with fine, fibrous lining. An Ohio nest is essentially similar in all respects; it contained two cow-bird's eggs.

A large series of eggs measured, show average dimensions of .73 by .53 of an inch; but, though borne out in few this is hardly a fair estimate, since the majority have a proportion of about .68 to .53. One writer thought he detected a difference in the size of the eggs according to latitude, some from Wisconsin measuring .70 by .53 of an inch, while speci-

mens from Georgia were only .63 by .49. But in the eggs from eastern Massachusetts there is a range of from .65 to .72 of an inch in length, and .49 to .56 in breadth, showing great variation, both in size and shape. The eggs vary also in markings, but the ground-color appears always to be clear crystal-white. The spots are reddish-brown, in some specimens aggregated into an irregular wreath around the larger end, in others sparsely sprinkled over the whole surface but more thickly at the butt; two eggs of a clutch found by Mr. J. Warren at Newton, Mass., were spotless white.

In an article upon the subject in the *Bulletin* of the Nuttall Ornithological Club (vol. I, p. 6), Mr. Warren describes the behavior of a female whose nest he found under a skunk cabbage. He says: "Upon searching we found the nest concealed by the large leaves of the plant. It was raised about two inches above the wet ground by dead oak and maple leaves which were quite damp. The owner soon came back, and hopping excitedly from branch to branch of an alder thicket a few yards away, almost continually uttered a sharp chirp of alarm, betokening her strong dislike to the intruders; but, strange to say, her mate did not make his appearance, although we could hear him distinctly *zee-zee-zeeing* a few rods away." On another occasion a sitting bird allowed the hand to be placed upon her before attempting to escape. Concerning the nesting habits of few of our rarer warblers have we such complete information as has been presented above. (Pl. X. Fig. 63.)

63bis. THE WHITE-THROATED WARBLER.

HELMINTHOPHAGA LEUCOBRONCHIALIS, *Brewster.*

"Of this supposed good species, no specimen is known to be now in existence. The unique type was accidentally destroyed shortly after publication of the original description, but fortunately not before Mr. Ridgway had made the drawings which illustrate Mr. Brewster's second notice. At the time that the specimen was kindly sent by the owner to the Smithsonian

Institution for examination by Mr. Ridgway, there was living at large in the 'South Tower' an owl of the genus *Speotyto*, species doubtful, which had been captured at sea, somewhere near the West Indies, and was destined to make history in an undesirable manner. This reckless bird of prey, in one of his nocturnal explorations, discovered the pretty warbler, and proceeded to investigate the new species anatomically. He survived the dose of raw cotton and arsenic, but was condemned to death by unanimous verdict of the exasperated ornithologists who haunted the locality. His heart was cut out with mock ceremony, bottled and sealed, and sent to Mr. Brewster as a peace-offering, and a serio-comic narrative of the whole transaction shortly afterward appeared in a New York newspaper by a 'strictly anonymous' author." From the above "serio-comic" relation of the melancholy fate of the type, it may be inferred that no knowledge of the nest or eggs is at hand, although since then four other specimens of the bird have been obtained.

(Pl. X. Fig. 63b.)

64. BACHMAN'S WARBLER.

HELMINTHOPHAGA BACHMANI (*Aud.*) *Cabanis.*

So far as known this bird has been observed only in *South Carolina, Georgia and Cuba*, and it is extremely rare. Its nest and eggs remain unknown, but Dr. Bachman, the discoverer, was confident that it bred near Charleston, S. C. It probably follows its congeners in placing its home upon the ground.

(Pl. XI. Fig. 64.)

65. LUCY'S WARBLER.

HELMINTHOPHAGA LUCLE. *Cooper.*

This is a species recently discovered, and, so far as yet known, it is confined to *Arizona*. Captain Bendire was the first to find its nest, discovering the eggs near Tucson on May

19, 1872, under the loose bark of a dead mezquite a few feet from the ground, after the manner of a creeper. Although this is against the analogy of the genus it seems unquestionable, and must be accepted until refuted. Dr. Coues knew that they bred in the neighborhood of Fort Whipple, since he got young, nearly fledged, early in May, but was unable to secure a nest. This family was reared in the bushes along a stream.

The four eggs Capt. Bendire described as "nearly globular in shape, and hardly larger than those of a humming bird [.54 by .45], white, with five red spots on the larger end." They contained large embryos. (Pl. XI. Fig. 65.)

66. VIRGINIA'S WARBLER.

HELMINTHOPHAGA VIRGINLE *Baird.*

Rocky Mountain Warbler.

Not much is known of the habits of this pretty warbler, whose home is in the mountain ranges from *Colorado and Utah southward*. In 1869 Mr. R. Ridgway observed it breeding in the scrub-oak thickets on the East Humboldt and Wahsatch mountains, Utah, and on June 19, came upon its nest at Salt Lake, on the side of a ravine in the foothills among dense oak-bush. It was embedded among the decaying leaves on the ground. The materials were fine strips of inner bark, loosely interlaced, fine stems of grasses, roots and mosses, and a lining of vegetable fragments, fur and hair; its diameter was 3 1-2 inches, its depth, 2 inches. In various parts of Colorado it has since been reported by Mr. C. E. Aiken, and although shy and timid, it seems abundant in favorite haunts, and is very musical during the nesting season. "No bird with which I am acquainted," says Mr. Aiken, "conceals its nest more effectually than this warbler. This is placed at the base of a tussock of grass, among the oak bushes, being sunk in a hollow scratched in the earth, so that the rim of the nest is on a level with the surface. The overhanging grass of the tussock hides all so completely that the nest is only to be discovered by the most

careful and persistent search. About the first of June, five white eggs, delicately specked with reddish brown, are laid."

A careful description of the eggs is "rosy white, profusely spotted with numerous small blotches and dots of purplish brown and lilac, forming a crown around the large end." They measure .64 by .47.

67. THE NASHVILLE WARBLER.

HELMINTHOPHAGA RUFICAPILLA (*Wilson*) *Baird*.

Nashville *Vermivora*; *Paro Colorado* (Mexico).

Scattered over nearly all temperate North America, this warbler breeds only from middle New England *northward* and in the mountain districts of the Pacific coast. Its nesting habits are fairly well known. The majority of Nashville warblers pass to Canada for their summer, but many remain and rear their young in the northern tier of states, especially in New England.

Their favorite home-site is a sunny side-hill near the woods, where the nest is placed on the ground sunken among the fallen leaves, so that the top is level with the surface and protected and completely concealed above by tall dead grass and weeds. The nest is composed of rootlets, mosses and dried grasses, mingled with strips of grape-vine and other bark, weeds, etc., lined with fine dried grasses, fine needles and horse-hairs. The whole is loosely framed, and assimilated to its surroundings by much green moss exteriorly, as well as by an artful canopy of leaves overhead. Mr. Allen found two nests, in successive seasons, in precisely the same spot, near Springfield, Mass., and Mr. Goodhue reports it common in southern New Hampshire. "A nest found at Big Trees [California] in May was built on the ground in a thick growth of an evergreen shrub. It was formed of pine-root fibres, and contained five eggs."

In middle New England the eggs are laid about June 1. They are four to six in number, pointed, average .60 by .50 of an inch in size. The ground color is pinkish or creamy white, over the whole surface of which, but most thickly at the great end, is

sprinkled a mass of purplish and reddish specks. Minot says that he has seen eggs "thickly and coarsely blotched at the greater end with reddish brown, these markings being sometimes combined" with the normal type of fine dottings, and Belding mentions "a prominent ring" on Californian specimens; but the variation among the eggs of this species is unusually small.

68. THE ORANGE-CROWNED WARBLER.

HELMINTHOPHAGA CELATA (*Say*) *Baird*.

Orange-colored *Vermivora* or Warbler.

The habitat of this bird is given as "North American at large, but especially the *western and middle* provinces . . . Var. *lutescens* along the Pacific coast. Its breeding range appears to be nearly coextensive with the whole area of its distribution in the west, where the mountain chains afford the elevation that answers to increase of latitude as far as the nidification of birds is concerned."

Nests with eggs were taken in the middle of June on the Yukon and at Great Slave lake, by Mr. Robert Kennicott; and near Haywood, Alameda county, Cal., by Dr. Cooper on May 25. Those from Great Slave lake seemed large for the size of the bird—as is usual in ground-builders—having an external diameter of four inches and a height of 2 1-2, and appearing as if made of two or three distinct fabrics, one within the other, of nearly the same materials. The external portions of these nests were composed almost entirely of long coarse strips of bark loosely interwoven with a few dry grasses and stems of plants; within, a more elaborately interwoven structure of finer dry grasses and mosses, warmly lined with hairs and fur of small animals. The usual situation was in a clump of low bushes, often in the side of a bank, and always concealed by the dry leaves. Nests from Alaska are more compactly built and smaller. The one described by Cooper from near San Francisco was built on a steep slope in the woods, among the fallen leaves.

The eggs are very finely dotted all over—thickly about the larger

end, more sparsely elsewhere—with pale brown and purplish. They measure about .67 by .50 of an inch. The number of spots varies greatly in different eggs.

Variety *LUTESCENS*, No. 68*a*, is the Pacific Coast form of the orange-crowned warbler. Captain Bendire describes the eggs as pinkish white, “spotted principally about the larger end with fine dots of reddish brown and lavender.” While they thus agree perfectly in color with the eastern variety, in size they seem to average considerably smaller. Henshaw found this bird numerous on the island of Santa Cruz, breeding early in June.

69. THE TENNESSEE WARBLER.

HELMINTHOPHAGA PEREGRINA (*Wils.*) *Cab.*

This warbler is a *northern* breeder so far as is known, no nests having been discovered south of Massachusetts, north of which it resides throughout eastern British America. Little is known concerning its nidification, which does not differ from the other members of this genus. One nest obtained at Springfield, Mass., is described by Mr. Brewster as built in a low clump of bushes just above the ground. “It is well made, woven of fine hempen fibres of vegetables, slender stems of grasses, delicate mosses, and other like materials, and very thoroughly lined with hair. It measures 2 3-4 inches in outside diameter and 2 in height.” Another nest from Lake Superior in the Smithsonian seemed to have been built on the ground.

The eggs measure about .64 by .50 of an inch and are broad, pyriform and opaque white, marked around the large end only, with the merest points of dull red, many in number but so minute as hardly to be visible; they look more as if they belonged to one of the *Empidonaces* or to a *Vireo*.

69 bis. THE OLIVE-HEADED WARBLER.

PEUCEDRAMUS OLIVACEUS (*Giraud*) *Coues.*

A rare Mexican species lately detected in *Arizona and Texas*. Its breeding habits are not yet known.

70. THE SUMMER YELLOWBIRD.

DENDRÆCA ÆSTIVA (*Gm.*) Baird.

Yellowbird; Yellow, Olive, Citron, Summer, Golden, and Golden Swamp Warbler; Wild Canary; Yellow Titmouse (*Catesby*); Yellow-poll, Blue-eyed, Children's and Rathbone's Wood Warbler (*Audubon*); Blue-eyed Yellow Warbler (*Wilson*); Yellow or Willow Wren (*Nuttall*); False Yellowbird (*Giraud*, Long Island); Yellowhammer (*Newfoundland*); La Fauvette Jaune, and L'oiseau Jaune (Canada); Mule-bird, or Cage-bird (West Indies).

This charming visitor is known from end to end of the *whole continent*, and also in the upper part of South America and the West Indies. It is a true herald of coming warmth and brightness, and when the ornithologist hears its slender note he is sure that the host of pretty plumaged, sweet voiced, migratory birds will soon throng among the opening leaves of the rejuvenated woods.

The summer yellowbird makes its appearance at the Ohio river late in April, in the latitude of Oregon and Massachusetts about May 15; and at once begins the construction of its tenement,—one of the most familiar bird-homes in the United States.

The favorite resort of the summer warbler in breeding time is some rose-embowered village garden, where, secure from all enemies but the ubiquitous house-cat, and surrounded with the best of food for its prospective family, it may live in quiet happiness. Other individuals choose to dwell in some roadside bush; or retreat to the pastures and thickets along the edges of swampy woods, where patches of briers and convenient young saplings are in plenty and to their liking.

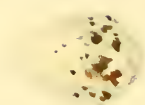
The nest of the yellow warbler is one of the simplest and yet among the most attractive in our whole catalogue. It gives the beholder a most charming impression of the happy home-life which must be led there, and appeals to him not ruthlessly to interrupt the pleasant current of the warblers' lives. Substances for the framework of this pleasant villa, the pair find in the loose shreds of fibrous bark hanging from old willows, elms and other trees, but most of all from the dead wood of the grape-arbor, and



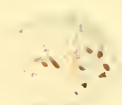
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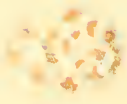
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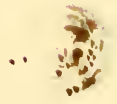
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PLATE XI.

- 68. *HELMINTHOPHAGA CELATA*. Orange-crowned Warbler.
- 69. *HELMINTHOPHAGA PEREGRINA*. Tennessee Warbler.
- 70. *DENDRÆCA ÆSTIVA*. Summer Yellow Bird.
- 71. *DENDRÆCA VIRENS*. Black-throated Green Warbler.
- 74. *DENDRÆCA CHRYSOPARIA*. Golden-cheeked Warbler.
- 76. *DENDRÆCA CÆRULESCENS*. Black-throated Blue Warbler.
- 77. *DENDRÆCA CÆRULEA*. Cærulean Warbler.
- 78. *DENDRÆCA CORONATA*. Yellow-rumped Warbler.

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- 78. *DENDRÆCA CORONATA*. Yellow-rumped Warbler.

in the hempen fibres to be torn from silk-weed and various other wild plants, with a dozen other twinable materials. These are all woven and curled together, the loose ends being well tucked in until there is held secure in the crotch of a bush or tree, usually low down, a neat, white, flaxen cup, ready to be adorned and furnished. If you should take the nest out, it would hold its shape well enough, and though you might easily crush it in your fingers, upon being released it would spring well back to its first form.

Softness and warmth for the interior are obtained by searching for "the down of willows, the nankeen wool of the Virginian cotton-grass, the down of fern-stalks, the hair from the downy seeds of the button-wood (*Platanus*), or the pappus of compound flowers." Over this soft bedding is laid a sheet, as it were, of a few hairs, threads of lint or slender grasses, to make a smooth surface. Now and then, you will find little strength of framework, the builders seeming to have been so captivated by the delicious softness of the down as to use it almost exclusively. Thus I once took a nest in Michigan made wholly of orange fern-down; it was as light and fluffy as a bunch of cotton, and when removed from its perch had little greater consistency.

One of the too few really entertaining chapters in the late Dr. T. M. Brewer's writings is devoted to this warbler, and I quote a pertinent paragraph.

A pair of these birds, in 1836, built their nest under a parlor window in Roxbury, where all their operations could be closely watched. When discovered, only the framework, the fastening to the supporting twigs, had been erected. The work of completion was simple and rapid. The female was the chief builder, taking her position in the centre of the nest, and arranging the materials in their places as her mate brought them to her. Occasionally, with outstretched wings and expanded tail, she would whirl herself round, giving to the soft and yielding materials their hemispherical form. At intervals she arrested her revolutions to stop and regulate with her bill some unyielding portion. When her mate was dilatory she made brief excursions and collected material for herself, and when the materials brought her were deemed unsuitable, they were rejected in a most summary and amusing manner. The important part of the tail-feathers in shaping the nest and placing the materials in position was a striking feature in this interesting performance. The greater portion of the nest was thus constructed in a single day.

Variations in the architecture are described by Nuttall in conjunction with a very remarkable feature of the domestic history of this species—a method of outwitting the cow-bird, which he was the first to discover. A second quotation, from his rare *Manual*, is therefore of value :

Circumstances sometimes require a variation from the usual habits of the species. In a garden in Roxbury, in the vicinity of Boston, I saw a nest built in a currant-bush, in a small garden very near to the house; and, as the branch did not present the proper site of security, a large floor of dried grass and weeds, was first made between it and a contiguous board fence; in the midst of this mass of extraneous materials, the small nest was excavated, then lined with a considerable quantity of white horse-hair, and finished with an interior bed of soft cow-hair. The season proving wet and stormy, the nest in this novel situation fell over, but was carried with the young to a safe situation near the piazza of the house, where the parents now fed and reared their brood Sometimes they condescend to the familiarity of picking up the sweepings of the seamstress, such as thread, yarn, sewing-silk, fine shreds of cotton stockings, and bits of lace and calico; and it is not uncommon to observe hasty disputes between our little architects and the Baltimore birds, as they sometimes seize and tug upon the loose or flowing ends and strings of the unfinished nest, to the great annoyance of the legitimate operator.

The labor of forming the nest seems often wholly to devolve upon the female. On the 10th of May I observed one of these industrious matrons busily engaged with her fabric in a low barberry bush, and by the evening of the second day, the whole was completed to the lining, which was made, at length, of hair and willow down, of which she collected and carried mouthfuls so large that she often appeared almost like a mass of flying cotton, and far exceeded in industry her active neighbor, the Baltimore, who was also engaged in collecting the same materials. Notwithstanding this industry, the completion of the nest, with this and other small birds, is sometimes strangely protracted or not immediately required. Yet, occasionally, I have found the eggs of this species improvidently laid on the ground

The Summer Yellow-Bird, to attract attention from its nest, when sitting, or when the nest contains young, sometimes feigns lameness, hanging its tail and head, and fluttering feebly along, in the path of the spectator; at other times, when certain that the intrusion had proved harmless, the bird would only go off a few feet, utter a feeble complaint, or remain wholly silent, and almost instantly resume her seat.

A well-known trait of this bird, during the breeding season, is its pertinacious refusal to rear foundlings left at its door by the cow-

blackbird (*Molothrus ater*). In case it suffers by the desecration of a new nest, as yet untenanted by its own eggs, it will abandon the structure, and build a second one : or else, unable to tumble the egg out, and unwilling to seek a new homestead, it will bury the offensive deposit under a thick layer of hemp or cotton, and atop of this floor raise the walls and furniture of a second-storied nest. But I reserve a discussion of this remarkable example of warblersagacity until I come to my chapter upon the baleful intruder himself, under the family Icteridæ.

The eggs of the summer yellowbird are five in number, usually, and easily described. Upon a greenish ground, they show a speckling, chiefly about the large end, in various degrees of amount and interfusion, in tints of dull brownish red, brown, lilac and purple. Some of these marks are dots, others are blotches, sometimes they form a wreath and often not ; upon the whole, the egg is characteristic among those of its family chiefly on account of its dulness of pattern. In those eggs from the Rocky mountains to the Pacific coast, however, there seems to be a constant lack in the ground-color of that greenish tinge which characterizes all eastern examples that I have ever seen,—a green sometimes very decided. In length they will average about .66 of an inch, and in breadth .50.

In the south and on the Pacific, two, and occasionally three, broods are reared in a season ; but in the northern states more than one laying is rare.

71. THE GREEN WARBLER.

DENDRÆCA VIRENS (*Gmelin*) *Baird*.

Black-throated Green Warbler or Flycatcher; Fauvette a cravate noire (Canada).

Spread in the migrating season over all *eastern* North America, as far as the Missouri, in the breeding season it is only seen from the mountain ranges of the middle states, and central New England, northward to Hudson's bay.

The little that is known of the obscure summer-life of this war-

bler is derived from the older writers,—Thomas Nuttall first of all, who relates the matter in these words :

In the summer of 1830, however, on the 8th of June, I was so fortunate as to find a nest of this species in a perfectly solitary situation, on the Blue Hills of Milton [near Boston]. The female was now sitting, and about to hatch. The nest was in a low, thick and stunted Virginia juniper. When I approached near to the nest, the female stood motionless on its edge, and peeped down in such a manner that I imagined her to be a young bird: she then darted directly to the earth and ran, but when, deceived, I sought her on the ground, she had very expertly disappeared; and I now found the nest to contain four roundish eggs, white, inclining to flesh-color, variegated, more particularly at the great end, with pale, purplish points of various sizes, interspersed with other large spots of brown and blackish. The nest was formed of circularly entwined fine strips of the inner bark of the juniper, and the tough, white, fibrous bark of some other plant, then bedded with soft feathers of the robin, and lined with a few horse-hairs, and some slender tops of bent-grass . . . In the whole district of this extensive hill or mountain, in Milton, there appeared to exist no other pair of these lonely warblers but the present. Another pair, however, had probably a nest in the vicinity of the woods of Mount Auburn in Cambridge: and in the spring of the present year (1831) several pair of these birds were seen for a transient period.

Describing specimens in the National Museum, Doctors Brewer and Coues both refer to nests taken at Lynn and Roxbury, Massachusetts. Of the former, it is said: "It is composed, first, of fine twigs in small bits, then of various soft, pliant, fibrous substances, composing the bulk of the nest and lined with fine grasses and rootlets. The substance contains also a few feathers and some downy material . . . This nest measured a little over three inches across by nearly two in depth, and is rather neatly and compactly finished. Another nest, from West Roxbury, Massachusetts, is smaller and deeper, as well as less regular in contour, having apparently been placed in an oblique fork."

Eggs of this warbler on record give an average measurement of about .70 by .52. They are white or creamy in ground color, and agree with Mr. Nuttall's description given above; but the wreathing of the spots about the large end seems to be a pretty constant character.

72. THE HERMIT WARBLER.

DENDRÆCA OCCIDENTALIS (*Townsend*) *Baird*.

Western Warbler.

This is a *Pacific coast* species, occurring from the Rocky mountains westward and southward to Guatemala.

Its nesting-life is unknown.

73. TOWNSEND'S WARBLER.

DENDRÆCA TOWNSENDII (*Nuttall*) *Baird*.

Western in its habitat, Townsend's warbler ranges in the course of the year from Alaska to Central America, and as far eastward as the Rocky mountains ; but its nest and eggs remain undescribed, so far as I know.

74. THE GOLDEN CHEEKED WARBLER.

DENDRÆCA CHRYSOPARIA *Sci. et Salv.*

Concerning the nidification of this exceedingly rare native of *Texas and southward*, the only intelligence was first printed in April, 1879, on page 77, volume iv, of the Nuttall Club's *Bulletin*. The writer is Mr. W. H. Werner, whose account I subjoin :

While on a collecting tour in the mountainous districts of Comal county, Texas, I noticed these warblers, and after studying their habits and different attitudes I shot one, which proved to be a male. Their habits were similar to those of *D. virens*; they were very active, always on the alert for insects, examining almost every limb, and now and then darting after them while on the wing. The male uttered soft notes at intervals, which sounded, as nearly as I can express it, like *tsrr weasy-weasy tweah*. I found them invariably in cedar timber, or "cedar brakes," as the ranchmen call them. I was not fortunate enough to find a nest until the 13th of May. About eight days prior to that date I noticed a female bird with building material flying in a certain direction, but it gave me a good deal of trouble before I traced her through underbrush and thickets to a cedar brake, where I found new difficulties. The

trees were numerous and standing near together, and a large patch at that; so I came to the conclusion that if I wanted the nest I must examine each tree separately. Accordingly I waited till the 13th, and then commenced in good earnest on my first tree. In about an hour's time, to my great joy, I found the nest, containing three eggs, and also one of the cow bunting. I am inclined to think that they generally lay their eggs earlier in the season, as I had, a few days previous to this, found a brood of young ones following their parents (with young cow buntings in their wake), clamoring for food.

I also found in the immediate neighborhood another nest, but it was abandoned; I think it belonged to the same pair of which I found the eggs. This would account for finding them so late with fresh eggs. On the 14th of the same month I found two more nests vacant, and by examining them found that young ones had been hatched, and had already left the nest. The four nests that I have 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.

William Brewster examined and reported to the Nuttall Club upon two of these nests, to the following effect :

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. The original position of this nest is well shown, as it is preserved with a section of the limb upon which it was found. It is placed in a nearly upright fork of a red cedar, between two stout branches, to which it is firmly attached. Although a large, deep structure, it by no means belongs to either the bulky or loosely woven class of bird-domiciles, but is, on the contrary, very closely and compactly felted. In general character and appearance it closely resembles the average nest of the black-throated green warbler (*Deudroca 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 exterior is mainly composed of strips of cedar bark, with a slight admixture of fine grass-stems, rootlets, and hemp-like fibres, the whole being kept in place by an occasional wrapping of spider-webs. The interior is beautifully lined with the hair of different quadrupeds and numerous feathers; among the latter, several conspicuous scarlet ones from the cardinal grosbeak. The outer surface of the whole presents a grayish, inconspicuous appearance, and from the nature of the component materials is well calculated to escape observation. Indeed, it must depend for concealment upon this protective coloring, as it is in no

way sheltered by any surrounding foliage. . . . The eggs belonging with this nest are similar in shape, all being 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, $.75 \times .57$; $.77 \times .56$; $.76 \times .58$. 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. Mr. Werner is of the opinion that they are exceptional in being so finely spotted, as the broken shells found in the deserted nest exhibited much heavier markings, and in that respect agreed closely with two eggs in Mr. Ricksecker's cabinet, collected in Comal county, May 24, 1877. . . . They measure respectively, $.72 \times .53$ and $.76 \times .53$. The latter dimensions, it will be observed, nearly coincide with those of one of Mr. Werner's specimens. The ground-color of the shell is a dead, dull white, thickly spotted everywhere with fine dots of reddish-brown and shell markings of pale lavender. At irregular intervals bold, conspicuous blotches of a darker shade of brown occur. These markings become nearly confluent around the larger ends, forming the wreath-pattern so common among spotted eggs. The nest bears a very close resemblance to those already described, but is somewhat smaller, measuring as follows: External depth, 2.15; external diameter, 2.00; internal depth, 1.50; internal diameter, 1.50. As with the other two, the outer walls are made up of strips of cedar bark, and the lining differs only in being composed almost entirely of feathers. These are used in such profusion as to form a dense, downy bed for the eggs, while around the rim or mouth of the nest they arch over inward, prettily concealing the greater part of the interior. The occurrence of such a nest in semi-tropical Texas is of itself a most interesting fact, especially when considered in connection with the theory that warm, feather-lined domiciles are peculiar to northern-breeding birds. Although the parentage of this last nest is undeniably involved in some obscurity, I have little doubt that it is correctly referred to *D. chrysoparia*. I should perhaps have stated before that the identification of the nest and eggs in Mr. Werner's collection is of the most positive character. The female was sitting on the nest, and at the first alarm her mate appeared, when both were secured.

75. THE BLACK-THROATED GRAY WARBLER.

DENDRCECA NIGRESCENS (Towns.) Baird.

The range of this species is from the *Plains westward* to the Pacific, but not beyond our boundaries northward. It arrives in

Oregon early in May, where Mr. Nuttall had no doubt it was breeding in the pine woods as early as May 23. Like the last three species, its nest may be looked for in the elevated forests of the mountainous territories: Mr. Ridgway, for example, finding young in the cedar and piñon thickets of the East Humboldt mountains, Nevada, where certainly they had been bred. In Arizona, however, these birds occur through heavy timber of all sorts, nesting in the tops of the tallest trees.

76. THE BLACK-THROATED BLUE WARBLER.

DENDRÆCA CÆRULESCENS (*Linn.*) *Baird.*

Canadian Warbler; Pine Swamp Warbler.

In most of the United States this warbler is migratory only, and little was known of its breeding until recently, beyond Audubon's somewhat doubtful account.

It had not certainly been observed to breed in New England until 1874, when the Rev. C. M. Jones discovered the fact at Eastford, Conn. This first nest was found on June 8, in deep swampy woods, near the base of a hill, in a small *Kalmia* bush. About five inches from the ground the bush separated into three branches, and in this triple fork the nest was situated. It had a firm and compact appearance: external diameter, about 3 inches; internal, $1\frac{3}{4}$ inches; external depth, $2\frac{3}{4}$ inches; internal, $1\frac{3}{4}$ inches. It was composed outwardly of what appeared to be the dry bark of the grape vine, with a few twigs and roots. This was covered in many places with a reddish, woolly substance, apparently the outer covering of some species of cocoon. The inside was composed of small black roots and hair. The nest contained four fresh eggs, which were ashy white with a heavy ring of brown and lilac spots and blotches around the larger end, and a few minute spots of the same scattered over the entire surface; also sometimes spots of umber near the small end. The dimensions were: .61 by .47 (of two) .64 by .50, and .66 by .50 of an inch. The bird permitted Mr. Jones to approach within a few feet, and then

flew to a neighboring bush, uttering a few chirps. Mr. Jones's second nest was found June 13, about eighty rods away from the former one, in shaded, swampy land. This bird also betrayed her home by her actions, and, like the other, allowed a very near approach before fleeing. Previously to this, John Burroughs had taken the nest with young in a small hemlock near Roxbury, Delaware county, N. Y., early in July. Here, the parents at first exhibited great, though cautious, alarm, but upon the jumping out of the young, the distracted pair fairly threw themselves under Mr. Burroughs's feet. With the four (or five) fledglings in the nest was also one fresh egg, which Dr. Brewer describes as oval, not pointed, pinkish-white, and marked round the larger end with a wreath, chiefly of a bright umber-brown with lighter markings of reddish-brown and obscure purple; a few smaller dottings of the same are sparingly distributed over the rest of the egg; its measurements are .70 by .50 of an inch. Other nests found in northern New York agree with these in all particulars.

77. THE CÆRULEAN WARBLER.

DENDRŒCA CÆRULEA (Wils.) Bp.

Cerulean Wood-Warbler, Azure Warbler, Blue-green Warbler, White-throated Blue Warbler.

The summer range of this brilliant species includes the United States east of *Colorado*; but it may be said scarcely or never to enter New England, and rarely to go north even to Lower Canada, although breeding from Niagara Falls westward. Its principal resort seems to be the valleys of the Mississippi and Ohio, throughout all but the lower parts of which it breeds in considerable numbers. It is reported from Connecticut (Suffield, June 12, 1875) by H. A. Purdie during the breeding season, but no nest has been taken there yet. In the Bulletin of the Nuttall Club for January, 1879, Mr. J. A. Allen has written a very succinct account of the nidification of this species, to which I am unable to add anything of value.

The Museum of Comparative Zoölogy has recently received a nest and four eggs of the cerulean warbler (*Dendroæa cærulea*) collected at East Penfield, Munroe county, N. Y., June 7, 1878, by Mr. P. S. Fuller. The female was shot as she left the eggs, which were nearly fresh. The nest was placed in the fork of a small ash-tree, about twenty-five feet from the ground. It is neatly and compactly built, consisting externally of fine dry grasses of an ashen tint, bound firmly together with spider's silk, to which are affixed a few bits of whitish lichen; it is lined with strips of bark and fine grasses of a reddish brown color. The nest is thus gray externally and brown within. It measures as follows: inside diameter, 2 inches; outside diameter, 2.50 inches; depth inside, 1.40; external depth, 1.75. The eggs vary little in size or color, and mainly in respect to the size of the blotches. The ground color is dull creamy white, thickly covered with rather heavy blotches of reddish brown. In one egg the blotches are coarse and cover the greater part of the surface; in another the markings are finer, quite evenly diffused, and of a lighter tint; in the other two about two-thirds of the surface is covered by the markings. The eggs measure .60 by .47 of an inch.

The Museum has also two other nests of this species. One was taken, with one egg, at Drumnondsville, Ontario, in June, 1873, and, with the egg, was soon after described by Dr. Brewer (Hist. N. Amer. Birds, Vol. III, p. 505). The other nest was taken at Mount Carmel, Illinois, May 16, 1878, by Mr. William Bryant, of Boston. It contained four eggs, which are now in his collection. The nest described by Dr. Brewer differs from the Penfield nest in no essential point, except that it is rather slighter and has a more nearly continuous covering of lichen, with which are mixed small pieces of hornet's nest. The bottom of the nest shows that it was built in the fork of a small branch. The Mount Carmel nest differs from the others in having somewhat thicker walls, thus giving to the structure greater bulk and firmness. Like the others, it is partly covered externally with lichens, which enclose some of the smaller twigs amidst which it is fixed to the upper surface of a small branch. These nests agree as closely in their general structure, as well as in the material of their composition, as three nests of the same species are often found to do, and differ quite widely from the nests of any other species of the genus known to me. The Penfield and Mount Carmel nests were placed respectively twenty and twenty-five feet from the ground, and the Drumnondsville nest at a height of fifty feet.

Audubon describes the nest of the cerulean warbler as placed in the forks of a low tree or bush, and as being partly pensive, and the eggs as being pure white, with a few reddish spots about the larger end. In the light of present information, Audubon's description is evidently erroneous in nearly every particular. The only other description of the nest and eggs of this species is that given by Dr. Brewer, as already stated.

Dr. Brewer describes the egg as somewhat similar in its general appearance

to the eggs of the yellow warbler (*D. æstiva*), but as being smaller, with the ground-color of a different shade of greenish-white. On calling Dr. Brewer's attention to the discrepancy between his description and the set of eggs above described, he was led to reëxamine the subject, and also to compare his egg with the set obtained by Mr. Bryant. As a result, he writes me that his egg corresponds exactly with those obtained at Mount Carmel. He further states that while they seem to resemble the eggs of *D. æstiva*, a comparison shows that while the spots on the eggs of the last-named species are "olivaceous brown," those on the eggs of *D. cærulea* are "decidedly red-brown." He still further observes, "In my egg and in Mr. Bryant's the ground-color is very conspicuous, the spots sparse. In yours the spots are large and confluent, obscuring all the ground-color." In the eggs collected at Penfield the blotches are probably exceptionally large and heavy, but the differences between these eggs and the others are not greater than occur not uncommonly between different sets of eggs in most species of birds that lay spotted eggs. There consequently appears to be no reason for doubting the authenticity of either of the sets of eggs here attributed to *D. cærulea*, which, in two of the instances at least, were identified by the capture of the parent bird.

78. THE YELLOW-RUMPED WARBLER.

DENDRÆCA CORONATA (L.) Gr.

Yellow-crowned Wood-Warbler; Myrtle-Bird (South);

The yellow-rump is one of the most common and most widely distributed of the wood-warblers, occurring over the *whole of North America*, except the southwestern territories. This is a peculiar distribution and its wintering range also appears anomalous: "while some individuals are at that season in subtropical and tropical America, others are wintering in the middle states if not also in southern New England." Although its regular breeding place is far to the north, it has been known to nest in Jamaica. Yellow-rumps pass through New York state between the first and middle of May on the way northward and all disappear unless it be from the mountainous portions near Canada; but it has rarely been known to breed in Massachusetts, thence northward, becoming abundant in British America, where it spreads even to Alaska and the shores of the frozen sea. The nest is built in northern Maine early in June, fresh eggs having been obtained by Mr. H. B. Bailey

at Upton between the 8th and 15th. About the same date is given for Alaska, but in central Michigan the season is a few days earlier.

Mr. MacFarlane sent some nests from the Anderson river all of which were found very low down, or resting upon the ground, sometimes, he averred, in the very midst of a village. Such was the substance of our knowledge before Messrs. Bailey and Maynard went to Maine on ornithological expeditions. There the bird was traced to its home in old clearings in the forest where the "second growth" had begun to obliterate the work of axe and plough. Among such thickets of young spruces nests of this warbler could generally be discovered within easy access, the loftiest one found being only twenty feet from the ground. All the nests taken were coarse but compact structures, composed outwardly of twigs and roots, very deep for their width, and invariably lined with feathers, which served to distinguish them from others of this same group in the Umbagog region. Some yellow-rumps, however, still resort to the deep forest, and, following the law of living in the tops of the trees, defy all efforts to obtain their eggs. The parents were always shy.

The usual time for laying in northern New England is early June : and Maynard is confident that two broods are often reared, which is quite likely. The eggs of the yellow-rumps are of rather large size and are white, spotted chiefly in a wreath about the large 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. The eggs of the blackpoll warblers come nearest to them in ornamentation. An average of many recorded measurements gives .71 by .52 of an inch as the medium dimensions. Five or six eggs make a clutch.

79. AUDUBON'S WARBLER.

DENDRECA AUDUBONII (*Towns*) *Baird*.

Western Yellow-rump; Fout-sah (Chinook Indians).

This warbler is found from the *Pacific coast* eastward to the Laramie plains ; in most localities throughout this extent it is as common as its eastern representative, the yellow-rump.

The most complete history of this species is to be found in Dr. Coues's Birds of the Colorado Valley. Most of the spring immigrants from Mexico keep on to high latitudes before pausing to breed; but a few secure the requisite conditions of temperature, *et cetera*, by ascending lofty mountains in regions far south of those to which their more eager brethren have flown. In Colorado it nestles from 9,000 feet up to timber-line, and is abundant among the pines and aspens, building its home the first week in June. One nest which Henshaw found near Denver was composed of bark strips firmly and neatly woven, with a lining of fine grasses; it was four inches in diameter and an inch deep. In Arizona he took young just from the nest on July 12, even so far south as Mount Graham, where the young birds were just beginning their new plumage on the 1st of August. At Lake Tahoe, in the Sierra Nevada, newly fledged birds were seen by Dr. Cooper in September. A nest found by Ridgway in the Wahsatch mountains of Utah, June 23, 1869, was near the extremity of the horizontal branch of a pine tree, about ten feet from the ground. It contained one egg and three young.

Both Dr. Brewer and Dr. Coues draw their description of the nest of Audubon's warbler from a single specimen in the National Museum, transmitted from Vancouver by the late Mr. J. Hepburn, who affirms that the structure may be placed indifferently in the upper branches of trees or in bushes only a few feet from the ground. This nest was built in the crotch formed by three forks of an oblique stem, its shape consequently being obliquely conical. The exterior is composed of rather coarse strips of fibrous bark and weeds variously intertwined, the main substance consisting of fine grasses, mosses, and rootlets, mixed with some large feathers and bits of string, these miscellaneous materials being closely matted or felted; and the interior is finished off with an abundant lining of horse-hairs. The cavity is small, but deep.

Mr. W. E. D. Scott, on the contrary, brings home a nest obtained at Twin lakes, Col., which he says was not in a crotch at all. His description is as follows:

On the 25th of June I took a nest containing four eggs nearly ready to

hatch. The nest is a rather bulky structure, composed of twigs of sage-brush and fine grass, and is lined with soft hair and large feathers. In general shape it is flat and rather shallow, as the following dimensions show: Diameter outside, four inches; diameter inside, three inches; depth, two and a half inches outside and two inches inside. It was situated on the outer twigs of a large pine-tree, five feet from the ground. . . . The nest was not fastened in any crotch, but simply laid on a bunch of pine leaves, and was sheltered by another bunch directly above it. On the 29th of June I found a second nest containing four young a day or two old. This one was situated in the topmost branches of a small fir-tree, about twenty-five feet from the ground. The nest is essentially the same in structure as the one above described. On July 9 I took young which had just left the nest.

Minot reports a nest from the same locality "composed of shreds and feathers with a few twigs without and hairs within, built in a dead bare spruce tree, about 20 feet from the ground, compressed between the trunk and a piece of bark . . . so compressed that the hollow measures $2\frac{1}{4}$ by $1\frac{3}{4}$, and $1\frac{1}{2}$ inches deep."

The eggs are greenish white, somewhat pointed, and touched at the larger end with spots of neutral tint and reddish. They measure .75 by .55 of an inch.

80. THE BLACKBURNIAN WARBLER.

DENDRŒCA BLACKBURNIÆ (*Gm.*) *Baird.*

Hemlock Warbler; Orange-throated Warbler.

This brilliantly liveried warbler is a visitor to the *eastern* United States, the Canadas, and west to Kansas; also Utah and New Mexico. It has been recorded as breeding as far south as Massachusetts and is asserted to do so in the Connecticut valley. It is known to nestle in Maine, the White mountains, and in Michigan, as well as Nova Scotia and its vicinity.

A nest from Halifax is described by Audubon as found in a small fork of a tree five or six feet from the ground. It was "composed, externally of different textures, and lined with silky fibres and thin delicate strips of fine bark, over which lay a thick bed of

feathers and horse-hair." Mr. H. D. Minot has courteously given me an extract from his journal, dated Bethlehem, N. H., July 12, 1873.

To-day I found the nest of the Blackburnian warbler. . . . I believe it has never before been found in New England, if we except Dr. Brewer's doubtful case. It was in a pine-tree about twenty feet from the ground, and was composed of pine-needles, cottony substances, etc., and lined with hairs. Unfortunately it contained young. . . . The pine in which it was placed stood by itself in an open field, but near woodland. My second nest I found in the West Roxbury district of Boston, Mass., on June 5, 1876. It was in a hemlock bough, about twenty feet from the ground, and held three young and one egg. The hemlock grove from which I got them is a unique place, very distinct from the surrounding country, and recalling the White Mountains. It is thick and cool, with an atmosphere of its own; it grows down a rocky steep, and is bordered by what I may fairly call a mountain brook, so much is it like those of New Hampshire. I do not wonder that the warblers were tempted to make it a summer home. The egg is conical, measures about .65 by .50 of an inch, and resembles that of the chestnut-sided warbler. The surface is crystal white, marked in a wreath around the larger end, with purple and reddish dots, sometimes one tint and sometimes the other predominating in the spots.

Its habit of keeping quiet, and haunting the tops of the trees in secluded forests, makes its home difficult to find; and no doubt the warbler breeds more commonly than is supposed. I just now hear, for example, that on June 14, 1873, Mr. A. B. Covert took a nestful of young birds of this species near Ann Arbor, Michigan.

81. THE BLACK-POLL WARBLER.

DENDROCECA STRIATA (Forst.) Baird.

Autumnal Warbler (young).

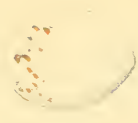
"In the extent of its migrations," writes Dr. Coues, "this species is surpassed by none of its allies, and equalled by few, if any; its dispersion will prove more extensive than that of any other warbler, should the *D. atricapilla* be found identical, as it probably will. It is known to breed beyond the United States, from Labrador to Fort Yukon, where its eggs were procured by Mr. Kennicott. The southernmost breeding localities I have found quoted are the Um-

bagog lakes, and Calais, Maine (*Verrill and Boardman*). It is very abundant throughout the eastern United States during the migrations, but appears to leave the country altogether in the fall, wintering farther south. Audubon's quotation, 'Columbia river,' requires confirmation, but will most probably be proved correct; in that event the case will apparently correspond to that of *D. coronata*."

The date of its nest-building in Maine appears to be about the second week of June, this warbler being one of the latest of those migrating northward in the spring. It has never been my good fortune to discover the nest of the black-poll. I am therefore constrained to quote the whole of Dr. T. M. Brewer's comprehensive account, he having had much experience with these warblers around Eastport and at Grand Menan Island, Me., where they breed on the edges of swampy evergreen woods. He says:

All of the several nests I met with in these localities were built in thick spruce trees, about 8 feet from the ground, and in the midst of foliage so dense as hardly to be noticeable. Yet the nests were large and bulky for so small a bird, being nearly 5 inches in diameter and 3 inches in height. The cavity is, however, small, being only 2 inches in diameter, and $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in depth. They were constructed chiefly of a collection of slender young ends of branches of pines, firs and spruce, interwoven with and tied together by long branches of the *Cladonia* lichens, slender herbaceous roots, and finer sedges. The nests were strongly built, compact and homogeneous, and were elaborately lined with fine panicles of grasses and fine straw. In all the nests found, the number of eggs was five.

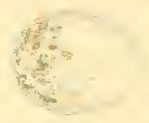
It is a somewhat noticeable fact that though this species is seen in New England only by the middle of May, others of its kind have long before reached high Arctic localities. Richardson records its presence at the Cumberland House in May, and Engineer Cantonment by the 26th of April. Mr. Lockhart procured a nest and five eggs at Fort Yukon, June 9. All the nests taken in these localities were of smaller size, were built within two feet of the ground, and all were much more warmly lined than were those from Grand Menan. In a few instances Mr. McFarlane found the nests of this species actually built upon the ground. This, however, is an abnormal position, and only occasioned by the want of suitable situations in protected localities. In one instance a nest was taken on the first of June containing well developed embryos. Yet this same species has frequently been observed lingering in Massachusetts a week or more after others of its species have already built their nests and begun hatching.



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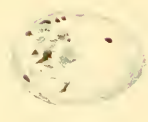
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PLATE XII.

- 79. *DENDRÆCA AUDUBONI*. Audubon's Warbler.
- 80. *DENDRÆCA BLACKBURNIÆ*. Blackburnian Warbler.
- 81. *DENDRÆCA STRIATA*. Black-poll Warbler.
- 82. *DENDRÆCA CASTANEA*. Bay-breasted Warbler.
- 83. *DENDRÆCA PENNSYLVANICA*. Chestnut-sided Warbler.
- 84. *DENDRÆCA MACULOSA*. Black-and-Yellow Warbler.
- 85. *DENDRÆCA TIGRINA*. Cape May Warbler.
- 86. *DENDRÆCA DISCOLOR*. Prairie Warbler.

Two nests of this species, from Great Slave lake and Fort Yukon, in the Smithsonian Institution, closely resembling each other, 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 only nest Audubon found afforded him such intense satisfaction that it is no more than fair to allow him space for his own words. The locality is Little Macatina Harbor, Labrador.

One fair morning while several of us were scrambling through one of the thickets of trees scarcely waist high, my youngest son chanced to scare from her nest a female of the black-poll warbler. Reader, just fancy how this raised my spirits. I felt as if the enormous expense of our voyage had been refunded. "There," said I, "we are the first white men who have seen such a nest." I peeped into it, saw that it contained four eggs, and observed its little owner looking upon us in anxiety and astonishment. It was placed about three feet from the ground, in the fork of a small branch, close to the main stem of a fir tree. Its diameter internally was two inches, the depth one and a half. Externally it resembled the nest of the white-crowned sparrow, being formed of green and white moss and lichens, intermixed with coarse dried grass. Within this was a layer of bent grass, and the lining was of a very dark-colored dry moss, looking precisely like horsehair, arranged in a circular direction with great care. Lastly there was a thick bed of large soft feathers, some of which were from ducks, but most of them from willow grouse.

The eggs of the black-poll are pure white, "blotched and dotted over the entire surface with profuse markings of a subdued lavender, and deeper markings of a dark purple intermixed with lighter spots of reddish brown." They measure about .72 by .50 of an inch. Five or six are laid.

82. THE BAY-BREASTED WARBLER.

DENDRÆCA CASTANEA (Wils.) Baird.

Autumnal Warbler (young).

The habitat of this species includes the *United States east of the Lower Missouri river*; but through the most of this region it is

only migratory, since it winters in Central America, and spends its midsummer north of our limits.

Maynard, in his Catalogue of the Birds of Coos county, N. H. and Oxford county, Me. (Proc. Bos. Soc. Nat. Hist., XIV, Oct. 18, 1871), gave us about the first information upon the nidification of this handsome bay-breasted warbler. In concert with Mr. William Brewster, he took three nests at Lake Unbagog, Me., each of which was placed on the horizontal branch of a hemlock-tree, fifteen or twenty feet from the ground,—one beside a cart-path, the other on the side of a densely wooded hill. One nest was completed June 3 and three fresh eggs were taken from it June 8. These nests seemed large for the size of the bird, resembling those of the purple finch. They were built of fine dead larch twigs, mixed in one instance with long tree-moss, in another with a few grass-stems, and smoothly lined with black fibrous rootlets, some moss and rabbit's hair. External diameter $5\frac{1}{2}$ to 6 inches, internal $2\frac{1}{2}$ to 3; depth outside $2\frac{1}{2}$ to 3, the cavity $1\frac{1}{4}$ to $1\frac{1}{2}$ inches; they differed in shape, the broader nest being the shallower one. One contained three eggs, the other two: the five ranged from .65 to .71 long by .50 to .53 broad. The ground color was varying greenish white, more or less thickly speckled with dark brown all over, the markings becoming confluent, or nearly so, at or around the larger end, where the brown was mixed with some lavender markings. They resemble those of the yellow and pine-creeping warblers. Mr. Deane found another nest, also in a hemlock, but higher than the former. It contained *six* eggs.

83. THE CHESTNUT-SIDED WARBLER.

DENDRCEA PENNSYLVANICUM (Linn.) Baird.

This pretty warbler seems to be increasing in numbers over all of the *eastern United States* beyond the northern limits of which it passes only a little way. It breeds from New Jersey northward to the Canadian border, and westward to Iowa; the most southern reference I can find is White Sulphur Springs, Virginia, which is

2000 feet above the sea. Everywhere it is a common summer resident, arriving from the south early in May.

A bird of the underbrush rather than of the tree-tops, its breeding places are the thickets of briars bordering swampy lands, or skirting the edges of the woods,—in fact just such localities as the yellow warblers (*D. aestiva*) resort to. I have found several of their nests on the western Reserve, Ohio. All were placed in an upright crotch, generally of several small stems, and were all more or less lengthened perpendicularly to fit such situations, with a rather narrow but deep cavity. The distance from the ground was three to six feet. In the Maine forests, however, their nests are scarcely ever found, since they are placed in the tops of those very lofty pines and firs which make Maine's lumber region famous.

In composition the nest is a rather loosely woven mass of weedy and fibrous substances varying according to location,—cedar bark, for instance, being a prominent constituent of the exterior of those built in New England; the interior is more closely woven of fine grasses, with hairs and some bits of down from plants. There is an absence of woolly materials anywhere about the nest, but Mr. Welch mentions that the nests found by him near Boston were firmly bound to the supporting twigs by silky fibres from the cocoons of various insects. I have seen examples in Ohio which were indistinguishable from hemp-built homes of the yellow-warbler; but in Massachusetts the two nests are said always to be entirely different. In the middle and eastern states eggs are to be looked for about the first of June.

Dr. Coues's admirable description of the eggs, agreeing with my own experience, is not to be improved: "The shell is white; the markings are chiefly confined to the larger end, only rarely a few dots being sprinkled over the whole surface, and they form, or tend to form, in many cases, a wreath about the large end. The wreath is sometimes close and heavy, consisting of confluent blotches; in other instances it is a circle of separate fine dots. The markings are of all shades, from light reddish to various darker browns, mixed with neutral tints." The size of the egg is .68 by .50 of an inch, and rarely more than four are to be found in one suite.

When you approach a nest the female remains in perfect quiet until you can almost touch her with a cautious hand ; and exhibits little anxiety when her treasures are removed. If a pair think themselves discovered, however, before their nest is completed they will stop work and lay new foundations ; yet so attached are they to a certain locality, probably their homestead of the previous year, that the new nest may be placed in the very same bush, and even on the same twig as the one abandoned. Their judgment that it is not safe to dwell in a nest which is known to their enemy, the bird's-nesting naturalist, leads them far enough to desert it and build anew in hoped-for secrecy ; but does not go far enough (at least in many cases) to teach them that the new site should be remote from the former one.

"The parent sits very closely upon its nest ; if disturbed, it refuses to move farther than a few feet, there remaining quite silent, except a soft, pleading note occasionally repeated."

84. THE BLACK-AND-YELLOW WARBLER.

DENDRŒCA MACULOSA (*Gm.*) *Baird.*

Magnolia Warbler; Spotted Warbler; Spotted Canada Warbler.

The sprightly magnolia warbler spreads in summer over all the *Eastern Province* of North America, north to the Hudson's Bay region, breeding from New England and the Catskills northward. It has also been found in Colorado.

Many nests of this warbler have been found by ornithologists, and several careful descriptions are extant. It arrives in its breeding haunts in northern New York and New England, about the third week of May, and at once proceeds to build its nest among the unfolding buds. Some dates at which eggs have been found are : at Unbagog Lake, Me., June 7 to 15 ; Isle of Grand Menan, June 27 (embryos advanced) ; Labrador, "beginning of July ;" Great Slave lake, June 12. The nest is usually placed in a small fir or spruce, rarely at a greater elevation than five or six feet, and sometimes only a few inches from the ground ; but, on the other

hand, Mr. Brewster in his admirable monograph of the species, in the second volume of the Bulletin of the Nuttall Ornithological Club, speaks of exceptional nests situated in the top of a young evergreen, ten, fifteen, or even thirty-five feet up. Those trees usually are chosen that stand on the edge of a clearing or wood-road, but in the depth of the forest the nests have also been found. In the Hudson's Bay country, willows are resorted to, in lack of evergreens. The composition of the loose, shallow nest is faithfully described by Mr. Brewster from many specimens examined by him in Maine, collected by himself, Deane, Maynard and Bailey; it is as follows:

The framework is wrought somewhat loosely of fine twigs, those of the hemlock being apparently preferred. Next comes a layer of coarse grass or dry weed-stalks; while the interior is lined invariably with fine black roots, which closely resemble horse-hairs. In an examination of more than thirty examples I have found not one in which these black roots were not used. One specimen has, indeed, a few *real* horse-hairs in the lining, but the roots predominate. This uniform coal-black lining shows in strong contrast with the lighter aspect of the outer surface of the nest. The whole structure is loosely put together, and bears a no distant resemblance to the nest of the chipping sparrow (*Spizella socialis*). Among nests of the *Sylvicolida*, it finds, perhaps, its nearest approach in that of the chestnut-sided warbler (*Dendraeca pennsylvanica*).

Audubon, describing a nest from Labrador, affirms that it was lined with "a great quantity of feathers." Mr Brewster says this statement is entirely at variance with his observations; but Audubon is supported by the evidence of Hutchins in British America, and it seems to me not at all unlikely that in arctic latitudes the birds should increase the warmth of their abode by an additional lining of feathers unnecessary at the south. Again, Mr. Brewster writes:

Observe how cunningly the whole affair is concealed—built close to the stem of the little fir, resting on the flat horizontally disposed rows of "needles," and arched over by the flake-like layer of twigs above. One long rootlet alone hangs down in full view, and had it not caught my eye I might have passed without discovering the nest. It seems, indeed, a pity to disturb it; but we shall regret it next winter if we leave it behind. Naturalists are probably not hard-hearted by inclination, but of necessity. I dare say the female will com-

mence another nest before we pass here on our way back, and the male will be singing as joyously as ever in an hour or two. Birds' grief, like their average lives, is short, though apparently intense for the time. It is only the end, however, that can ever justify the destruction of a nest, and unthinking persons might, in many cases, be benefited by contemplating a little more closely the suffering which they inflict. . . . Be careful how you shake that branch; for I would have you take a good long look ere we disturb her. See how her dark little eye glistens, and note the rapid pulsating motion of her back. Underneath those puffed-up feathers a poor little heart is beating wildly with fear and apprehension; but still she sits bravely on her trust. She would say, if she could, with the Roman mother, "These are my jewels," and would entreat us to spare them. Now I will advance my hand cautiously. See! I almost touch her tail with my finger-tips; but the next instant she is gone. How quietly at the last moment she slid over the edge of the nest, barely eluding my grasp! A faint cry or two, and there comes the male; but he, gaudy little braggart, is far better at singing brave deeds than performing them, and will not trust himself very near, though he keeps up a constant chipping. His mate, however, is bold enough for both, and in her anxiety almost comes within reach of our hands.

In regard to the eggs I certainly cannot do better than continue to quote Mr. Brewster's exhaustive essay :

The time of laying with this species varies, in relation to the season, from June 8 to June 15. Four eggs commonly constitute a set, though in some cases but three are laid; and I know of an instance where five were found in one nest. They measure .62 of an inch in length by .50 in breadth. The usual shape is a rounded oval, and the ground-color almost invariably creamy white after the removal of the contents. The markings are most commonly blotches of rich, warm umber, with smaller dottings of pale lilac or brown, disposed about the larger end. Some specimens are, however, thickly sprinkled over their entire surface with fine brownish spots. One set of four eggs differs from any of the others in having a decided tinge of bluish in the ground-color; while upon the large patches of umber which encircle the greater ends are drawn numerous wavy lines of black, precisely like the characteristic pen-markings of some of the oriole's eggs. With an extensive series of specimens before me, I am led to the inevitable conviction that eggs of *D. maculosa* are in many cases indistinguishable from those of *D. virens*, *D. pennsylvanica*, and *D. discolor*; and an examination of an equal number of authentic eggs of the other *Dendrocæ* would, I am satisfied, result in adding many more to this list. In the eggs of each of the above-named species there is an almost endless variation, and many sets are consequently quite

unique; but the type—if, indeed, any can be established—finds equally near approaches among them all. Nests may, however, in most cases be relied upon, especially when procured from proximate localities.

In the case of the young, both before and after they leave the nest, this bird displays no exceptional traits. Both old and young, when the latter have become able to take care of themselves, join the immense congregations of mingled warblers, wrens, titmice, sparrows, and woodpeckers, which collect in the northern forests in early August, to be dispersed—most of them southward—by the first frosts of September.

85. THE CAPE MAY WARBLER.

DENDRŒCA TIGRINA (*Gm.*) *Baird.*

Spotted Creeper (Jamaica).

The Cape May warbler is found only *east of the Mississippi*, north to Lake Winnipeg and Hudson's bay, breeding from northern New England northward, and nowhere abundant even in the migrations. It winters and also breeds in various West Indian Islands.

There is little assurance of its home having been found more than once in the United States,—the single instance being the discovery by Mr. H. B. Bailey of a nest of this species on the Richardson lakes in the northwestern part of Maine. Mr. Maynard also felt confident that they were breeding at Lake Umbagog, while Mr. H. D. Minot states that it has been found breeding in the neighborhood of Boston, but fails to particularize.

That it breeds in Jamaica and St. Domingo islands, West Indies, is well attested. Mr. W. T. March, according to Dr. Brewer's quotations, has met with several instances in the elevated parts of Jamaica. The nests are described as found in bushes or trees, and wrought of long and thin strips of flexible bark, stoutly and firmly interwoven, with an intermingling of lichens, mosses, and bark of deciduous trees. The long and deep cavities are lined with more delicate strips than are found in the exterior. Mr. Bailey's nest

just spoken of was in a young spruce tree, breast high and contained one fresh egg. The nest was left in order to obtain a full set of eggs, but a second visit found the tree cut down, a "clearing" having been started.

Eggs in the Smithsonian Institution are described by Mr. Ridgway as oval in form, dull white in color with blotches of lilac, spots and occasional scraggy lines of black around the larger end; dimensions, .75 by .55."

86. THE PRAIRIE WARBLER.

DENDRÆCA DISCOLOR (V.) Baird.

Red-backed Warbler (Jamaica); Particolored Warbler.

Though nowhere abundant, this warbler may be met with during migrations, at least, over all the United States between the Mississippi and southern New England.

Breeding along the whole *Atlantic coast*, its nidification was described by all the early writers, but the accounts show great differences. My own experience is so brief, and Dr. T. M. Brewer, in the *History of North American Birds*, has summed up the matter so completely, that I prefer to copy his remarks almost as a whole :

Both Wilson and Audubon were evidently at fault in their descriptions of the nest and eggs. These do not correspond with more recent and positive observations. Its nest is never pensile. Mr. Nuttall's descriptions, on the other hand, are made from his own observations, and are evidently correct. He describes a nest that came under his observation, as scarcely distinguishable from that of the *D. æstiva*. It was not pensile, but fixed in a forked branch, and formed of strips of the inner bark of the red-cedar, fibres of asclepias, and caterpillar's silk, and thickly lined with the down of the *Gnaphalium plantagineum*. He describes the eggs as having a white ground, sharp at one end, and marked with spots of lilac-purple and of two shades of brown, more numerous at the larger end, where they formed a ring. He speaks of their note as slender, and noticed their arrival about the second week of May, leaving the middle of September.

At another time Mr. Nuttall was attracted by the slender, filing notes of this bird, resembling the suppressed syllables 'tsh-'tsh-'tsh-'tsh-*tshea*, beginning low



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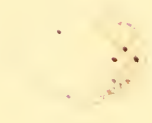
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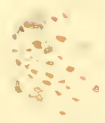
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PLATE XIII.

88. *DENDRECA DOMINICA*. Yellow-throated Warbler.
90. *DENDRECA PALMARUM*. Yellow Red-Poll Warbler.
91. *DENDRECA PINUS*. Pine-creeping Warbler.
92. *SIURUS AURICAPILLUS*. Golden-crowned Wagtail.
93. *SIURUS NÆVIUS*. Northern Wagtail.
94. *SIURUS MOTACILLA*. Large-billed Wagtail.
96. *OPORORNIS FORMOSA*. Kentucky Warbler.
97. *GEOTHILYPIS TRICHAS*. Maryland Yellow-throat.

and gradually growing louder. With its mate, it was busily engaged collecting flies and larvæ among a clump of locust trees in Mount Auburn. Their nest was near, and the female, without any precautions, went directly to it. Mr. Nuttall removed two eggs, which he afterward replaced. Each time on his withdrawal, she returned to the nest, and resorted to no expedients to entice him away.

Several nests of this warbler have been obtained by Mr. Welch in Lynn. One was built on a wild rose, only a few feet from the ground. It is a snug, compact, and elaborately woven structure, having a height and a diameter of about two and one-half inches. The cavity is two inches wide and one and one-half deep. The materials of which the outer parts are woven are chiefly the soft inner bark of small shrubs, mingled with dry rose-leaves, bits of vegetable wool, woody fibres, decayed stems of plants, spiders' webs, etc. The whole is bound together like a web by cotton-like fibres of a vegetable origin. The upper rim of this nest is a marked feature, being a strongly interlaced weaving of vegetable roots and strips of bark. The lining of the nest is composed of fine vegetable fibres and a few horse-hairs. This nest, in its general mode of construction, resembles all that I have seen; only in others the materials vary—in some dead and decayed leaves, in others remains of old cocoons, and in others the pappus of composite plants being more prominent than the fine strips of bark. The nests are usually within four feet of the ground. The eggs vary from three to five, and even six.

The late Dr. Gerhardt found this bird the most common warbler in northern Georgia. There its nests were similar in size, structure and position, but differed more or less in the materials of which they were made. The nests were a trifle larger, and the walls thinner, the cavities being correspondingly larger. The materials were more invariably fine strips of inner bark and flax-like vegetable fibres, and were lined with the finest stems of plants, in one case with the feathers of the great horned-owl. In that neighborhood the eggs were deposited by the 15th of May.

In Massachusetts the prairie warbler invariably selects wild pasture land, often not far from villages, and always open or very thinly wooded. In Georgia their nests were built in almost every kind of bush or low tree, or on the lower limb of post-oaks, at the height of from four to seven feet. Eggs were found once as early as the 2nd of May, and once as late as the 10th of June. They arrived there by the 10th of April, and seemed to prefer hill-sides, but were found in almost any open locality.

In southern Illinois, Mr. Ridgway cites this species as a rather rare bird among the oak-barrens where it breeds.

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.

87. GRACE'S WARBLER.DENDRÆCA GRACIÆ *Coues.*

Grace's warbler is a rarity (thus far) from *New Mexico and Arizona*, and seems there wholly confined to the "pine-belt that indicates a certain elevation of the surface in those territories." Henshaw ascertained its presence frequently in the White Mountains of Arizona, and saw young birds just from the nest during the second week of July; but the home they had left always remained hidden, and we have only the conjecture with which to solace ourselves, that it will be found high up in the pine-trees.

88. THE YELLOW-THROATED WARBLER.DENDRÆCA DOMINICA (*L.*) *Baird.*

Yellow-throat; Pensile Warbler; Jamaica Warbler; Conjaune.

A bird of the *eastern* half of the Union alone, this lovely warbler belongs also to the south rather than to the north, since even in midsummer it wanders little northward of Philadelphia on the coast, and Missouri in the interior. The most admirable account of the bird ever written is contained in the Nuttall Club's Bulletin, Volume II, pp. 102-106; it is by Mr. William Brewster, and I am able to add nothing essential from personal experience:

While collecting near St. Mary's [Florida], April 18, I was in the act of shooting a female, when I noticed that she was gathering material for building, and, tracing her flight, I was fortunate enough to discover her half completed nest. Visiting the spot at frequent intervals, I invariably found both birds feeding among the pines in the vicinity, although the nest, as far as I could judge, seemed finished. At length, May 2, a friend, ascending the tree, found the female sitting. She remained on the nest until he nearly touched it, although the limb shook violently under his weight. When she did finally leave it she sailed down into a smaller tree a few yards off, where she remained a silent and seemingly unconcerned spectator of what followed. The nest and its contents being safely lowered to the ground, I shot both the female and her mate. The latter was singing, as usual, a short distance off,

and apparently took no more interest than the female in the destruction of their mutual hopes. Embryos of small size had already formed in the eggs, so that incubation must have been begun three or four days previously. This nest was placed at the height of about 35 feet from the ground, on the stout horizontal branch of a southern pine, one of a thinly scattered grove or belt that stretched along the edge of a densely wooded hummock. It was set flatly on the limb,—not saddled to it,—nearly midway between the juncture with the main trunk and the extremity of the twigs, and was attached to the rough bark by silky fibres. It is composed externally of a few short twigs and strips of bark, bound together by Spanish moss and a silky down from plants. The lining consists of a few hair-like filaments of moss and soft cottony vegetable fibres. The whole structure is neatly and firmly compacted, though essentially simple in appearance, and, from the nature of the component materials, of a grayish inconspicuous color. In size, shape and general formation, it very nearly resembles nests of the black-throated green warbler in my collection. It measures externally 2.80 inches in diameter by 1.70 in depth. The eggs, four in number, measure .69 by .53 of an inch. They are quite regularly ovate, with fine dottings of pale lilac scattered thinly and evenly over a grayish white ground-color. A few spots or blotches of burnt sienna occur about the large ends, while occasional irregular, pen-like lines of dark brown diversify the remaining surface.

Mr. Brewster shows that every account published hitherto of the nesting of this species is open to doubt, if not manifestly wrong, including the elaborate descriptions by Brewer and Coues from an alleged specimen in the National Museum.

89. KIRTLAND'S WARBLER.

DENDRCECA KIRTLANDI *Baird.*

Concerning this very rare summer resident of the region of the *Great Lakes*, we are so ill informed that nothing can be said in elucidation of its breeding.

90. THE RED-POLL.

DENDRCECA PALMARUM.

Palm Warbler; Yellow Red-poll Warbler; Fauvette a tete rouge (Canada).

The habitat of the red-poll in the breeding months includes the *eastern* half of Canada and Labrador; for, though abundant in

the United States during the migrations, it never remains to breed there, at least south of the Maine forests; consequently, little is known of its breeding life.

The red-poll selects for its home the edge of a swampy thicket, or an old brushy pasture, and places its sparrow-like nest on the ground, beside a little knoll, or at the roots of a spruce-sapling or small bush. In this habit it stands alone among the *Dendroæcæ*. The structure is not large, measuring, ordinarily, about $3\frac{1}{2}$ inches in diameter and $2\frac{1}{2}$ in depth, with walls half an inch thick. "The walls are 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, the nest is warmly and softly lined with down and feathers."

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

91. THE PINE WARBLER.

DENDROECA PINUS (*Wilson*) *Baird*.

Pine Creeper; Pine-Creeping Warbler; Fauvette des Pins (Canada).

Ranging in summer from the lower Missouri *eastward* to the coast, and northward as far as the Maritime Provinces, this bird is one of the few warblers whose nests are to be obtained in every Atlantic state.

Living chiefly among the pine woods, and associating with such birds as the titmice, bluebirds and kinglets, which are all early comers, the pine warbler's nest is among the first to be taken in spring. Mr. Maynard records it as laying in Alabama and South Carolina, the last of March; and even in Massachusetts by the middle of May.

Though the nests vary greatly in manner of construction, they all agree in position, being lodged in safe forks at the tops of trees

(almost always young evergreens), and thus are well concealed. One found by Nuttall in Cambridge was thin but very neat; the principal material was the wiry old stems of the slender knot-weed, circularly interlaced, and connected externally with rough, linty fibres of some species of *Asclepias*, and blended with caterpillars' webs. The lining, he says, was made of a few hogs' bristles, slender root-fibres, a mat of the down of fern-stalks, and one or two feathers of the robin's breast; a curious medley, but all answering the purpose of warmth and shelter for the expected brood. Several other nests were of the same sort.

On the other hand Mr. Welch, of Lynn, Mass., describes many nests as alike in being loosely made of fine strips of the bark of the red cedar (chiefly underneath), fine inner bark of other trees, hempen and cotton threads, the exuviae of insects, and dry stalks of grasses: the lining of these nests, which were deep, consisted of fur, silky down and feathers. Other nests from Woburn, Mass., show fine, crinkled, black rootlets as the chief means of framework. The structure usually bears a close resemblance to a red-start's home, and is about three inches across the brim.

The eggs of the pine warbler are four in number, as a rule, and two or three clutches of them are hatched each year in the southern states, but only one in New England. They are about .70 by .52 of an inch in average measurement, and the ground color is dull 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." Sometimes there is a distinct wreath about the large end, or the whole butt is capped. Dr. Brewer points out a supposed likeness to eggs of *Dendrocæ castanea*; but I should say *D. discolor* or *D. striata* furnished a better type, though the latter's eggs are considerably larger.

Though Nuttall removed two eggs from one of the nests he found, the mother-bird, after feeble complaint, resumed her sitting upon the remainder. "In summer," the same diligent author tells us, "their food is the eggs and larvæ of various insects, as well as

flies or cynips, caterpillars, coleoptera and ants. In autumn, the young frequent the gardens, groves and orchards, feeding likewise on berries of various kinds, as on those of the cornel, wild-grape and five-leaved ivy; at this season they are very fat and fly and forage in families."

92. THE OVEN-BIRD

SEIURUS AURICAPILLUS (L.) *Swainson*

Golden-crowned Thrush; Water-thrush, or Wagtail; Water Warbler; Land Kickup (West Indies); Orange-crowned Accentor.

This pretty and familiar woodland bird is common everywhere in the *Eastern* United States, as far as the dry plains, and northward to Alaska and Hudson's bay.

Rather an early arrival in the middle and northern states (wintering rarely this side of Mexico and the Antilles), it quickly proceeds to establish its well-guarded home. The site chosen is usually the side of a hill in the woods,—less often in a cleared space, and then only when the shelter of bushes is close by; and it is noticeable that the neighborhood of water is not important, as seems to be the case with its congeners next succeeding. Scraping aside the dead leaves until a foundation of solid earth is secured, the skilful bird entwines linear leaves, grasses, shreds of bark and bits of moss or blossoms into a circular bed both dry and warm. Then, from materials close at hand, and hence not discernible at once from any difference between them and their surroundings, she heaps up a parapet, and drags upon the top old dead leaves, long dry weeds and stems of grasses, pieces of light bark that the squirrels or woodpeckers have thrown down, and even twigs, until she has made a complete domed roof over her snug "farm," with its little unnoticed door in front whence she can peer out. She has thus converted her house into a cave, where she may sit secure from anything but accident. Varying in its timber with the lo-

cality and the kind of wood or pasture in which it is placed, the domed form is the same everywhere, and always admirable. The only way to find it is slowly to search the ground where the nest is suspected, or where it seems likely one may be, and startle the bird out of its retreat. Even then one cannot always be sure of his prize, for when thus surprised the mother runs from the nest with the silence and celerity of a mouse.

These nests are not always domed, however, like old-fashioned ovens in miniature. Now and then the bird so takes advantage of a sheltering rock or the protection of a projecting root,—making any superstructure unnecessary to its concealment,—that I think the roof of the unsheltered nest must be intended as a guard against the eyes of enemies rather than any shield from the weather. The fact that nests built in very thick woods are frequently left uncovered supports this belief. Dr. Brewer tells pleasantly how his daughter, then a child of four years of age, discovered such an one. It was built in a depression in the ground and its top was completely covered by the natural growth of surrounding vines and wild flowers. Although the little girl and her father were standing with their feet almost upon the nest, the warbler remained sitting quietly until the child stooped to pluck the flowers growing directly over its entrance; then the bird darted out and fluttered and tumbled about with well-feigned manœuvres to distract attention from her treasures. The child in great glee tried to catch it, but of course failed; while the father, wiser in the ways of birds, stooped to examine the nest and saw that it had no other cover than the wild plants that clustered above it.

The eggs of the golden-crowned thrush are subject to considerable variation. Their markings differ in color and shade, and yet more in number, size and manner of distribution. The eggs are oval in shape, one end being only very slightly smaller than the other. Their average length is .82 of an inch, and their breadth is .55 of an inch. Their ground color is a beautiful creamy white. They are marked, usually principally about the larger end, with dots and blotches, intermingled, of red, reddish brown, lilac, purple and ferruginous. Occasionally these make a beautiful crown around the larger end, leaving the rest of the surface nearly free from spots.

93. THE WATER THRUSH.

SEIURUS NÆVIUS *Bæddært.*

New York Water-Thrush, Wagtail or Water-Wagtail; Northern Water-Thrush.

In moderate latitudes this wagtail is confined in summer chiefly to the United States *eastward* of the plains, but in British America it extends clear across the arctic continent. Its breeding-range, however, seems restricted to the colder half of the country, say north of latitude 40°, except where mountains carry a more northern aspect toward the south, as in the case of the Catskills.

“Several nests with eggs are in the Smithsonian, from various arctic localities, as Fort Yukon and La Pierre House. They appear to have been built on the ground, and are composed chiefly of moss, compactly matted and mixed with little sticks and straws—in one instance with a large amount of disintegrating fibrous material circularly woven. . . . The nests are about four inches across, by two-thirds as much deep.” Previous to the reception of these Alaskan examples (collected by Lockhart, Kennicott, Dall, etc.), we were all at sea in regard to the nidification of the species, for the accounts of the earlier standard authorities inextricably confused this species with the following, so that they were untrustworthy. Even now the accurate information extant is meagre; I do not think the whole series of Atlantic Club Bulletins contains a word on the subject, yet the bird is not uncommon everywhere in the Canadian faunal district.

In the History of North American Birds, it is stated that Dr. Brewer once found its nest and eggs near Boston, and that on June 8, Professor Verrill discovered its nest in a dense cedar swamp near Norway, Me. “This was built in an excavation in the side of a decayed, moss-covered log, the excavation itself forming an arch over the nest in the manner of, yet different from, that of the golden crowned. The nest itself was an exceedingly beautiful structure, four and a half inches in diameter,

but only an inch and a half 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 small, black vegetable roots."

This is all the books have to say on the subject which can be trusted.

94. THE LARGE-BILLED WAGTAIL.

SEIURUS MOTACILLA *Vieillot.*

Louisiana Water-Thrush, Wagtail or Accentor; Large-billed Accentor; Warbler-Thrush.

The geographical distribution of this wagtail is *southern*, reaching in its northernmost breeding limit only the southern edge of the summer range of the small-billed species; and westward to Kansas. Like the former it is to be sought in low, wet districts or along mountain brooks, and is shy of observation and secret in its domestic ways. Although a very common resident in the south, its breeding habits have only recently been really well known; and the knowledge has been so skilfully combined by Dr. Edgar A. Mearns, in his admirable contributions to the eleventh volume of the Proceedings of the Essex Institute, that I can do no better than to quote him at length.

We had no reliable account of the nidification of the large-billed accentor, until Mr. Ernest Ingersoll gave a description of a nest with four fresh eggs, taken in June, 1873, at Franklin station, New London county, Conn., and fully identified by the capture of the female parent.* The nest "was rather loosely and carelessly constructed of fine grass and some little dead fibrous moss, but beneath, a few, and about the outside, particularly in front, many dead leaves were put, as a sort of breastwork to decrease the size of the entrance and more thoroughly conceal the sitting bird. It was underneath

* *Am. Naturalist*, VIII, p. 238.

the edge of a perpendicular bank, eight or ten feet from the water." The eggs, lustrous white, were more or less profusely spotted all over with dots and specks, and some obscure zigzaggings, of two tints of reddish brown, with numerous faint points and touches of lilac and very pale underlying red. Dr. Coues gives (*Birds of the Northwest*, p. 73, 1874) the following notice: "The large-billed water thrush has been found breeding on the Wachita river [Kansas] where the nests and eggs were secured by Mr. J. H. Clark, and at Kiowa Agency, where Dr. Palmer also procured them. The one of these two nests in the best condition was built upon a layer of leaves, apparently upon the ground, composed otherwise entirely of rootlets and fine grasses. The other contained five eggs; they are more globular than any of those of *S. noveboracensis* I have seen, but not otherwise different; and other sets would probably not be distinguishable. The roundest one of them measures only 0.69 by 0.59."

These nests remained unique until Mr. William Brewster "had the good fortune to secure two fully identified nests of this species in Knox County, Indiana," in the spring of 1878. "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 amber with fainter sub-markings of pale lavender, while over the remainder of their surface are thickly sprinkled dottings of reddish brown. But slight variation of marking occurs, and that mainly with regard to the relative size of the blotches upon the greater ends. They measure, respectively, .75×.63, .78×.64, .75×.63, .76×.62, .76×.62, .75×.61."

Mr. Brewster then gives a pleasant description of the second nest, taken May 8, on the opposite side of the same pond, in a precisely similar situation, where his previous experience enabled him to find it directly. In shape it was nearly square, "measuring externally 6.50 inches in diameter by 3.54 inches in depth. The inner nest measures 2.73 inches in diameter by 2.50 inches in depth, and is lined with dry grasses, leaf-stems, and a few white hairs. The eggs were four in number and perfectly fresh. They agree closely in shape with those of the first set, and have an equally high polish, but are somewhat more heavily and handsomely marked. The color is creamy white with heavy blotches of umber brown generally distributed, but occurring most thickly at the greater ends; fine dottings of lighter brown, and a few spots of pale lavender, fill in the intermediate spaces. Their measure, respectively, $.71 \times .60$, $.71 \times .60$, $.72 \times .60$, $.72 \times .61$. In each of these two sets the eggs show unusually little variation *inter se*." On May 12, a third nest was found by Mr. Robert Ridgway, on the shore of an isolated little woodland pond, which contained five young birds, well feathered and nearly able to fly. The site, in this instance, was at the foot of a huge stump, the nest being placed in a cavity in the rotten wood. Still another nest was found by Mr. Brewster, April 29, under the bank of White river, among the earth and roots, and well sheltered by the projection of the bank above. The female was sitting upon the empty nest, and was shot as she flew from it.

In "The Oölogist" (Vol. IV, No. 2, pp. 10, 11, April, 1878), Mr. Adolphe B. Covert describes its nest and eggs as follows: "On the 7th of June I found the nest to contain five eggs, and shot the parent bird, which proved to be the large-billed species. The nest was built on the ground, at the base of a large black ash, partially under and against a large root, which formed an arch over half of the nest. It was composed of a layer of dead leaves, moss, fine roots, and dried grasses, compactly and rather smoothly finished, and lined with fine grass and some cows' hair. The eggs were five in number, white (of a roseate tinge before blown), thickly spotted with small reddish brown spots; they measure about $.78$ by $.59$ of an inch." I am unable so much as to guess where this nest was discovered, since the author neglects to give any locality.

As the above comprises all that is at present known concerning the nidification of this bird*, it will not seem out of place to give, in this connection, the results of my own observations on the nestling of this *Accentor* at Highland Falls, where, as stated at the commencement, it is a common summer resident. I remember quite well the first nest that I discovered—

* Besides the above, I am informed that a notice of its breeding appeared in *Forest and Stream*, sometime during the past year.

a number of years ago. As I was returning home through the woods one evening, I stopped to drink, hunter fashion, from a cold spring that bursts from the side of a ravine, close to a large brook. I was about to drink, when a bird flew right in my face, startling me greatly; but I soon heard the accustomed *chick*, uttered in a loud, complaining tone, and then I saw the bird tilting up and down upon a stone in the middle of the brook. The nest was placed at the side of the spring just above the water, occupying the cavity whence a round stone had been dislodged. It contained four eggs, having embryos considerably advanced. The nest was loosely constructed of strips of bark, grasses, stems of plants, and leaves. A nest was also found in this same spot on a succeeding season, from which five fresh eggs were taken. The eggs of the first set are before me, and are as described by Mr. Brewster, except that the markings are aggregated at the larger ends; the darkest arranged in a circle near that extremity. This nest was found May 31. In 1877 I found as many as six young Water Thrushes in a nest that was built in a pile of *débris* that was lodged in some bushes that grew on a little island in the midst of a large stream. This nest was very artfully concealed, and I had searched for it unsuccessfully ever since the middle of May. The parents always seemed greatly distressed whenever I approached the nest, and always tried to lead me away from it. I should not have discovered it had not the young ones betrayed its presence by their chirping. They left the nest about June 10. On May 7, 1878, I shot a female containing an egg of full size in her oviduct. On the 15th, after a long search and several previous failures, I found a newly finished nest. So carefully was it concealed, that I looked directly into it before making its discovery. By the 21st five eggs were laid, but neither of the parents would approach it. On the 22nd six eggs had been deposited, and I nearly succeeded in capturing the sitting bird; but it slipped away just as I was going to put my hand over it, and ran down the bed of the brook to the large stream, where it remained silent till nearly approached, when it flew into a tree opposite, where it bowed and chipped in a low tone till shot. The nest was placed under the bank of a smaller stream, tributary to a large brook. Its position was such, that only accident, or the most careful search, could discover it. The projecting branches of a laurel-bush still further aided its concealment. The nest presents the following dimensions: internal diameter, 2.95 inches; internal depth, 1.25 inches. The six eggs measure, respectively, .75×.62; .79×.65; .77×.64; .75×.63; .75×.63; .74×.62. This nest and the others resemble so closely, in composition, those already described by Mr. Brewster, that a detailed description is unnecessary; their form and materials differ slightly, according to situation. On May 23, 1878, I took five slightly incubated eggs from a nest that was placed under some brush and roots, in the bank of a small stream that flows into the Buttermilk Falls brook. One of these

eggs is in the hands of Mr. Ernest Ingersoll for illustration of his work on the "Nests and Eggs of American Birds," his original set having been placed where it was not available for the purpose. The remaining four measure, respectively, $.79 \times .65$; $.80 \times .65$; $.80 \times .64$; $.80 \times .65$. The nest presents an internal diameter of 2.70 inches; internal depth, 1.40 inches. In this set the eggs are as described by Mr. Brewster, but the markings form a distinct circle about the larger end. In the preceding set the markings are more uniformly distributed, but are most distinct at the great end. May 27, 1879, another nest was found, which contained five young birds nearly full-fledged. Visiting it a few days later, I found the old birds present, but the young had left the nest, and though not seen, were still in the neighborhood, as was plainly indicated by the actions of the parents, which manifested the utmost concern at my presence; fluttering and dragging themselves over the leaves with wings extended in a seemingly helpless fashion, they endeavored to lead me away from the spot. This nest was built far under the jutting margin of the stream; also tributary to a larger one. It was only discovered by my having actually placed my hand upon the young birds while exploring in search of the nest.

Of the six nests above enumerated, three were found under the projecting margins of small brooks, near their anastomoses with larger streams, two at the side of a spring close to a large brook, and one on an island in the middle of a large stream. It would seem, from these circumstances that the Water Thrush usually builds *away* from the large stream, that its sagacity leads it to select for its nesting site a position less liable to endanger the lives of its progeny by subsequent accidents of storm and flood. The Accentor sometimes builds very early. I am confident that the eggs taken by myself do not represent the earliest period of its nestling, since I have shot specimens containing full-sized ova in their oviducts as early as May 1st.

95. THE CONNECTICUT WARBLER.

OPORORNIS AGILIS (*Wils.*) *Baird.*

This rare migrant belongs to the *eastern* province of the United States, but has never yet been traced to its far northern breeding-place, and no satisfactory notes exist upon its nests or eggs.

96. THE KENTUCKY WARBLER.

OPORORNIS FORMOSA (*Wils.*) *Bd.*

A denizen of the *Mississippi Valley*, this warbler is seen breed-

ing northward to Lake Erie, eastward to the Connecticut valley, and westward to the Indian territory. Wilson found it particularly numerous in Kentucky and Tennessee, sitting in May; and Audubon considered it even more abundant in Louisiana where it arrives in March. In northern Georgia, its eggs are laid during the first week of May, and a few days later along the Ohio, but not until June north of the Alleghanies; two broods are reared in many cases.

The nest of the Kentucky warbler is usually placed on the ground in the woods at the foot of a sapling or "in a thick tuft of rank grass;" but sometimes in a low bush or the brushy top of a fallen tree. The materials are dead leaves, loose dry grass, the light pith of weeds, the bark of dead plants, etc., etc., the interior being composed mainly of fine black roots, with soft grass, cotton and hair. Underneath and around it there is usually a large aggregation of leaves. The whole affair, though beautiful, has little coherence, and evidently is not constructed with a view to the convenience of nest collectors; nor is it easy to find, usually being concealed beside a decaying log under a bunch of ferns, or in some other dense corner. In rare cases, the nest is rudely arched over with leaves and the heads of flowering grasses much after the fashion of an oven-bird's. Naturally, so clumsy a structure would appear large for the size of the maker, but the cavity is small. "Very little artistic skill was displayed in its construction," writes Henshaw, of one taken at Washington, D. C., "the nest of the Maryland yellow-throat much surpassing it in workmanship.

The eggs are four to six in number, and average .72 by .58 of an inch in size. In shape they are pyriform; in color glossy white, finely sprinkled with dots of bright red over all the surface, but most thickly around the large end; and besides the reddish specks, there are often other dottings of neutral tint, and a few conspicuous touches of lavender.

The young are said by Audubon to remain with their parents until both depart for their winter home.

97. THE MARYLAND YELLOW-THROAT.

GEOTHELYPIS TRICHAS (L.) *Cab.*

Yellow-throat; Oven-bird (South); Black-masked Ground Warbler.

This is one of the birds with which the young ornithologist first becomes acquainted, when his newly awakened interest leads him outside of his door-yard. It breeds abundantly *all over the Union*, but departs in winter for a more southern climate. It is to be sought in wet woods and by the edge of the little morasses about the farm to which one is guided by the cackle of blackbirds. Although not seeking the society of men, it does not strenuously avoid it.

The nest of the Maryland yellow-throat is constructed during April in Florida, during May in Pennsylvania, and later northward. In northeastern Maine eggs have been taken on June 8 and at the Grand Menan on June 20; in Truckee valley, high among the Sierras, on May 19; at Washoe, Nev., May 23 (near hatching) and at Salt Lake in June.

The nest "is fixed on the ground," to use the concise words of Wilson, "among the dried leaves, in the very depth of a thicket of briers, sometimes arched over and a small hole left for entrance." Occasionally, the structure is elevated a short distance from the ground in the midst of a bush dense enough to afford ample support to the bulky mass. Mr. Gentry mentions that near Philadelphia he has frequently found the nest occupying the heart of a skunk-cabbage—an odorous site. Although a lover of swamps, it yet seeks a dry piece of ground as its home, not caring to risk the welfare of its eggs.

The materials of the nest vary with the latitude, but in general consist of leaves amassed together into an incoherent bed, enclosing the deeply sunken cavity of the nest, and giving no appearance of design in the accumulation. Within this rim are loosely interwoven walls of grape-vine bark, grasses and weed-shreds, lined internally with fine grass or hair. The whole is sunk deep into the leaves and among the roots of the brambles,

very often on a slope ; frequently a hedge of grasses stands about the nest, and sometimes, as the older ornithologists invariably mentioned, the whole is roofed over like that of the golden-crowned wagtail ; but this dome is not an integral part of the structure, being simply leaves, etc., dragged over it into self-supporting shape as a disguise. The framework seems to be slighter at the south than in the north ; and Mr. Herrick tells me that at Grand Menan the yellow-throats find the climate so cold that they embed their eggs in feathers. Mr. Mearns, in his valuable memoir on the ornithology of the Hudson Highlands, records that one nest of this bird, found in a wet meadow, was built over a little watercourse, being suspended to the interlaced grasses which were brought from each side and fastened together. He also adds, that its nest is very often found suspended to the rushes of the marshes that border the Hudson.

The five or six eggs of the *Geothlypis* are begun to be laid as soon as the nest is completed. They are very pretty, being pure, semi-transparent white, "dotted, blotched and marbled around the larger end with purple, reddish brown and dark umber." These markings are laid on very irregularly : in some specimens scarcely anything but a confused rim about the butt appears ; in others a few scattered blotches ; in others sparse and diffused dots ; while occasional examples are almost or quite immaculate. The size and shape also are highly variable, the length ranging from .74 to .55 of an inch and the breadth from .58 to .48. All sizes and forms occur in the same nest. In Dr. Brewer's collection the largest eggs are from Kansas and the smallest from Georgia ; but this no doubt is mere accident. It is rare to find a nest without one or more eggs of the cowbird in it ; but never, Audubon thought, in the nests of the second brood.

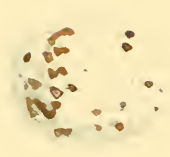
Incubation is said to devolve wholly upon the female, and to continue about ten days. During this time the male is assiduous and affectionate in the collection of food for his mate and guarding her safety. Relying upon the admirable concealment of their home for protection, the birds rarely show any open solicitude



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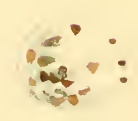
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PLATE XIV.

- 98. *GEOTHILYPIS PHILADELPHIA*. Mourning Warbler.
- 99. *GEOTHILYPIS MACGILLIVRAYI*. McGillivray's Warbler.
- 100. *ICTERIA VIRENS*. Yellow breasted Chat.
- 101. *MYIODIOCTES MITRATUS*. Hooded Warbler (two figs.).
- 102. *MYIODIOCTES PUSILLUS*. Black-cap.
- 103. *MYIODIOCTES CANADENSIS*. Canada Flycatcher.
- 104. *SETOPIAGA RUTICILLA*. Redstart.

until it is discovered. "Then they will make the most vehement demonstrations of alarm and distress, flying about the intruder and fearlessly approaching him to within a few feet." Dr. Brewer was surely in error when he declared that they "rarely, if ever, have more than one brood in a season." All experience, from Massachusetts southward, is opposed to him. When the young are hatched they are treated with tender care by both parents, being fed upon the larvæ of small beetles and moths, and various flies. The young are able to leave the nest in about twelve days, but are not left wholly to shift for themselves, for a week longer. If the last brood, they remain with their parents upon their leisurely journey northward in September.

98. THE MOURNING GROUND WARBLER.

GEOTHLYPIS PHILADELPHIA (*Wils.*) *Bd.*

Ranges from Kansas and Dakota over the whole of *Eastern North America*, wintering south of our borders, and breeding through the northern portion of its summer habitat.

Mr. John Burroughs was the first to see the nest of this bird, the account of the finding of which I quote from his charming book, *Wake Robin*:—the scene is a locality in the interior of New York, at the headwaters of the Delaware:

Continuing my random walks, I next paused in a low part of the woods, where the larger trees began to give place to a thick second growth that covered an old Barkpeeling. I was standing by a large maple, when a small bird darted quickly away from it, as if it might have come out of a hole near its base. As the bird paused a few yards from me, and began to chirp uneasily, my curiosity was at once excited. When I saw it was the female mourning ground warbler, and remembered that the nest of this bird had not yet been seen by any naturalist,—that not even Dr. Brewer had ever seen the eggs,—I felt that here was something worth looking for. So I carefully began the search, exploring inch by inch the ground, the base and roots of the tree, and the various shrubby growths about it, till, finding nothing, and fearing I might really put my foot in it, I bethought me to withdraw to a distance and after some delay return again, and, thus forewarned, note the exact point

from which the bird flew. This I did, and, returning, had little difficulty in discovering the nest. It was placed but a few feet from the maple tree, in a bunch of ferns, and about six inches from the ground. It was quite a massive nest, composed entirely of the stalks and leaves of dry grass, with an inner lining of fine, dark-brown roots. The eggs, three in number, were of light flesh-color, uniformly speckled with fine, brown specks. The cavity of the nest was so deep that the back of the sitting bird sank below the edge.

The mourning warbler breeds commonly in northern New England and Canada, and as far west as the Red river of the North, where it is abundant in the thickets, and the young appear late in June. The few accounts of nests and eggs available confirm Mr. Burroughs' record fully; but Dr. Coues, judging from several suites collected by Ridgway, decides that the eggs "lack the sharp speckling of reddish brown found mostly throughout this family, being variously blotched, in an entirely irregular manner, with very dark brown, and smirched with several shades of lighter dirty brown, together with some obscure neutral shell-markings; the ground is white as usual. Extremes of size and shape which have offered are .70 by .50 and .65 by .52.

99. MACGILLIVRAY'S GROUND WARBLER.

GEOTILYPIS MACGILLIVRAYI (*Aud.*) *Ld.*

Western Yellow Throat.

This warbler, by many ornithologists perhaps properly considered only a variety of the foregoing, replaces the mourning warbler in the West, being found from the *Plains to the Pacific Ocean* and northward to British Columbia. It breeds throughout this area, in rather greater numbers than does the other species in the East.

"Any patch of shrubbery or tangled growth of bushes," says Henshaw, "is sure to be selected as the summer abode of one or more pairs of these birds. From such localities in the low valleys, they follow the streams upward as they flow from the mountains; and up to the altitude of about 9,000 feet, the

species is common." It is a great lover of seclusion, refusing to leave the ground while you are in the vicinity of its home, or to show itself; while the *G. philadelphia* has a habit of clamoring up trees to forage and sing while its mate is nestling below.

The most complete account thus far, of its breeding, appears in *The Birds of the Colorado Valley*.

Many nests of this bird have come to the notice of naturalists. They are usually built on the ground in close covert, though said to be sometimes placed in a bush a foot or so high—in one instance given by Nuttall, "near the ground, in the dead mossy limbs of a fallen oak, and further partly hidden by a long tuft of *Usnea*." The shape differs much according to the situation, the ground-built specimens being quite broad and flattish, not more than half as high as wide, with a shallow cavity, and quite uniformly thick walls. Those placed in bushes were more cup-like. Some have been described as consisting almost entirely of mosses; others are built of various soft, fibrous materials, especially bark strips and frayed-out plant-stems, with fine grasses, mostly circularly arranged, and lined with slender rootlets. When a nest is disturbed the female manifests her displeasure by a sharp *chip*.

In the mountains of Utah and Colorado, the eggs are laid before the middle of June; but on the coast, even as far north as Puget's sound, the dates of laying and hatching appear to be at least a fortnight earlier. The eggs, as circumstantially described by Dr. Coues, from several sets before him collected by Ridgway, are white (doubtless a flesh-tint when fresh), variously blotched, in a wholly irregular manner, with very dark brown, almost blackish; and further spotted and smirched with several shades of lighter, more reddish brown, together with the usual shell-markings of undefinable neutral tint. Some of the blotches, especially the darker ones, are remarkably large; and the whole aspect of the egg is different from that usually seen in this family, where fine speckling with reddish is the rule. The extremes measure $.70 \times .50$ and $.65 \times .52$ of an inch. Four or five are laid in a clutch. The devotion of the parents to their home and fledglings is very striking.

100. THE YELLOW-BREASTED CHAT.

ICTERIA VIRENS (L.) Bd.

Chat; Yellow-breasted Icteria; Ghost-bird (Delaware Indians); Yellow Chat (New England).

This is a *Southern* species, extending northward on the coast to Connecticut, thence westward to the central Mississippi Valley as far as the Plains, and southward into Mexico and Guatemala, whence they also reach northward throughout California. The species includes two varieties.

A very conspicuous bird in all its manners and always highly attractive, an unusual amount of matter has been written about the chat,—and written well. “It is difficult to observe their arrival with precision, unless the collector is carefully on the watch for them, for they come furtively, and for some little time keep most sedulously concealed in their favorite retreats amidst dense shrubbery. Such period of concealment probably corresponds to the interval between the arrival of the males and the following after of their more dilatory mates, which may be several days or even a week.” Both sexes are to be seen in New Jersey by May 10. It is at this wooing time that the chats develop those eccentricities that make them famous. “They grow too restless to abide the covert they have chosen for their home, and are seen incessantly in motion, flitting with jerky movement from one bush and brier-patch to another, giving vent to long-pent emotions in the oddest notes imaginable.” To describe this crazy love-song, to which for wild *abandon* that of the bobolink bears no comparison, and that of the cat-bird yields in volubility, is beyond my scope. I must refer you to Dr. Coues’s *Birds of the Colorado Valley*, and to an essay by Dr. C. C. Abbott, in *Science Gossip* for January, 1876. Yet I cannot refrain from quoting a single paragraph from the first author :

His nuptial song, I should observe, is something very different from the medley of sounds, not all of which are pleasing, that are heard when each chat, as one performer in the orchestra, first tunes his curious pipe. Such

Published in March, 1879
Eau

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SALEM, MASS.

Part II

Price 50 cents.



NESTS AND EGGS
OF
AMERICAN BIRDS.
BY
ERNEST INGERSOLL.



August, 1879.
(Op. 25-48, Pl. III, IV.
E. A. M.)

S. E. CASSINO,
NATURALIST'S AGENCY,
SALEM, MASS.

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Edited by S. L. WILLARD.

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Part 3

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(Pp. 49-72, Pls. V, VI.
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A chapter also will be given to the formation of Cabinets of Oology, containing directions how, when and where, to find the nests of birds; suggestions as to the best modes of collecting and transporting the eggs, the preparation of specimens, arrangement of the collection, disposal of duplicates, and the best method of keeping the records of the museum. These suggestions, derived from the experience of the oldest American and European collectors, will be of the most practical nature, furnishing precisely that information and help which beginners need, and from the lack of which old collectors often suffer.

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The author has the hearty approval and assistance of the leaders of ornithology in this country, in the way of access to unique specimens in cabinets, notes from private journals, etc. Among these may be mentioned: Dr. Elliott Coues, Naturalist of the United States Geological Survey; Prof. J. A. Allen, of the Museum of Comparative Zoology at Cambridge, Mass.; Captain Charles Bendire, U. S. A.; prominent members of the Nuttall Ornithological Club and other gentlemen very well known.

The publisher wishes an active agent for this work in every place in the country. Full particulars, with circular, will be sent *free*.

CONDITIONS OF PUBLICATION.

The work will be issued in large 8vo monthly parts. Each part will be printed on very heavy super-calendered paper, made expressly for this work, and will contain two magnificent chromo-lithographic plates. The price of the work will be fifty cents per part. In no case will subscriptions be taken for less than the whole work.

It is impossible to state the number of parts at this stage of the work, as new material is constantly being brought to light. It is thought the work will make three volumes of twelve parts each. Subscriptions will be received at \$5.50 per year.

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S. E. CASSINO, PUBLISHER, Salem, Mass.

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Part 4-5

Price 50 cts. each.



NESTS AND EGGS
OF
AMERICAN BIRDS.
BY
ERNEST INGERSOLL.



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NATURALIST'S AGENCY,
SALEM, MASS.

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A NATURAL HISTORY
OF THE
Nests and Eggs of American Birds.

BY ERNEST INGERSOLL,

Editor of Science News, Late Zoologist of the United States Geological Survey, Member of the Boston Society of Natural History, the Nuttall Ornithological Club, the Davenport Academy of Sciences, etc., etc.

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The scheme of the book, which will embrace all of North America this side of Mexico, is to inform the reader :

First,—Of the area throughout which each species is ascertained to breed ;

Second,—Of the date of arrival, and preliminaries to nest-building ;

Third,—Of the site chosen for the nest, materials employed, method of architecture, shape, and all characteristics by which the structure may be recognized ;

Fourth,—Of the eggs,—when laid, number, size and markings, with the aid of superior figures of each kind ;

Fifth,—Of the incubation and birth of the young birds, their food while in the nest and the care bestowed upon them by the parents.

While of many species it is impossible to give a full description of all these incidents of domestic life, the publishers are confident that the surprise will be that so much is known in detail of our birds, when all the recorded observations are brought together, as proposed, and made to shed light on each other.

A chapter also will be given to the formation of Cabinets of Oology, containing directions how, when and where to find the nests of birds ; suggestions as to the best modes of collecting and transporting the eggs, the preparation of specimens, arrangement of the collection, disposal of duplicates, and the best method of keeping the records of the museum. These suggestions, derived from the experience of the oldest American and European collectors, will be of the most practical nature, furnishing precisely that information and help which beginners need, and from the lack of which old collectors often suffer.

In a book designed to fill the place of the present work, and which is to have the wide circulation among all classes, which there is no doubt this will attain, it is needful that there should be both attractiveness of style and the highest scientific accuracy.

All that Mr. Ingersoll has previously written has shown in a marked degree that he possesses the faculty to combine these two merits of popularly scientific composition ; and it is fair to suppose that this book, to the careful preparation of which he brings long study, will even excel the literary charm and technical purity of his previous essays.

An indispensable feature of such a work, also, is the illustration of the form, markings and colors of the eggs. Each number of the NESTS AND EGGS OF NORTH AMERICAN BIRDS, therefore, will contain three plates, drawn from the most typical eggs in public and private oological museums. The figures will be drawn by Mr. J. H. Emerton, the unexcelled artist in natural history, and other skilful draftsmen ; and particular attention will be paid to the beauty and exactness with which every feature is reproduced. In addition to this the pages of letter-press will be garnished with a large number of wood-cuts of nests, fully illustrating the characteristic architecture of each family.

Lastly, it may be mentioned that the approval of the leaders of ornithology in this country has been heartily given to the plan of this work, and important assistance offered by them in the way of access to unique specimens in cabinets, notes from private journals, etc. Among these may be mentioned Dr. Elliott Coues, Naturalist of the United States Geological Survey; Prof. J. A. Allen, of the Museum of Comparative Zoology at Cambridge, Mass.; Captain Charles Bendire, U. S. A., prominent members of the Nuttall Ornithological Club, and other gentlemen very well known.

It is safe to assume, therefore, that this book will take the place of a standard work, and become a necessary part of the library of every lover of birds, or student of their nests and eggs.

NOTE.—Memoranda sent to the author upon any occurrences related to the subject, as outlined above, would be highly valued. Nothing ought to be thought too insignificant,—merely a careful record of dates of nest-building and egg-laying actually observed in any one locality, for example, being of importance. The author will take pains to give due thanks and credit for all such information.

Mr. Ingersoll may be addressed at the Office of "The Country," No. 33 Murray street, New York City.

Conditions of Publication.

The work will be issued in monthly 4to parts. Each part will be printed on very heavy super-calendered paper, made expressly for this work, and will contain three very fine lithographic plates. The work when completed will be a companion to Dr. Coues' "Key to Birds of North America," and will make two volumes of the same size and style as the "Key."

The price of the work will be fifty cents per part. In no case will subscriptions be taken for less than the whole work. The number of parts will not exceed twenty-four, and the work will be completed in two years. Subscriptions will be received at \$5.50 per year. For the convenience of subscribers who receive their parts by mail, we shall send double numbers every two months, and reinitances can be sent upon receipt of the parts.

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S. E. CASSINO, Publisher,

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SALEM, MASS.

PROSPECTUS OF AN

Important Work on Ferns.

ILLUSTRATIONS OF

The Ferns of North America.

Text by Prof. Daniel C. Eaton, of Yale College.

Illustrations by Mr. Jas. H. Emerton.

Published by

S. E. CASSINO, NATURALISTS' AGENCY.

Salem, Mass.

The need of a carefully prepared, and thoroughly illustrated work on the American Ferns, has long been felt by those studying these beautiful plants. As yet, no work whatever has made its appearance which contains even a description of all our American species, and the few that have been figured at all, are found scattered through so many foreign works that it is quite impossible to find them, even in an excellent library.

Prof. Eaton has for a long time had in contemplation the writing of a work which should possess all the requirements of a scientific student and at the same time be so popular, and so thoroughly illustrated that those unfamiliar with botanical methods could be able with perfect ease to determine any of our American Ferns.

The great cost of preparing the plates, suitably drawn and colored, for illustrating a work of such extent, has until now, debarred publishers from undertaking its publication. The undersigned has decided to undertake to publish the work, believing that he will be sustained by the Botanists of America, and that his facilities for properly bringing the work before the scientific world are unsurpassed.

The services of Mr. J. H. Emerton, so well known for his remarkably accurate, and highly finished Natural History drawings, have been secured to illustrate the work. Mr. Emerton's great experience as a botanical draughtsman, and his knowledge of botany will give assurance that the illustrations will not be excelled by any yet published and that the work will be a fit companion to the "Wild Flowers of America," now publishing.

Prof. Eaton's herbarium of Ferns is the largest in America and he is constantly in receipt of additional plants from all parts of the country. He is therefore in a position to better conduct the work and furnish the necessary specimens for illustrations than any other person. Besides the labors of Prof. Eaton and Mr. Emerton, Dr. Gray of Cambridge, has expressed an interest in the undertaking and kindly offered the use of the extensive herbarium of the Botanical Gardens, for consultation. The Mass. Horticultural Society has also freely offered the use of the Davenport herbarium of ferns. The publishers will also have the assistance of Mr. J. Robinson, well known as a Fern specialist. Mr. Geo. E. Davenport and Mr. Chas. E. Faxon, of Boston, Mrs. Cooper of Santa Barbara, Cal., and others in various parts of the country, have kindly offered their assistance.

Hon. J. Warren Merrill, widely known as having the largest and most valuable collection of American Ferns in cultivation, has very liberally offered living specimens from any of his plants to be used in making the drawings and in coloring.

The Work will be issued in large quarto parts, at intervals of about two months, which is as fast as the plates can be prepared. In the course of the publication of the Work, every species known to inhabit the U. S. will be figured. Each part will contain three elegant 4to plates, colored by Chromo Lithography, giving exact representations of from one to three species each. The paper on which the plates are printed will be the best in the market. It will require about twenty parts to complete the work.

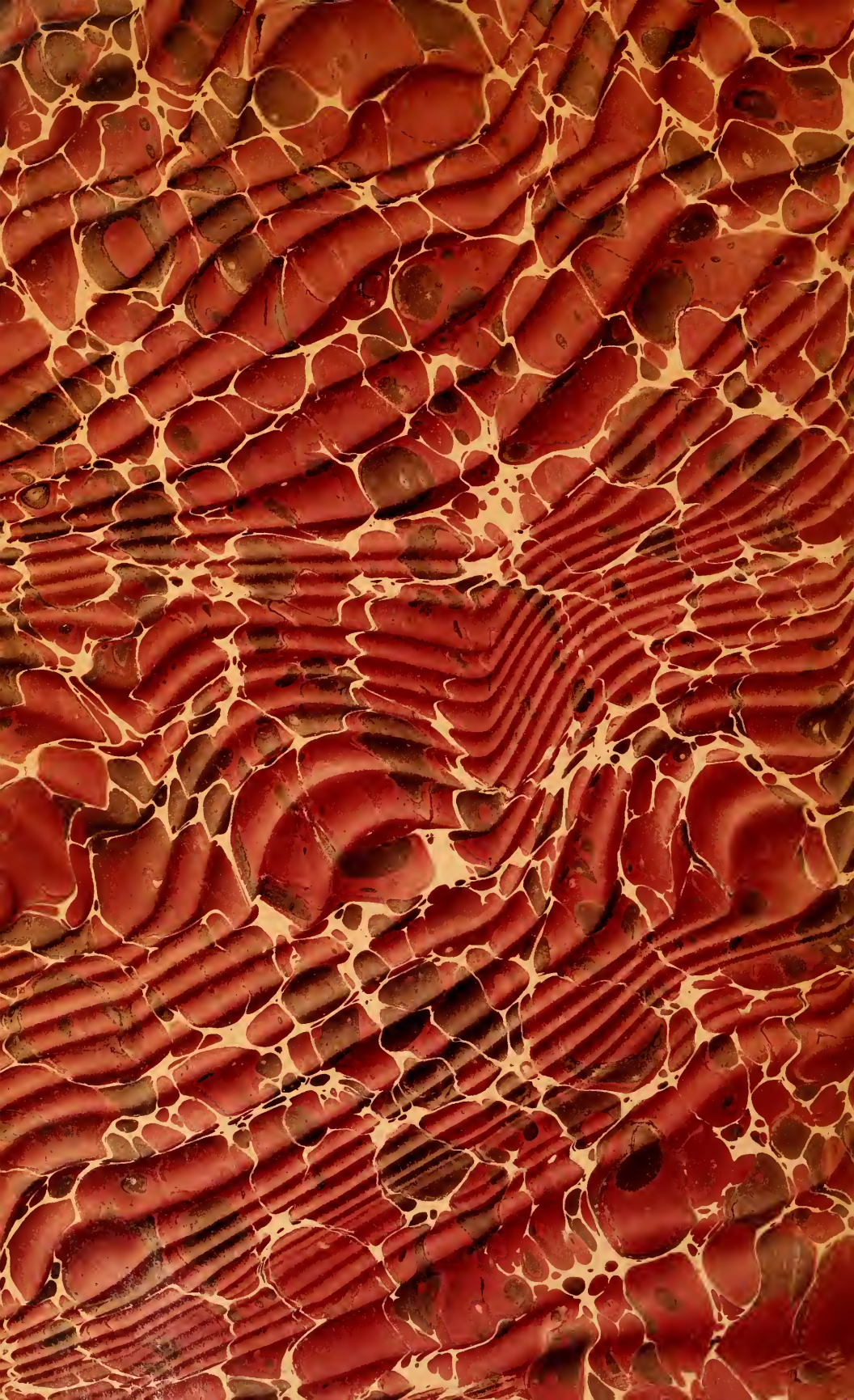
The text will be printed in large beautiful new type by the well known firm of Rand, Avery & Co., on paper-calendered paper, made expressly for the work.

The Subscription price, will be \$1.00 per part, which it is believed, is lower than any work of the same nature and quality yet published.

Botanists, who desire to inspect the work before subscribing, will receive a sample plate and text, by mail upon application.

For the benefit of any young botanists who do not feel able to purchase the Work, the publisher offers an opportunity to obtain a copy, by procuring a few subscribers in their vicinity. A lady can easily obtain four subscribers for the Work among her friends and thus secure a copy for nothing.

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