

NESTS AND EGGS
OF
BIRDS OF THE UNITED STATES.



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Sincerely Yours,
Thomas G. Gentry.

NESTS AND EGGS

BIRDS OF THE UNITED STATES.

ILLUSTRATED



By THOMAS G. GENTRY,

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PREFACE.

FOR many years we have been of opinion that a work on NESTS AND EGGS, in life-like colors, would be a valuable acquisition to ornithological science, and meet a want that has long been felt to exist. After vainly hoping that some more competent person than the writer would see the necessity therefor, and take a step in the right direction, we were beginning to despair of any such enterprise being undertaken, when, to our surprise, two publications, partially of this character, loomed up in the literary horizon, one hailing from Ohio, and the other from New England. The former, a local publication, seemed of such high pecuniary value as to be beyond the public reach; while the latter, fully up to it in merit of learning, but illustrating merely the eggs, was destined to failure from the first, and, after running a brief career, has at last ceased to exist. Under these circumstances we embarked in the project, in the confident expectation that our ornithological friends and others would give us encouraging support.

The utter impracticability and, we may say, impossibility of any scheme looking to the delineations of all the nests built by the many hundred birds belonging to our country, in the small space of a single volume, was obvious at the outset. All that we could promise our conscience were the figures of representative forms, and this we have kept in

view, and endeavored to fulfil. To future series, if there should be a demand, we will leave the continuation of the subject, when, not being necessarily restricted to family types, we shall labor to invest the Plates with greater charms and attractiveness in the shape of rarer and more magnificent birds.

Upon cursory examination it will readily be perceived that the work has considerably deviated from its original aim. This change occurred shortly after the issuance of the third number, and in obedience to the popular demand, which insisted that the birds should be given with the nests, thereby entailing increased expense, but adding, it cannot be denied, largely to the beauty, utility and value of the publication. This innovation, dictated by good sense and sound knowledge, necessitated further expenditures of capital. In order that an air of uniformity should pervade the entire work, it was very essential that extra plates of birds should be furnished for the early drawings of nests. Determined that the work should be first class in every respect, and well worthy of patronage, the publisher spared not the expense, and once more exceeded the promises made to his patrons.

Especial pains have been taken with the text. The aim of the author has been to present a short, plain and detailed account of the habits of each species described, from the time of its arrival, if a migrant, until its retirement to the South in the fall. In the case of resident birds, he has been particular to give their winter history in addition to that of the breeding season, in the same orderly and continuous manner as is apparent in his descriptions of their more migratory brethren. The presentation of the events in regular sequence, if great care be not taken, is sure to lead to monotony. This he has tried to avoid, but how well he has succeeded, he defers to the judgment of his readers.

Throughout the work, considerable prominence has been given to those interesting and curious phases of bird-life which are present during the breeding-period, and which have been the principal study of the author for many years. Extraneous matter has been sedulously omitted, and nothing permitted to appear about which there could be serious doubts of accuracy. While he has drawn largely and, in very many instances, almost entirely from his own observations, recorded and unrecorded, for material, he has not hesitated to consult the writings of others, or to avail himself of the statements of reliable correspondents, where his own knowledge has been incomplete or defective. Wilson, Audubon, Nuttall, Brewer, although dead, have spoken to him through their valuable works, and yielded up their varied observations for occasional selections. Among living authors, to Baird, Coues, Ridgway, Allen, Samuels, Cory and Minot, and others less eminent, he has had access through their writings, and he now takes this opportunity of returning to them his grateful acknowledgments.

In the arrangement of the details of the Plates, the artist has been subject to the suggestions and dictations of the author, the constant aim of the latter being to secure accuracy in this respect, as well as the greatest variety possible. The typography, for clearness, sharpness, regularity and finish, has rarely been surpassed by that of any other work. Much praise is due the enterprising publisher for his liberality and public-spiritedness.

With these few preliminary remarks, we send this beautiful book out into the world, trusting that it may meet with a cordial reception everywhere. If it be the means of acquainting man with the lovable manners and interesting domestic relations of a few, though not all, of our feathered friends, and of restraining our youth from nest-destroying propensities

by offering them pictures of the homes of birds for study and contemplation, and thus abate the evil; or if it add but one new fact to the author's favorite science of ornithology, or benefit it in any way whatever, he will rest satisfied, and feel that he has not labored in vain.

THOMAS G. GENTRY.

GERMANTOWN, PHILADELPHIA, PA.,
May, 1882.

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KINGBIRD

CEDAR-BIRDS.



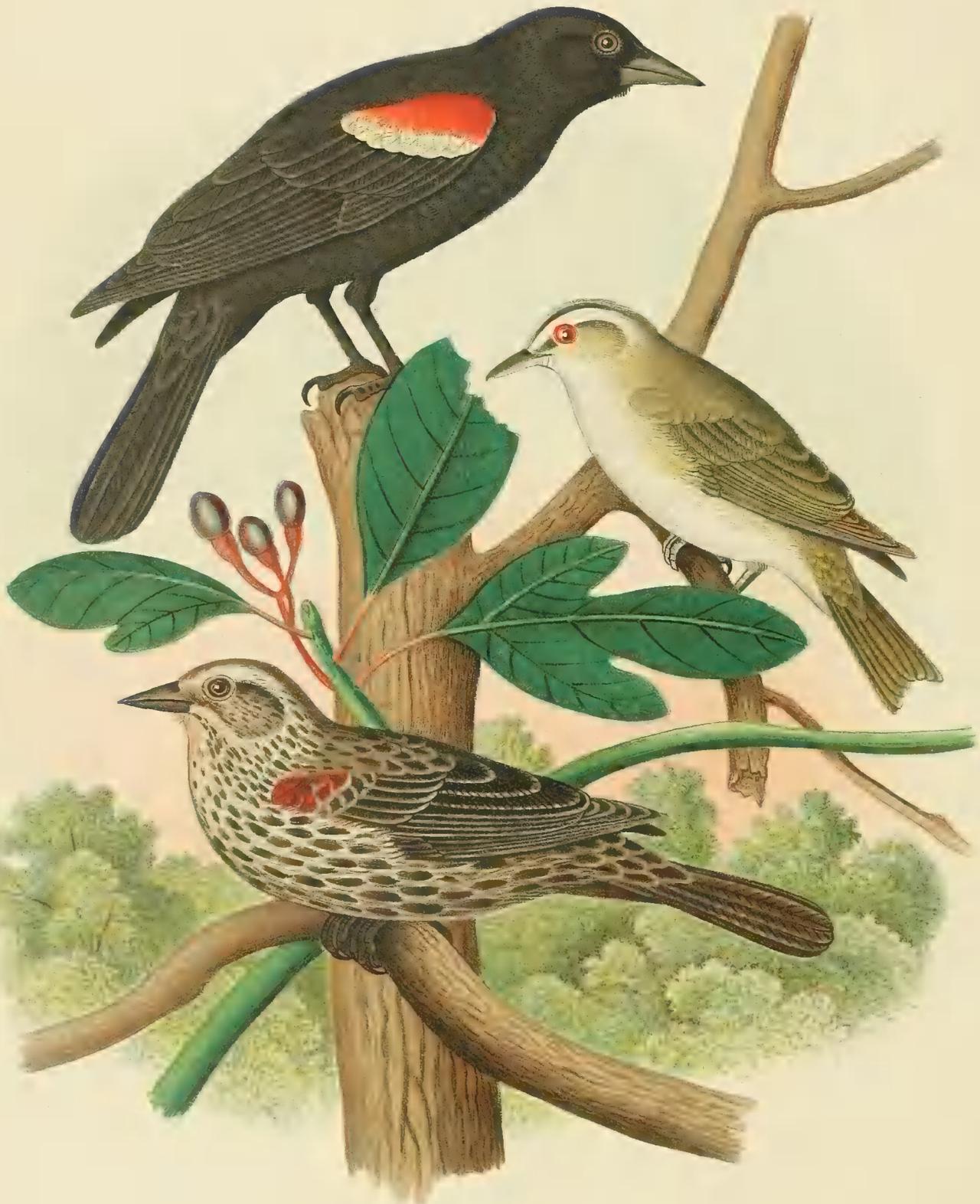
CATBIRD

TOWHEE BUNTINGS.



WOOD PEWEE

ORCHARD ORIOLES



REDWING BLACKBIRDS

RED-EYED VIREO



CEDEAR-BIRD

THE
NESTS AND EGGS
OF
Birds of the United States.

PLATE I.

AMPELIS CEDRORUM, SCLATER.

Cedar-Bird.

THE CEDAR-BIRD, though mainly a denizen of the wooded regions of North America, and occasionally of cultivated fields and orchards, has been known to nest from Florida to the Red River country. But, wherever found during the non-breeding period, it is the same gregarious, nomadic species.

After the beginning of October, the search for food so completely engrosses the attention, that it is not until the latter part of May, or the beginning of June, that the flocks break up into pairs.

Nidification now becomes the all-absorbing passion, and the birds after mating, which business is generally conducted in a quiet and unostentatious manner, repair to the woods or hedges in quest of a suitable shrub or tree in which to establish a home. This matter requires considerable labor and care; and, ordinarily, no little time is devoted thereto.

The place usually selected, is a retired and unfrequented thicket or nook; or occasionally, an orchard in close proximity to an occupied dwelling. When the former, the cedar, with its tall, nearly vertical

branches and dark green foliage, is, of all our forest-trees, pre-eminently fitted to receive, support, and conceal the nest; when the latter, the apple is accorded the preference.

Having chosen the locality, the birds waste no time in idleness, but apply themselves to the task of building, with the most commendable zeal and perseverance. Each bird has its allotted part of the work to perform: the duty of the male being to collect the materials; that of the female, to shape and fix them in their proper places. Occasionally the latter, when not thus occupied, accompanies her partner in his frequent journeys, and assists in collecting and bringing in his load. The time employed in the labor of construction, making due allowances for recreation and rest, is between five and six days.

In form, the typical structure is nearly hemispherical, and presents a rather neat and elegant appearance. It is compactly made, and, in the generality of instances, exhibits anything but bulkiness. In position, it rests upon the horizontal limb of a tree, or is wedged in among several upward-growing branchlets, at elevations varying from three to twenty feet.

During the period of nidification, almost any substance, having the requisite flexibility and strength, is in demand; consequently, the materials of composition are as varied as they are numerous, and depend in a great measure upon the *environment*. In thickets, small twigs, stems of grasses, dried leaves, lichens, and the tendrils of the vine, make up the bulk of the structure; but in places situated in close proximity to houses, wrapping-twine, strips of rags, and such other substances as are ready prepared and accessible, are utilized. The lining is generally fine roots of grasses, bits of string, flower-stalks, lichens and tendrils. The cavity seldom exceeds three inches in width, and scarcely two and a half in depth; while the external diameter varies from four and a half inches to five; and the height, from two and a half to three.

The specimen which we have figured, and which may be regarded as typical in its character, was obtained in the vicinity of Bridgeton, N. J., in the summer of 1878, and was neatly erected upon the hori-

zontal branch of an oak, and held in position by two nearly vertical branches of the same tree. It was placed at a height of nearly twenty feet above the ground, and consists almost exclusively of fibres of the long greenish-yellow lichens which constitute so conspicuous a feature of the trees of that locality, in their sylvan retreats. Externally, besides a few fine rootlets, there is noticeable much white wrapping-string, which relieves, in a great degree, the monotony of the fabric. Internally, there is the same green moss-like lichen. The cavity is beautifully symmetrical, and measures about three inches in width, and nearly two inches in depth. The external diameter is five inches, and the height, two inches. The nest is most elaborately finished, and is evidently the workmanship of superior mechanics. The Plate represents it three-fourths the natural size, placed upon an apple branch.

Among other fabrics which the writer possesses, is one which was obtained in June, 1871, in Germantown, Pa., saddled upon the horizontal branch of an apple-tree. It is rather firmly and compactly built, and is composed, exteriorly, of stems of the common timothy, fine rootlets, dried leaves of the mullein, and green leaves of the apple, which are held together by broad strips of colored rags, bits of lint, and divers strings, the latter constituting a prominent feature. Interiorly, there is a promiscuous lining of flower-bearing stems, fragments of strings, fine roots of grasses, fibres of linen, and tendrils of some species of cucurbitaceous plant. The nest is about four and a half inches in external diameter, and nearly three in height. The cavity is three inches wide, and two and a half inches deep in the middle.

This last model of architecture, as already remarked, was placed upon the limb of an apple-tree, near its extremity, and barely at a distance of fifteen paces from an occupied dwelling. The rags, etc., which form such a prominent feature of the outside, were purposely furnished by an inmate of the house. When first proffered, it was thought that the birds would be slow to perceive the use to which they could be put, but not so, for they entered into the idea with the most praiseworthy alacrity. And even after the materials were no longer supplied, they would repeatedly fly to the

bush upon which they had been laid, as though soliciting a continuance of such favors.

The birds having constructed their home, the female commences on the day following its completion to deposit her complement of eggs. The time thus spent varies from four to six days, and depends upon the number which is to constitute a setting. Oviposition being accomplished, incubation follows, sometimes immediately on the deposit of the last egg, but, not generally, until the succeeding day. This is the exclusive task of the female for nearly fourteen consecutive days. Although the male does not assist in the labor, yet he shows himself to be a very kind and attentive husband, by providing food for his partner, and keeping a vigilant lookout for approaching enemies. This he signals by a low single note, which the female quickly acknowledges, and instantly the two timid creatures beat a hasty retreat to an adjoining tree or shrub beyond the reach of peril, where they become passive spectators of the demolition of their home, with all its precious burden.

The eggs, which are from four to six in number, resemble those of the Waxwing, but differ in size, being somewhat smaller. Their ground-color passes from a light slate to a dark stone-color. The markings are chiefly blotches of dark purplish-brown, lighter shades of the same color, and penumbrae of light purple, either by themselves, or surrounding the darker spots. In form, they are either oblong-oval, or nearly spherical; and in length, they vary from .80 to .90 of an inch, and in breadth, from .56 to .70 of an inch.



WOOD PEWEE.

PLATE II.

CONTOPUS VIRENS, CABANIS.

Wood Pewee.

THE WOOD PEWEE, like most of its congeners, has a somewhat extended habitat, ranging from the Atlantic westward to the Plains, and from Texas to New Brunswick. It visits the United States about the 15th of April, and from this time until its departure for Guatemala in October, it is principally an occupant of high-wooded regions with a scanty growth of underbrush, and timbered river-bottoms.

But as the season advances, and the amatory feelings become awakened, these shady retreats are deserted by a few individuals of more venturesome disposition, and a temporary abiding-place is sought for amid the stirring scenes of active farm-life. This generally occurs during the last of May or the beginning of June, and is the prelude to the more important act of mating, which follows.

The assumption of matrimonial relations, however, is not a matter that is entered into without more or less consideration. Occasionally, much time is spent in its preparation. This is presumably the case when a young female is courted by some venerable male. But when an apparently experienced individual is the object of his devotion, the state of things is different. His advances are then either encouraged and reciprocated, or they are declined, and the disappointed suitor compelled to seek a partner elsewhere. It is probable, moreover, that the same birds pair together on each return of the breeding-season, unless prevented by death, or some other of the numerous vicissitudes of life.

The ceremony of mating being over—which business is ordinarily of short continuance, seldom lasting for a greater period than two days—

the newly-wedded pair now set out to discover a suitable place for the building of a home. This is a matter of considerable moment, often requiring the performance of long and extended tours of observation and exploration. These reconnoissances generally last for a week, but eventually result in the choice of a locality well adapted, as far as the essential conditions of shelter and security are concerned, to become the depository of a nest. The site generally chosen for this important purpose is a tall open woods with a preponderance of ash or oak trees; but where a time-honored orchard is the recipient of this favor, which is sometimes the case, the apple, on account of the many advantages which it possesses, is preferred above all other fruit-trees.

The site being mutually agreed upon, the happy pair proceed with all possible dispatch and diligence to construct a domicile: the male to collect and bring in the necessary materials; the female, to fix them in their proper places, and also to give shape and symmetry to the structure. The time devoted to this work varies with the industry of the builders, the style of the nest, and the character of the neighborhood. But, where the birds are laboring under the most favorable circumstances, the task is easily accomplished in five days.

This admirable piece of bird-architecture, which rivals in beauty and symmetry the nest of our little Ruby-throated Humming-bird, is either saddled upon a living or dead limb that is horizontal and lichen-clad, or else upon the crotch of a bifurcated branch, and is placed above the ground at elevations varying from five to thirty feet. According to Nuttall, "the body of the fabric" occasionally consists of "wiry grass or root fibres;" but we have yet to meet with a nest with "*small branching lichens* held together with cobwebs and caterpillars' silk, moistened with saliva," as that author remarks. In a structure before us, which is typical in its character, small strips of inner bark plucked from trees of chestnut and oak, bits of tow, and fragments of wool, circularly arranged and compactly pressed together, are the prevailing constituents. Externally, it is closely invested with the bluish-gray crustaceous lichens which are so plentiful

upon the trunks of certain trees, and also upon fence-rails. In diameter, it measures three and a half inches; in height, one and a half inches. The width of the cavity is about two inches; the depth in the centre, three-fourths of an inch.

The most beautiful fabric, as well as the most compactly built, which we have seen, was obtained in the spring of 1876, not far from Germantown, Pa. It was placed upon a horizontal branch of an apple-tree, in close proximity to a farm-house. Externally, it is thickly covered with *bluish-gray crustaceous lichens*, which are held in place by a few cobwebs, and fragments of the silk of caterpillars. The base consists of dried stems of grasses, and on these is reared a neat and cosy superstructure composed of the inner fibres of the wild and cultivated species of the vine, and a slight sprinkling of wool. These materials are variously interwoven, and arranged around the margin so as to form a cavity. The dimensions of this nest are as follows: External diameter, three and a half inches; height, one and a half inches; width of cavity, two inches; depth in the centre, three-fourths of an inch. In the Plate it is represented the natural size—built upon an oak branch.

In the details of form and dimensions, this nest differs immaterially from specimens which we have met with and seen from other localities. But wherever obtained, they will always be found to bear a very close resemblance to one another, differing chiefly in the character of the articles which constitute the inner arrangement. We will merely mention one example which was taken by Mr. Welch, in Lynn, Mass., and which will give our readers some faint conception of the extent to which variation is often carried. This structure was placed upon a dead limb of a forest-tree. Its walls were composed of small dry stems and vegetable down, finely interwoven, and covered on the outside with lichens which were cemented to it by a viscid secretion that was apparently supplied by the builders. The base was somewhat flattened, much thinner than the walls, and composed of finer materials. The external diameter was three inches, and the height one and a half inches;

the cavity, two and a half inches at the rim, and the central depth about one inch.

Having finished their home, only a day or so intervenes when oviposition becomes the controlling instinct. The female now proceeds to deposit her complement of four eggs, which she does on consecutive days, at the rate of a single egg daily. This is followed, on the day succeeding the last deposit, by the trying duty of incubation. Upon the female devolves this arduous and irksome labor. For about eleven days she is thus engaged, until her patience is finally crowned with success. Although the male takes no part in this duty, yet he contributes his share to the prosperity of the undertaking, by guarding his partner from danger, and supplying her with the essential articles of food. When his home is assailed by feathered enemies, if they are not more than a match for his strength, he is not slow to wreak instant vengeance upon them. But in the case of human depredators, where effort would be futile, no exertion is put forth to cause desistance from any contemplated assault, save a little scolding.

The eggs are four in number, and resemble in configuration those of the common Phœbe-Bird. They are obtuse at one extremity, and slightly tapering at the other. The ground is a rich cream-color, and is diversified about the larger end with a wreath of purple and lilac spots, which are large, and occasionally confluent. In length, they measure .76 of an inch, and in width .54. It is pretty well established that but a single set is deposited by any given pair of birds in a season. Nests with eggs, however, have been taken during the last of July, or the beginning of August; but whether a second laying or not, we cannot say—possibly the work of birds whose early efforts had been frustrated.



CATBIRD

PLATE III.

MIMUS CAROLINENSIS, GRAY.

Cat-Bird.

THE CAT-BIRD is one of the most common and conspicuous of all our feathered visitants. It reaches the United States from its Central American home, on or about the 15th of April, and thence diffuses itself over the whole country, northward as far as the Saskatchewan, and westward to the Rocky Mountains.

Immediately upon its arrival, it seeks the shelter of dense woods, or the security of waste fields and bramble-ridden hedges. In such situations, among the dead leaves that lie scattered upon the ground, it gleans a well-earned subsistence. But later, when the leaves begin to appear, and with them an abundance of insect-life, these retreats are deserted by a few venturesome individuals, and an abiding-place is sought amid the quiet scenes of rural gardens.

A week or ten days, however, elapse before the sexes are ready to assume conjugal relations. Being vigorous feeders, and living in the midst of plenty, they are seemingly all unconscious of the better and nobler instincts of their being. But feeding eventually satisfies appetite, and conduces to the awakening of the amatory forces from their hitherto dormant condition. The males, by their altered demeanor, are the first to show signs of change. We no longer observe them engaged in the pursuit of the juicy caterpillar, or the gilded butterfly, with the same energy and zest as before. Their aims are higher, their aspirations loftier. Perched upon a small tree, or screened from observation by dense clumps of bushes, with heads bent skyward, they startle the echoes of woodland and valley with their strange, ecstatic music. But the

females still continue feeding, as though utterly oblivious of the concert which is intended for their benefit. After a day or two thus spent, they become less absorbed in such matters, yield to the potency of song, and coyly emerge from obscurity to welcome and encourage their would-be suitors. The period of courtship is short, and unattended by any of those peculiar antics which characterize many species at this time.

In the Middle and Western States mating occasionally commences as early as the 25th of April, when the season is remarkably forward, but generally about the first of May—seldom later. In the Territories, from some unknown cause, it is delayed to a later period. Very little time is wasted after this event has occurred, in celebrating the occasion, for the pair soon begin to look for a proper nesting-place. This is a labor not entered into without previous care and deliberation. Ordinarily a week or ten days are spent in making a choice of locality. The site selected is usually a brier, cedar, thorn-apple, or a bush in the midst of a grove or hedge, seldom remote from a settlement. The nest is sometimes placed in a maple, and when such is the case, the birds take the precaution to build it pretty well up. During the summer of 1880, my son discovered one in a crotch of the red maple, at an elevation of thirty feet from the ground. This, however, is exceptional, as the height usually ranges from three to about twelve feet. It sometimes happens that an injudicious selection of locality has been made, and a nest has been nearly completed before the mistake is discovered. In this predicament, instead of “making the best of a bad bargain,” the birds ignore the site for another better suited to their purposes. The situation being 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 home. In some instances, particularly during moonlit nights, the work has been carried on long after twilight has faded from the earth. Unlike the case of the Cedar-Bird, which we have already cited, there does not seem to be any regular division of labor. Both birds collect the materials, as well as arrange them in the nest. When a suitable article has been found, the finder 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 yards of the nest, when she rapidly flies thither, and having disposed of her burden, goes off in quest of others. Where accustomed to man, the Cat-Bird does not seem to be much annoyed by his presence.

Nidification ordinarily commences about the 18th of May. The nest is placed in various positions—sometimes on a horizontal limb, occasionally in a crotch, but generally among the branches of the bush upon which it reposes. The materials of composition are as varied as they are numerous. In thickets, and also in places removed from human habitations, a platform of dried leaves, slender sticks, or weeds is used as a basis, on which is reared a superstructure of small twigs, fine roots, herbaceous plants, bits of straws, pine needles, and other materials which are common to such situations. But when a nest is built in close proximity to the home of man, bits of string, strands of silk or thread, and bunches of cotton or wool are appropriated, and made to do excellent service.

From the foregoing remarks it is obvious that nests vary according to changes in the *environment*. Hence, what is typical in one locality might be deemed but a deviation from the normal form, when compared with a nest of the same species found in an entirely different neighborhood, and *vice versa*. Mr. Ingersoll describes a nest found near Norwich, Connecticut, which was suspended between two small bushes in such a manner that it had no other support than that afforded by a slender spray from each bush; but the large mass of crooked sticks below offered so many hooked ends and projections that the nest was very secure. The writer describes elsewhere a nest that was carelessly made, and bearing a close resemblance to the structure of the Maryland Yellow-throat, which he supposed to be the work of young or indolent birds. Another, on the contrary, showed superior 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 lichens, etc.,

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

The nest which we have figured in the Plate was found in the vicinity of Philadelphia, Pa., in the summer of 1876. It is represented the usual size, and shown in its natural position upon a cluster of blackberry branches. Exteriorly, it is formed of wrapping string, bits of thread, fine roots, cotton ravelings, a few grayish lichens, and bunches of discolored raw cotton in great quantities. Interiorly, there is a lining of slender grass stems, which monotony is relieved in a measure by a piece of lamp-wick. The external diameter is five inches, and the height about two and a half. The cavity is three and a half inches, and the depth an inch and a half.

Such facts as are detailed above, with innumerable others of a similar nature that might be adduced, most abundantly and conclusively prove that birds are not the dull, senseless, routine-loving creatures which those who have some pre-conceived opinion to uphold, or cherished theory to sustain, are wont to argue. Though many of their actions are purely instinctive or mechanical, yet evidence is not wanting to show that they are gifted with a faculty similar in character to that possessed by man, but differing in degree. A thousand circumstances justify the belief that they often reason *a priori* from cause to consequences, providently managing with a constant aim for future comfort, convenience and necessity. Instinct is always the same thing, never advancing, never retrograding. Reason tends to improvement, always seeking a higher plane of existence. To say that changes in nest-building imply a *change of instinct*, is to perplex the understanding by a perversion of language; but to ascribe them to the operations of reason, influenced by motives, seems to be the most rational view to take of the matter.

The nest being completed, which is usually the case in about five days from the time of starting, a brief season elapses before any eggs are laid. In the Northern States this happens about the third week of May, and then only one is deposited each day, for four or five days. The

necessary complement being laid, the female immediately takes the nest, and incubation follows. This is her exclusive task for a period of twelve or thirteen days. While she is thus engaged, the male stations himself close-by the nest, only departing therefrom in quest of food for himself and partner. Should an enemy approach, he assails the intruder with commendable fearlessness and boldness. Various snakes, particularly the black-snake, are their inveterate foes. When an attack is made by one of these wily creatures, both parents, heedless of danger, often fly so close to the assailant as to lose their lives in efforts to prevent the nest being ravished and despoiled. But in the case of human depredators, knowing that resistance would be futile, they seek to deter them from any contemplated sacrilege by the most discordant cries and frantic gestures.

The young are objects of tenderest solicitude. Both parents vie with each other in rendering them every needed service. While one is absent from home in search of food for their rapacious appetites, the other is guarding the nest and its precious charges with the most jealous care. Earthworms, spiders, flies, caterpillars of non-irritating properties, together with such berries as the season affords, are collected in vast quantities, and fed to these helpless creatures. But as they increase in size and age, other articles are added to their voluminous bill of fare. In about twelve days from the time of hatching, the young are able to quit the nest, and in six days more, are ready to be initiated into the mysteries of flight. This important duty devolves exclusively upon the male parent.

The eggs are oval in form, of a dark emerald green color, very highly polished, and measure .97 of an inch in length, and .68 in width. There is small chance of confounding this with any other American bird's eggs—certainly after a specimen has been once seen. Dr. Abbott, as quoted by Ernest Ingersoll, once discovered a nest, at Trenton, N. J., that contained purely white eggs, which hatched in due time into perfect young. Similar instances are known in the case of other species laying

dark eggs, where one or two white examples have been found among others of the normal color in the same nest-complement. But a single brood is positively known to be raised, although cases have come under our observation of nests with fresh eggs as late as the 15th of August—possibly the work of birds whose early efforts had been frustrated by enemies, or by some accident.



EDWARD CHICHE.

PLATE IV.

ICTERUS SPURIUS, BONAPARTE.

Orchard Oriole.

THE ORCHARD ORIOLE is quite abundant throughout most of the United States, from the Atlantic to the Missouri Valley, and on the southwest to the valley of the Rio Grande. Individuals have been met with by Mr. J. A. Allen as far west as the base of the Rocky Mountains, in Colorado, the extreme limit of its western range. It is probable that it breeds throughout the entire area of its distribution—sparingly, however, in New England, according to eminent authority; but quite freely in the Central States, from New York to South Carolina, and thence south-west to Texas.

The period of its arrival in the United States from the genial clime of Guatemala, where it winters, has been fixed by Mr. Dresser, who has carefully studied its nesting-habits in Texas, as early as the first or second week of April. But, farther north, its presence is not observed before the last week of April, or the beginning of May.

Unlike the Warblers and Thrushes, which prefer secluded localities, the subject of our sketch delights in cultivated grounds, particularly where the apple and the pear abound. Here it takes up its quarters, accomplishes the object of its mission, and thence retires to its distant winter-home. Occasionally, a few individuals are to be found in waste grounds, dense thickets, or along the borders of woods, but such cases are exceptional, and conditioned only by the close proximity of some time-honored orchard.

Mating does not occur until the 15th of May, more than two weeks after the advent of the sexes. But from the first, the male, who precedes

his partner by some two or three days, may be heard in the early morning, and quite as frequently at the close of the day, from the tall tree-tops, chanting his wanton rhapsodies, for a half-hour at a time, utterly unmindful of passers-by. His roundelay, which is undoubtedly the free and happy expression of a heart actuated by the generous impulses of love, though composed of rather shrill and sprightly notes, and uttered with considerable agitation, is quite as pleasing as that of his nearest kin, the Baltimore Oriole. Clear, distinct and resonant, it thrills the air around, and is at last borne to the ears of some lonely female, tired with travel, and unblest by a partner. The life of the Orchard Oriole seems to be one of joyous song. Although fond of a dainty tid-bit, in the form of a juicy worm, he is not given to gormandizing; he only eats from sheer necessity; for, after having satisfied the demands of Nature, he resumes his soul-stirring strains, to the delight of man and bird.

The sexes having come together in a wise and business-like way, with little or none of the bluster that is customary on such occasions, a conference ensues, which results in a temporary separation for mutual good; one bird going in one direction, and the other in an entirely opposite course. The selection of a suitable spot for a home is the *vera causa* of this divergence. This is evidently a labor of little moment, as, ordinarily, but a day or two is thus spent. It must not be inferred, however, that the birds are not particular as to place. A large experience has convinced us that great care and deliberation are then exercised. Many a tree is visited, and often the same tree again and again, before a decision is reached; and when at last a suitable site has been chosen, the happy pair set to work with praiseworthy diligence to construct a home.

As previously remarked, an apple- or a pear-tree is generally chosen for nesting purposes. This is especially the case, as far as we are able to ascertain, in the Central and Western States; but in Texas, the nest is suspended from the upper branches of a mesquite-tree. In the North, the common red maple, and several species of coniferous trees, are occasionally chosen, from some peculiar advantages which they possess. A nest

in the writer's collection, which was built in the summit of a common swamp maple, occupies a very anomalous position. It is placed within a crotch formed by four nearly upright, slightly divergent branches, and is secured by long, flexible grasses from the nest, wrapped tightly around the twigs. Another specimen, from Germantown, Pa., is made to dangle from the end of a pine-branch. A peculiarity about the latter nest is the strained position which the four branches to which it is fastened are made to assume. The main twig, which is also the thickest (being about three-fourths of an inch in diameter) shows evidence of having been forced from a horizontal position to one that is almost vertical. The latter is really the best authenticated case we have seen of the truly pensile style of nest. In most instances these structures are but partially suspended, being supported from beneath by projecting branches.

In five or six days from the time of the assumption of matrimonial relations, the nest is started, and through the united efforts of both birds for the period of a week, is brought to completion. Although nidification usually commences about the 20th of May, from some inexplicable cause or other, this essential business is often deferred until the middle of June and, occasionally, as late as the beginning of August. But in the latter case, the birds are undoubtedly prevented by various accidents from carrying out their designs earlier in the season. In the building of a home, either the male collects the materials, and the female weaves them into a nest, or the converse is the case.

There is little variety noticeable in the materials that compose the nest. The generality of domiciles which we have seen from Texas, Georgia, Florida, New Jersey, Pennsylvania, and several of the Western States, have no lining, but are entirely constituted of one substance—a flexible kind of grass or reed. In a few cases we have discovered a slight lining of vegetable wool, doubtless plucked from the young and developing fronds of various species of ferns. Bits of yarn, down of seeds, and animal wool, have been mentioned by various observers as occasional linings.

Such is the homogeneity of its texture, that once seen and recognized, it can never be forgotten or confounded. A nest from Texas is the exact counterpart of a similar structure from Pennsylvania, or of one from Michigan. The abundance of the particular species of grass out of which these birds construct their homes, and the facility with which it is obtainable in localities remote from each other, conspire to produce the resemblances which are found to exist.

Plate IV exhibits a nest of this species which was obtained in the vicinity of Germantown, Pa., during the summer of 1880. It was suspended from the branches of a pear-tree, in the manner shown in the drawing, at an elevation of forty feet from the ground. It is built exteriorly of a peculiar kind of long, tough and flexible grass, which is common in Pennsylvania. The material is woven through and through in a very wonderful manner, and with as much neatness and intricacy as if actually done by a needle. It is hemispherical in shape, and open at the top. The external diameter is four inches, and height two and a half inches; the cavity is two and a half inches wide, and two and three-quarters in depth. The color of the outside is yellow, while that of the inside is a deep brownish-red.

Another specimen which the writer possesses from the same locality, is built of the same material, more highly colored interiorly, but less so exteriorly. It is pouch-shaped, and measures two and a half inches in internal diameter, and four and a half inches in depth. The length is five inches, and the external diameter three inches. When in position, this nest was so placed that the short spurs of the pear upon which it was built, with their beautiful green wreaths of leaves, met and roofed it over, thus constituting a natural covering for the protection of the young during the prevalence of inclement weather.

Dr. Brewer describes a nest taken by Mr. Brandigee in Berlin, Conn. This structure was elaborately and skilfully woven of long green blades of grass, lined on the inside with bits of yarn, animal wool, and a woolly substance of purely vegetable origin. In external diameter and height it

measured four inches; in depth, three inches, and in internal diameter three and a half inches—being widest in the middle. Specimens, similarly colored, have been frequently observed in Pennsylvania.

By far the most remarkable structure which we have seen is the one we are about to describe. This domicile was built in a red or swamp maple, at an elevation of nearly thirty feet from the ground. It is a double nest, composed entirely of long, flexible, yellow grasses, and securely fastened between three nearly vertical branches, in a linear direction. The main nest is inversely sub-conical, four inches high, with an external diameter of three and a half inches in the middle, and four at the top. The diameter of the cavity is three inches, and the depth two and three-fourths inches. The smaller is joined to the first by a continuation of the grasses of the latter, is somewhat similarly shaped, but less compact in structure. The height is one and three-fourths inches, external diameter in the long direction three and one-fourth inches, and in the short, but two inches. The depth of the cavity is one and three-fourths inches, and the width, one and a half inches. In one side there is a circular hole one inch in diameter. Various opinions have been ventured as to the object of this additional structure. Some have contended that it was never intended for occupancy or ornament, but is simply a fabric which the authors have failed to complete. But its completeness and finish operate against such a theory. The writer, as well as others who have witnessed this curious specimen of mechanism, are convinced that it was erected for a special purpose—namely, the accommodation of either parent while the other is sitting. The opening alluded to, served for the head of the non-sitting bird, who, from his position, looking away from the main building, could detect the approach of enemies, like a sentry upon an outpost.

The nest being completed, on the following day the female begins to deposit her complement of three or four eggs, at the rate of one egg daily. Incubation now ensues, sometimes on the day of the last deposit, but generally on the morrow. This duty lasts from fourteen to fifteen days, and is wholly the work of the female. While she is thus occupied, the male

stands guard over the nest, or acts the part of a dutiful and affectionate husband, by providing her with the necessary food. Should their home be disturbed by feathered assailants, or by man, the female leaves the nest, and by loud cries and menacing gestures, seeks, with the assistance of her partner, to drive off the intruders. Often the attack is carried on with a boldness and determination that challenge admiration.

The love for offspring is very intense, and manifests itself in unwearied devotion, and the tenderest solicitude. From early morn until dusk, one parent or the other is constantly on the go for appropriate articles of fare. Usually but one is absent at a time on this important business. But the demands for food are so pressing, that both are sometimes compelled to leave home, but only for a short time, and then never beyond seeing distance of the nest. At first the young are fed upon smooth caterpillars, aphides, spiders, ants, butterflies, and dipterous insects; but as they mature, small beetles and other hard-shelled articulates are added to their varied and extensive *menu*. At the age of fifteen days, they quit the nest, receive instructions in aerial navigation under the tutorage of the paternal head, and in ten days more, are prepared to shift for themselves.

One peculiarity of this species must have struck the attention of every careful observer of its habits; that is, its remarkable sociability. Audubon cites a case where no less than nine pairs were found breeding in the same enclosure. We have known instances where as many as five nests, all occupied, were crowded in the same orchard, within a short distance of each other. The most perfect good feeling and harmony prevailed in this little colony, the birds mingling together with the freedom and ease of inhabitants of the best regulated human communities.

The eggs are oblong-oval in form, pointed at one extremity, and marked with pale purple blotches and a few deep dark purplish-brown dashes upon a light bluish-white background. Specimens from Washington measure .85 by .62 of an inch; from New Mexico, .79 by .54; and from Pennsylvania, .88 by .58.



KINGFISHER

PLATE V.

TYRANNUS CAROLINENSIS, BAIRD.

Kingbird.

THE KINGBIRD, or BEE MARTIN, has an extensive range, being found during the summer throughout the continent of North America, from Texas and Florida in the south, as far as the 57th parallel of north latitude. Westward, north of the 44th parallel, it ranges from the Atlantic seaboard to Oregon and Washington on the shores of the Pacific.

Its arrival in the United States from Mexico, Central and South America, and tropical Cuba, where it winters, generally occurs during the early part of April. Having taken the step, the birds are not long in spreading themselves over their immense breeding-grounds, which have been found to be co-extensive with the whole territory over which they range. They reach the Middle Atlantic States from the 20th of April to the first of May; the New England, from the first to the 10th of the latter month, and their more northern habitats, not later than the 15th.

Careful observations, carried through a series of years, have convinced us that the appearance of the males always antedates that of the females by a week or ten days. Their advent is unheralded by song, or noisy demonstration, and is as mysterious as their departure. Our knowledge of the fact is mainly furnished by the eye, and not by the ear, which is ordinarily the first organ that apprises us thereof.

Like most of its kin, the Kingbird is not gifted with a fine voice. When it does essay a madrigal, its shrill, unmusical syllables are anything but pleasing and welcome to the cultivated ear. It may be otherwise with beings of its own special class. At all events, his song, if such it can be truly called, has the anticipated effect—namely, that of

calling from her wanderings, the partner, whose presence he is anxiously awaiting in his shady retreat.

Unblessed with the talent of producing sweet and soul-inspiring music, Nature has made amends for her seeming neglect by endowing him with certain mental and spiritual qualities which amply compensate for the want of a melodious voice. A noble, self-sacrificing nature, and a courageous but affectionate disposition, are traits of character which our little friend possesses in a remarkable degree.

Aware of these high qualities, the female, never unduly coy, but innocent, arch and simple, seeks rather than shuns the society of her suitor, almost as soon as she has reached his whereabouts, and proudly but courteously receives his attentions, which, without any show or pretension, she generously reciprocates by consenting to become his companion and helpmeet. Consequently, the season of courtship is comparatively brief.

Mating being accomplished, the newly-made couple, without much ado, and with but little waste of time, start off in quest of a suitable spot for a nest. This appears to be a difficult matter to settle. The pasture-grounds and waste places for which they have all along manifested a strong predilection, are deserted for the more congenial situations to be found about the home of man. Orchards of pear- and apple-trees, or an isolated pear-tree in close proximity to a human dwelling, are now visited. When the former, tree after tree is examined, and the particular advantages of each discussed, before one is found which answers all the requirements. These examinations often continue for a fortnight. The female seems to be the controlling spirit in these transactions.

The nest is generally placed between the forked branches of a pear-tree, although the apple, cherry, osage orange, oak, cottonwood and tulip-tree are sometimes employed for this purpose. Why the pear should be preferred in certain localities above all other trees, it is difficult to divine, unless the density of its foliage, and the short spine-like twigs with which it is armed, afford security from the attacks of rapacious birds and

mischievous boys. Mostly the birds select for building purposes the topmost boughs where the densest foliage abounds, although instances are known to us, through actual observation, where such structures have been found but five feet from the ground. Again, nests have been met with on the borders of deep forests, in situations remote from man, which fact seems to point to the conclusion that the habit of building in orchards has been acquired since the peopling of this country by human beings. The fondness of the Kingbird for the little honey-bee, whose hives are generally placed contiguous to human dwellings, has, doubtless, through the desire to be near such articles of luxury, prompted the change of habitat. This species, like one of its near congeners, occasionally builds upon the timbers of a bridge. Dr. Brewer mentions a case which came under his observation in the summer of 1851. While the doctor was passing over a bridge near the village of Aylesford, N. S., he was startled to see an individual of this species fly from a nest which was built on the projecting end of one of the planks of which the bridge was composed. "So remarkably exposed a position, open to view and on a level with and within a few feet of the highway," says he, "must be quite unusual." One fact which the same distinguished writer mentions, showing that the Kingbird, during the breeding-season, is not always the same ugly, pugnacious little creature which is claimed for him, must not be omitted in this connection. The circumstance to which we refer, occurred in the summer of 1871. A pair of these birds had built a nest in an apple-tree, near the doctor's residence and within four feet of the nest of the Baltimore Oriole, and not more than eight or ten feet from the abode of a couple of Robins, all in the same tree. These three pairs were on evident terms of friendship and good-will. The male Kingbird, from the topmost bough, kept a vigilant lookout for danger, and seemed to have all under his special care, but manifested not the slightest disposition to molest or annoy.

Few species are more careless in the selection of nesting materials. Almost anything of the proper length and requisite degree of flexibility is utilized. Herbaceous stems, leaves of deciduous trees, strips of the inner

bark of the flax, lichens, weeds, wrapping string, carpet rags, patches of cotton or wool, are a few of the many articles which are found on the outside; while slender grasses, fibres of bark, fine rootlets and horse-hairs constitute the inner arrangement.

A typical structure before us is rather loosely built exteriorly, but increases in compactness towards the interior, where the materials are more closely intermingled. The frame-work of this nest is composed of herbaceous stems, chiefly of the wheat and pigweed, large quantities of fibrous bark of a white, satiny lustre, and leaves of the oak, apple, pear, etc. The inside is formed of fine grasses, quite artistically and intricately laid in position. The cavity is beautifully symmetrical, and measures three inches in width, and two and a half in depth. The outside is five inches at the base, but contracts to four and a half at the mouth. The height is about four inches. This nest was obtained in the neighborhood of Chestnut Hill, Pa., June 15th, 1872.

Another structure which the writer obtained in the same locality, only a few yards distant from the foregoing, differs slightly from it in form, but largely in composition. It is built of compressed stems of wheat, numerous and rather large scraps of printed paper, a few herbaceous plants, all closely compacted and curiously intermingled. Within, there is an inner fabric, secured to the former in a neat and substantial manner, and composed of dark stems and leaves of various species of grass, besides a small quantity of fine roots. The cavity is less regular than that of the other, and conspicuously shallow. It measures three inches in diameter and two in depth. The basal diameter is five inches, which is nearly the width at the mouth. The vertical thickness is three and a half inches.

The Plate represents a very beautiful nest which was obtained in Southern New Jersey, in the summer of 1879. It was placed upon a cherry-branch, as shown in the drawing, at an elevation of fifteen feet from the ground. The outside consists of fine lichens, stems of grasses, wrapping string, roots, tassels of the oak and chestnut, and some mosses; the inside, of fine lichens, dried catkins of the oak, but largely of slender

stems and rootlets. The external diameter is four and a half inches, and the thickness about one and three-fourths. The cavity is three inches wide, and one and a half inches deep. In the engraving it is shown the natural size.

Before drawing this part of our subject to a close, we cannot permit the occasion to pass without giving a brief description of one more nest which was obtained in June, 1880. It was placed upon the horizontal limb of an apple-tree, at an elevation of about ten feet from the ground. The peculiarity of this structure is the large number of carpet rags which depend therefrom. In most cases they extend from ten to fourteen inches beyond its lower border, thus contrasting very markedly with the dark stems and rootlets that make up the bulk of the exterior. Was this arrangement the result of blind chance, or were the rags placed there for some special purpose?

The building of a home occupies the birds from four to five days. Did the builders work continuously at it from sunrise to sunset, the period of nidification would be considerably shortened. But such is not the case. They seem to have no regular hours for labor, but only work as it suits their convenience. The duty of the male is to collect the materials; that of the female, to arrange them in suitable places. The nest being completed, scarcely a day passes before the first deposit is made. Subsequent deposits are made on consecutive days until the full complement is reached, when the female on the day following the last extrusion, takes the nest, and continues thereon, with brief intervals of intermission, for a period of thirteen or fourteen days, when her labors are repaid by the appearance of a nest-full of tiny fledglings. While she is thus occupied, the male acts the part of a dutiful and faithful husband, guarding her from danger, and supplying her with the choicest and most savory articles of food. When not foraging, he may be seen upon the topmost bough of the tree upon which the nest is placed, directly above his mate, on the constant lookout for danger. Should an enemy approach, he immediately gives vent to his displeasure by a few shrill twitterings, elevates his crest, and then

gives chase to the intruder, whom he pursues for a considerable distance, all the while darting at him from different positions, and inflicting the severest punishment, in order to teach him the folly of trespassing. Owls, Eagles, Crows, Grakles, Jays, and even the common barnyard Hen, are made to feel the force of his vengeance; but his most implacable enemy is the Purple Martin.

The young are objects of more than ordinary parental solicitude. The most endearing attentions are lavished upon them, and no efforts are spared to render them comfortable and happy. Caterpillars, flies, and other equally tender insects, are brought in great quantities, during the first few days of their existence, to satisfy the demands of their greedy appetites; but as they become larger, beetles and grasshoppers are added to their dietary. When fourteen days old, they quit the nest, but still remain under home influences for a fortnight later, when they are allowed to shift for themselves.

In many particulars the eggs of this species resemble those of the Arkansas Flycatcher, but differ mainly in their somewhat larger size, and more pointed form. They are oval in shape, white in ground-color—except when fresh, when they show a roseate tinge—and beautifully spotted with brown and reddish-brown blotches and markings, which are confluent about the larger extremity in some, and irregularly scattered over the surface in others. They measure from 1.02 to .87 of an inch in length, and from .75 to .72 in width. Specimens from different parts of the country have been examined, and all, without exception, bear a very close resemblance to each other, scarcely differing more than do eggs of the same clutch.



REDWING BLACKBIRD

PLATE VI.

AGELAIUS PHŒNICEUS, VIEILLOT.

Redwing Blackbird.

THE REDWING BLACKBIRD is found throughout North America, from ocean to ocean, and westward to the 57th parallel. From Texas and Florida to the plains of the Saskatchewan, wherever found, it breeds more or less abundantly.

During the winter they congregate in large parties in Southern Virginia, the Carolinas, and all the Gulf States, especially near the sea-coast and among old fields of rice and grain. Occasionally, small flocks are found during the same season about stables and hay-stacks, in the vicinity of Vancouver. But in the Eastern, Middle, Western and Central sections, they are chiefly migrants.

Early in March these large assemblies break up, a part separating in pairs and remaining among the Southern swamps, while the greater portion, the males leading the way, direct their movements northward. Later in April they have re-established themselves in their favorite and accustomed haunts.

On their arrival, the males consort together in high open fields, where their songs may be heard, at regular intervals, from morning until night. At this time they are rather suspicious, and can be approached only by the exercise of great caution. But when the females make their appearance, their attention becomes so absorbed, that they are apparently oblivious of events transpiring around them. The presence of the latter is the signal for redoubled vigor in the line of music. From bush and tree, from ground and fence-rail, and from almost every available place, in loud, clear and

resonant notes, is heard their strange, unmistakable melody, each bird striving to outsing his companions. Ever and anon a half-dozen voices may be heard at the same time, producing a perfect medley of sounds, enough to "split the ears of the very groundlings." The males seem never to weary of singing. It is a remarkable and well-authenticated fact, that during the breeding-period, and even late in September when preparing to migrate, the same sweet but pensive strains are heard.

Nearly three weeks have expired since the advent of the Redwing, and still the sexes remain unmated. This cannot long continue. Already a change is manifest. The males are more musical, while, on the other hand, a spirit of restlessness pervades the females. The latter are now no longer given to feeding as before, but cease from their labors, and bend listening ears to the gushing notes of love which swell around. Enraptured, impressed, they eventually emerge from their hiding-places, select their partners, and hie away to more congenial scenes.

The period of mating is unusually short, and unmarked by any special peculiarities. It generally occurs about the 20th of April, but seldom later than the beginning of May. The chief concern of the newly-wedded pair now seems to be the selection of a building-spot. This is a matter of importance, and, with most species, is attended with considerable difficulty. Not so in the present instance. The birds repair to accustomed sites, and there, amid the small bushes and tussocks which abound, prepare their houses.

Nest-making commences in the Middle Atlantic States between the 25th of April and the 1st of May; in New England, about the 1st of June, but not before the middle of this month, in more northern regions. The nest is usually placed in a cluster of reeds, or in the tops of small bushes alongside of streams of water. Occasionally, small trees and fields of timothy are made the recipients of these marks of attention, and, in rare instances, the bare ground is made subservient to this purpose. Almost every ornithologist who has paid any attention to field-work has observed

nests in their ordinary positions upon small bushes, or in bunches of swamp grass, but few, we opine, have met with them elsewhere. Mr. Maynard, as stated by Dr. Brewer, seems to have been the first to notice this change. While exploring an island in the marshes of Essex River, he found a number of nests in trees at an elevation of twenty feet from the ground. One of these structures, which was purse-shaped, was composed entirely of eel grass, and placed upon a sapling, at a height of fourteen feet.

High grounds are seldom chosen for nidificating purposes, for the obvious reason that they offer poor facilities for food-collection; the aquatic larvæ, may-flies, dragon-flies, and mosquitoes, which constitute a conspicuous part of the diet of these birds, being only found in marshy situations. Even here a preference is manifested for certain positions. Small bushes along the borders of streams, from the two-fold advantages which they possess, are almost wholly adopted in some localities. Being convenient to appropriate food-stuffs, they are placed beyond the reach of snakes, particularly water snakes, which have a decided partiality for young birds.

Having selected a building-spot, the pair proceed with all possible dispatch to construct a home. This requires the joint labor of the sexes, during the early mornings and evenings, for a period of about five days. The articles of composition are chiefly collected by the male, while the female performs the more difficult operation of putting them in position. Considerable differences are often noticeable in these structures. Those placed upon bushes are, as a general thing, more symmetrical and compact than those found in clumps of grasses, and differ still further in being plastered with mud on the outside, which adds to their durability; while, on the other hand, nests enclosed by tall overarching grasses, have a looseness of arrangement that will scarcely bear manipulation. But where the nest is placed in fields of timothy and clover, there is evidence of great pains having been taken in its construction.

Having finished their domicile, generally on the following day, but sometimes not for nearly a week afterwards, as is the case when mud and other damp substances have been used in building, the female begins to

deposit her eggs, at the rate of one a day, until the full number of five has been laid. Incubation follows on the day of the last deposit, and continues for fifteen days. This business devolves wholly upon the female. While she is thus engaged, the male is not idle, but stands guard over the nest, or ventures off in quest of food for himself and companion. Should the nest be assailed, both parents seek, by the most piteous cries and remonstrances, to drive off the offending party. In case of pillage, they keenly feel the injustice, and for several days bewail their misfortune. But they soon recover their usual spirits, and prepare to remedy the disaster. So tenacious are they of a chosen locality, that the same pair has been known to build as many as three nests in the same bush, after having been robbed twice.

The parents show the most intense affection for their progeny. Day after day they watch over their helpless infancy with a devotion somewhat akin to that which a human mother manifests toward her child. Their slightest desire is a law, which is obeyed with cheerfulness and alacrity. When food is in demand, they prove themselves to be willing providers, each parent vying with the other in patience and fidelity. While one is absent in quest of food, the other remains at home to protect them from danger, the labor being accomplished by turns. Earthworms, caterpillars, fresh-water larvæ, flies and mosquitoes constitute their earliest fare. But later, beetles, butterflies, and various kinds of fruits help to swell their hitherto very extensive dietary. When about fourteen days old, the young leave the nest, but are not yet prepared to earn their own living. This requires an additional period of twelve days. Brood-raising being over, both young and old continue in the old haunts, until near the time of departure, when they collect in small flocks, and take up their southward-bound journey.

A typical nest of this species is somewhat irregular in shape, and rather coarsely and rudely built. It is composed of stubble and broad grasses variously intermingled, and lined with soft meadow grass. The dimensions vary according to locality. Several nests before us, from New

Jersey, Pennsylvania, and the South and West, have an average external diameter of five inches, and a height of three. The cavities, however, are more uniform, and generally measure three inches in width, and one and a half in depth. But when a nest is built in a bush, the outer basket-like frame is carefully interwoven with, and strongly secured to, adjacent twigs. Though somewhat rudely put together, it is nevertheless firmly and compactly woven. The outer framework is usually made of rushes, strong leaves of the iris, and, in some instances, of an additional article apparently similar to mud. Within is packed a mass of coarse materials, over which is placed a thick lining of grasses and sedges. These nests, in the matter of size, differ from the former chiefly in the particulars of length and thickness. The internal dimensions offer no very striking exceptions.

The nest represented in the Plate is three-fourths of the natural size, and was obtained by the writer in the summer of 1879, by purchase, from Mr. Alexander M. Reynolds, of Philadelphia. It was built in a field of grass, many of the stalks of which being wrought in its composition. In figure it resembles an inverted cone, and is beautifully, symmetrically and compactly put together. The outside is formed of grasses and rushes, very neatly and intricately interwoven, and shows here and there a head of dried pappus plucked from some species of hawkweed. The inside is lined with sedges and fine blades of grass. As shown in the drawing, the nest occupies a rather conspicuous position. This was not the case in its natural location. Being found in the centre of a large field, it is at once evident that the authors had spared no pains to make the concealment as complete as possible. In height, this fabric measures nine inches. Its external diameters above, below, and in the middle, are, respectively, six, two, and four and a half inches. The width of the cavity is three inches, and the depth three.

The eggs are oval in contour, of a light bluish ground-color, and are marbled, blotched and streaked with light and dark purple, chiefly about the greater extremity. In size, they vary considerably; the average

length of a large number of specimens from different regions being 1.01 inches, and breadth .76. In the Middle, New England and Western sections of our country, this species is single-brooded; but further south, three, and even a larger number of broods, are annually raised.



RUBY-THROATED HUMMING-BIRD.

PLATE VII.

TROCHILUS COLUBRIS, LINNÆUS.

Ruby-throated Humming-bird.

THE RUBY-THROATED HUMMING-BIRD is found throughout Eastern North America as far west as the Missouri Valley, and thence northward to the 57th parallel. It breeds from Florida and Western Texas to the plains of the Saskatchewan and the head-waters of the Elk River.

From its winter-quarters in Guatemala and Mexico, it takes up its line of flight when the season has fairly opened, reaching our southern frontiers late in March. Thence it slowly advances northward in its migration, arriving in Upper Georgia about the 10th of April; in Pennsylvania, from the last of April to the Middle of May, and in its northern habitats, during the last of May, or the beginning of June.

For a brief season subsequent to arrival the sexes remain apart, and seem only intent upon the procurement of food. This is especially the case in the Middle Atlantic States where their habits have been very closely observed. Here they make their appearance with the blossoms of the horse-chestnut and tulip-tree, and may be seen at all hours of the day, in fair weather, delving into flowers for honeyed sweets, or probing their bosoms for the caitiffs within. In feeding, their movements resemble those of the hawk-moths. Gracefully they suspend themselves in mid-air before the opening flowers, ravish their hidden treasures, and, with almost the speed of an arrow let fly from a bended bow by some skilled archer, are off in an instant, possibly to more delectable vineyards, or to some shady nook for rest and contemplation. For agility and fleetness of motion the little Ruby-throat is certainly unsurpassed by any of our smaller feathered species.

But things cannot long remain in this state. Their favorite flowers must soon wither and decay, and with their timely death, must inevitably come the disappearance of an easy and luxurious means of subsistence. The tooth of appetite will then grow dull, and other thoughts and scenes invite their attention. Experience has taught us that the falling of the blossoms of the horse-chestnut and tulip-tree foretell the time of mating.

This important business is performed without the least semblance of show. The sexes tired, as it were, of the riotous and luxurious lives they have been leading, come together by mutual agreement, and enter into matrimonial relations. This being accomplished, they separate for a brief period, and each proceeds to scour the country for miles around in quest of a suitable tree in which to locate. When one is selected by either bird, the other is summoned to the spot to talk over, in true bird-language, the merits thereof. Should the parties differ as to the advantageousness of the site, no quarrelling or bickering is indulged in, but, in the most friendly manner, they separate, and renew the search until one is found which gives satisfaction.

Having decided upon a locality, the birds are now ready to commence building. This takes place between the first and the tenth of June in the Middle States, about the tenth in New England, and as early as the fourth in the Southern Atlantic and Gulf States. The situations chosen vary considerably. Sometimes high, open woods are selected; again, low, dense thickets; but, more frequently, an orchard close-by a human dwelling, or an isolated tree in the midst of a lawn. Occasionally, the birds have been known to build in trees along travel-worn thoroughfares. A case in point came under our notice in the summer of 1872. While returning home one day, we were surprised to see a female fly from her nest in a maple-bough, only a few feet above our head. The nest was immediately examined, and found to contain a pair of young birds. Not wishing to disturb the happiness of the family, we permitted it to remain intact. On visiting the spot a week or ten days afterward, it was found to be empty, the birds either having matured and flown away, or else had been killed by some

ruthless invader. For several successive years a nest was to be seen on the same tree and branch, but whether the work of the same pair, we are unable to say.

That this species is not very particular as to the kind of tree in which it builds, has been our experience, and we do not find any recorded instance of disagreement. Dr. Brewer mentions but one kind of tree in which it builds—the apple. In addition to it, we have found nests saddled upon the pear, red-oak, white-oak, willow, red maple, sugar maple, cottonwood, beech, pine, etc. In fine, almost any tree will answer this purpose, as the generality of arboreous growths are more or less favorable to the development of lichens. Several anomalous positions, as on pine-cones and warty excrescences, have frequently been met with in our ornithological rambles.

The nest is the result of the joint labor of both birds, who work with unwearied perseverance and diligence until it is completed; the male furnishing the raw material to be manipulated and adjusted by his zealous partner. Occasionally, the latter assists her “liege lord” in collecting and bringing in his burden.

In the matter of composition, there is but little difference in fabrics from the most distant regions. Nests from Texas are exact counterparts of those from Georgia; and these, again, resemble others from Pennsylvania and Michigan. All we have seen are composed mainly of a woolly substance of vegetable origin, plucked from the leaves of the common mullein, or from the young and unexpanded leaves of the various species of oak, immediately before their full development. This substance, after being wrought into form and symmetry, is strengthened on the outside by small woody fibres, or the webs of spiders. Over all is placed a close and compact thatching of small lichens, a species of *Parmelia*, glued thereon by the viscid saliva of the builders. On the inside may be frequently observed a thin lining of white feathers; and, on the outside, a few dried catkins. In dimensions, these nests usually measure one and a half inches in external diameter, and nearly one and three-

fourths in height. The cavity is generally three-fourths of an inch wide at the rim, and the same in depth. Specimens have been met with which were but half an inch deep, and others which showed a much greater depth, as well as external height.

The nest in the Plate is from Comal County, Texas, and was found upon a beech-tree. It is composed almost entirely of vegetable wool from the poplar and oak, and is lined with a few small white feathers. Externally, there is a dense covering of bluish crustaceous lichens and brownish oak-tassels, which are held in position by saliva and strands of spider's silk. It was placed upon a branch at an elevation of twenty feet above the ground. In height it measures one and three-fourth inches; in external diameter, one and a half. The width of the cavity is three-fourths of an inch, and the depth about a half.

A nest obtained in Lynn, Mass., in June, 1860, was saddled on a horizontal branch of an apple-tree. It is woven of a soft woolly material, fine in texture, silky in appearance, and of the purest white color. Basally, it is strengthened with pieces of bark; and laterally, with fine vegetable fibres. The whole exterior is beautifully covered with a compact coating of lichens. It measures one and a half inches in height, and two and one-fourth in external diameter. The cavity is shallow, and is seven-tenths of an inch in depth, and one in width.

A very beautiful nest, as well as a marked deviation from the normal form, as far as materials of composition are concerned, was discovered in June, 1876, upon a branch of a red-oak which overhung a by-road, and within a few feet of a woollen factory. Scattered in the neighborhood was a lot of reddish shoddy, which had been discarded by the mill hands. The birds, it is evident, were not slow in perceiving the use to which this "waste" could be put. Accordingly they set to work, and, in a few days, had constructed a beautiful nest, at a saving of much labor and time. It might be thought there was a dearth of the usual materials, but this was not so, as a careful survey of the grounds soon satisfied us. Interiorly, this nest was entirely composed of this shoddy, while the exterior was

covered with the ordinary lichens fastened to the nest proper by a few cobwebs and a secretion from the builders. In external diameter, it measured one and three-fourths inches; in height, two inches; in internal diameter, three-fourths of an inch, and nearly as much in depth of cavity.

The nest being finished, which is the work of five or six days, but a day or two elapse, and the female is ready to deposit her eggs. The latter, to the number of two, are laid in as many consecutive days. Incubation immediately ensues, and continues for a period of eight days. Its duties devolve upon the female, who sits with commendable patience until her task is accomplished. While thus employed, her mate stands guard, or is abroad in quest of food. If any attempt is made to interfere with the nest while he is on duty, the most menacing gestures and loudest remonstrances are indulged in. Should these not have the desired effect of frightening away the intruder, he darts at his foe with wide, open bill, and endeavors to inflict summary punishment. He is so persistent in these attacks that it is often very hard to beat him off. The female, on the contrary, is of a more passive nature, quietly keeping the nest, although not unmindful of the proceedings being enacted, and only venturing therefrom when danger is imminent. These assaults continue while the nest is endangered, and even for a short time afterwards, when the birds retire to a neighboring tree to brood over their mishaps, and consider what is best to be done.

The young are objects of special interest to the parents, who render them every needed attention. When one is absent for food, the other stays at home to protect them from danger. Their food consists of a prepared mixture of nectar and soft insects, which they procure by thrusting their bills into the mouths of their parents. It was formerly supposed that this diet consisted entirely of the honey of flowers, but this opinion of the ancients was not wholly a fallacy, since a portion of nectar is taken with the insects, and supplies to the Humming-bird that kind of nourishment which the larger insectivorous birds derive from fruit. When eleven days old, these tiny creatures, in their beautiful robes of green, quit the nest, but

necessarily remain under parental control a week longer, before they are able to support themselves. By some inexplicable circumstance, the young do not leave for their winter-homes until some time after their parents have departed.

The eggs are beautifully elliptical in outline, and of a pure dull white color. They measure .50 by .34 of an inch. Never more than a single brood is raised annually. Nests with eggs have been taken as late as the 20th of July, but these were doubtless laid by females whose early efforts had been interfered with.



TOWHEE BUNTING

PLATE VIII.

PIPILO ERYTHROPHthalmus, Vieillot.

Towhee Bunting.

THE TOWHEE BUNTING, or CHEWINK, has an extended distribution throughout the eastern portions of the United States, ranging from Florida and Georgia on the south-east to the Selkirk settlements on the north-west, and westward to the border of the Great Plains, where it is replaced by closely allied races. It breeds wherever found, certainly in Georgia, and, doubtless, in Florida, although sparingly.

According to Wilson, it is found in the middle districts of Virginia, and thence south to Florida, during the months of January, February and March; but as the weather grows mild, and Nature begins to don her livery of green, many forsake these haunts, and wing their flight to distant localities; reaching the Middle Atlantic States about the fifteenth of April, Massachusetts and Connecticut towards the last of the month, Maine and New Hampshire early in May, and the North-western States a little later.

In some regions the birds arrive singly, but retire in small flocks. This is the case in the vicinity of Washington; whereas in Eastern Pennsylvania, they are somewhat gregarious for a week or ten days after their arrival, when they separate, and lead solitary lives. Their sole object now is the acquirement of food. For this purpose they repair to waste fields and damp thickets, or to small patches of underbrush along frequented roads. Here their simple song may be heard during the intervals of feeding, with scarce an intermission, from five o'clock in the morning until eight in the evening, by the early or belated pedestrian. In rain or in sunshine, or at noonday in the hottest weather of the season, the woods

resound therewith, or with that peculiar note of complaint from which the species has received the name Chewink.

There is an expression of cheerfulness in these notes, though they are not delivered with that enthusiasm which characterizes the songs of many of our species. But music, like poetry, must be of a somewhat plaintive nature, if it would take firm hold of the feelings.

After a period of three or four weeks mostly spent in feeding, the males seem to tire of such a life, and seek to attract the attention of the females. Perched on the lower branch of a tree, near the edge of a wood, or on the summit of a small tree or tall bush in the midst of a thicket, or hid from view by clusters of bushes, they may be heard pouring forth, with all the fervor of their being, their strange madrigals. At first, their efforts to captivate are unheeded. But patiently and persistently the singing is kept up in a quiet, simple manner, until their auditors become impressed, and modestly quit their shady retreats to encourage the musicians by their presence. Having gained this advantage, they follow it up, and in less than a week from the time the first note was uttered, have mastered the situation. The females wholly entranced, yield to the persuasions of their would-be lords, and conjugal relations are entered into. This generally occurs not later than the fifteenth of May. But the happy couple are not yet ready to begin nest-building. They must needs celebrate the occasion of their marriage. Accordingly, they set out on a wedding-trip, so to speak, visiting adjoining lots and thickets, and enjoying the delights and scenes around them. This continues for four or five days, when the lovers, thoroughly surfeited, return and quietly settle down to prosy life.

The erection of a home is now the absorbing topic of interest and conversation. Where to build, and how, are matters that are agitating their minds, and which seem, judging from the actions of the parties interested, very difficult questions to adjust. After no inconsiderable portion of time thus spent, and with little possibility of coming to any decision, a separation ensues, and the country scoured for miles around.

Should a situation which seems eligible be discovered by either party, the other, by a peculiar signal, is called to the spot, and the advantages thereof carefully discussed. If satisfactory, it is accepted, and building operations commenced. Otherwise, the search is commenced anew, and continued until one is obtained which is mutually pleasing. But where the birds are unmolested, the same localities are probably selected on each return of the breeding-season. The situation generally chosen is a small thicket with a dense growth of underbrush, or a high piece of ground overrun by brambles, and dotted by patches of fern. Latterly, nests have been frequently found in clumps of tall grass, in fields once swampy in character.

In New England, the locality usually chosen is a low, dense woods, thickets of briars and bushes near streams of water, or the "scrub," which is a low or bushy "growth" of trees, chiefly of oaks and birches, occurring in dry, hilly lands once occupied by pines. In the extreme northern limits of its range, dry uplands, near the edges of woods, or high tracts covered with a low brushwood, are used, rather than low or moist grounds, as was the case in some sections at the time when Wilson wrote. The love for such situations doubtless gave rise to the appellation of "Swamp Robin," which is generally applied to this species in Pennsylvania.

When placed within a thicket, or in the borders thereof, the nest is either built in a depression of the ground, usually beneath a bunch of grass, in a pile of old brush or fagots, or on a slight prominence surrounded by tall, graceful ferns. Within a concavity, the structure is made to project slightly above the margin thereof, and is artfully concealed from the gaze of intruders by dry leaves. So completely is it hidden, that all efforts to find it frequently prove unavailing.

The work of building is entered into with diligence and alacrity, each bird collecting and adjusting the materials as it thinks best. While thus engaged—which is usually from sunrise to sunset, allowing the necessary time for foraging and rest—the architects seldom, if ever, get at outs, but

labor with a purpose, and in the best of spirits. The time thus spent has never been known to exceed three days.

So little variation is manifested in these structures, that specimens from the Southern States resemble those from the Eastern, Middle and Western sections so closely, as to be readily identified by persons of the least experience in such matters.

A typical nest is mainly composed of the leaves of deciduous trees, twigs, grass and roots, on the outside, and is lined with the inner fibres of the wild grape-vine, or with fine stems of grasses. The drawing represents it as being constituted of the stems of grasses, with a slight intermixture of leaves and roots, and as having a lining of reddish-brown stems of the same. It measures four and a half inches in extreme diameter, and two and a half in height. The internal diameter is two and three-fourths inches, and the depth of cavity one and a half.

Oviposition commences on the day succeeding the completion of the nest, and proceeds at the rate of one egg daily, until the entire complement is deposited. Incubation closely follows, usually a day or two after the last egg is laid. This is undoubtedly the exclusive task of the female for a period of thirteen days. Diligent and close watching has failed to show that the male takes any direct part in this important business. Although seemingly averse, or unaccustomed to this kind of work, he does not fail to contribute his share to the success of the undertaking. While his wife is engaged in sitting, he is an ever watchful and cautious husband. Unlike many other species, he does not make himself too conspicuous, but stations himself some distance from the nest, for fear of revealing its whereabouts, and only ventures into the neighborhood at certain regular periods, to receive the commands of his patient little house-wife, or to administer to her bodily wants. Though shy, these birds often seem saucy; and, while one person complains of their chirruping to and starting his horse, another claims that, on the discovery of their nest, they express their grief so impudently as to arouse his indignation. But

when the nest has been stumbled upon by some cruel oologist, and the female is compelled to abandon it and seek safety in flight, the male does not even then desert his hiding-place to come to her rescue. Everything is left to her judgment, and well does she play her *role* in the drama. By various strategic movements, such as imitating the actions and cries of a crippled bird, she decoys the inexperienced intruder to a remote distance, when she flings off the veil of hypocrisy, and quickly disappears in the bushes. With the trained collector this *ruse* hardly succeeds, and the disappointed parent often beholds with profound sorrow the discovery of her nest, and its destruction by ruthless hands.

When the young are hatched, they are watched over with jealous care, and receive more than ordinary attention. Grubs, earthworms, plant-lice and larvæ of butterflies, in immense numbers, are daily gleaned, and fed to their hungry appetites. Such are their demands for food, during the first week or ten days of existence, that the parents are kept extremely busy in catering thereto. Occasionally, both are absent from home on this important business, but the rule seems to be for one parent to keep a watch over it and its helpless inmates, while the other is thus occupied.

At the age of thirteen or fourteen days, the young quit the nest, and receive their first lessons in the mysteries of bird life; and, in ten days more, are forced to shift for themselves, but are permitted, however, to remain with the parents until the time of the autumnal migration, when they help to form the small flocks which are seen flying southward about the middle of October.

The eggs of this species are four in number, rounded-oval in shape, and are covered over the entire surface with dots and blotches of reddish-brown upon an obscure grayish, or reddish-white background. In some specimens, these dots run into each other; and, in others, they are distinct, being more profusely collected about the larger extremity. The average measurement of a score of specimens from widely-separated localities is .97

by .80 of an inch. Such is the resemblance which obtains between these eggs and those of the Brown Thrush, that when sets of both are placed together in a tray, the difference between them would scarcely be apparent to a novice in such matters. It remains for the keen and critical eye of the more advanced student to point out the distinction, which consists in the paler and more roseate tint of the Chewink's eggs, and the larger size of those of the Thrasher. Wherever observed, these birds seem to be single-brooded, although nests are sometimes found with young, in June and August, which fact would seem to argue that occasionally more than one brood is reared; but, generally, the first brood leaves the nest too late for another to be brought out before the appearance of the early frosts.



DOWNY WOODPECKER.

PLATE IX.

PICUS PUBESCENS, LINNÆUS.

Downy Woodpecker.

THE DOWNY WOODPECKER, or LESSER SAPSUCKER as it is called by way of distinction, is a resident rather than a migratory species, and is known to breed wherever it is found. Its area of distribution extends from Lower Louisiana to Labrador, and from Texas northward through New Mexico and the Indian Territory to the 58° of latitude. It is also quite common in the maritime parts of Alaska, the Aleutian Islands excepted. Although abundant east of the Rocky Mountains, and rather more numerous than its nearest kin, the Larger Sapsucker, yet, owing to the smallness of its size, it is not so well known outside of cultivated districts.

In the autumnal and winter months, these birds lead solitary lives. Go where we will, then, we may here and there behold isolated individuals busily probing the fissured bark of trees for the eggs and pupa of insects. Even the mature forms meet with the same cruel treatment.

Though rarely observed in cultivated districts during these times, yet a visit to the woods will reveal many a little fellow in dappled dress arrayed, with or without a crown of red, wending his slow and labored flight from tree to tree, or waking the clear echoes of rock and shady glen with his shrill music and weird drumming.

But when balmy Spring returns, and releases the earth from the icy fetters of the winter-god, and peoples our shade and fruit trees with countless insect existences, then quits he the wild forest scenery, in a measure, and betakes himself to our lawns and orchards. This is not always the case. For in those lands where civilization has not planted,

but where Nature still reigns in her pristine glory, he is the same changeless creature as when first he greeted the vision of man.

'Tis now the social forces, freed from the frozen bonds of winter, rejoice in new vitality. The sexes no longer shun each other as before, but mingle in the most friendly manner. The male is the first to show symptoms of change. He pursues his predatory exploits with less of his characteristic zeal, and seeks to attract the attention of the gentler sex. With this object in view, he arranges his toilet with scrupulous nicety, and then goes forth to parade his beauties and grace before a bevy of idle, listless females. Ever and anon, he varies his occupation, by the rendition of a song. But his auditors seem either incapable of appreciating his efforts to please, or else are too much concerned with other matters to pay any real attention thereto.

Our little hero, not to be baffled, keeps up his courage, and with a patience truly praiseworthy, continues his suit, till at last he reaches the ear of some simple-minded female, when he pours forth, with all the resistless eloquence of his being, the short but pleasing narrative of his love.

Should his affection be requited as it deserves, the happy lovers, without further ado, hie themselves away to sunny field or shady grove, to enjoy a brief honey-moon, preparatory to entering upon the trying and responsible duties of wedded life.

The getting of a wife is not always so easily accomplished. It is generally attended with many trials and vicissitudes of fortune. Sometimes when success seems ready to crown the efforts of an actor in this part of life's drama, a rival comes upon the scene, and claims the attention of the wooed. The most ridiculous antics now ensue, and continue for hours together. The female becomes the most whimsical of creatures, lavishing her caresses first upon one, and then upon the other of her suitors. The jealousy of the contesting males now knows no bounds, and only vents itself in long and fierce encounters. The female, at last, comes to the

rescue, desists from her meaningless flirtation, and bestows the jewel of her affections upon her first lover. The combat ceases, and the participants separate.

Occasionally, several pairs will meet by chance upon the same tree, when similar scenes will be enacted by the jolly females, much to the vexation of their respective suitors. These farces have been known to last for nearly a week, but they seldom continue for a longer period than two days.

Mating having taken place, which is usually the case during the first week of May, never earlier except when the season is remarkably advanced, the birds make ample amends for the time thus seemingly frittered away, by the perseverance and diligence with which they ransack the orchards and groves for a suitable tree in which to excavate a nest.

The selection of a site is a matter of no little importance, the greater part of a week being consumed in making the necessary reconnoissances. These explorations commence early in the morning, and continue with but few interruptions until the close of the day. They are never performed singly, but always in pairs. One feature thereof strikes us as peculiarly interesting, and as deserving of mention. It is the perfect harmony and good-will which then prevail.

If a situation is discovered by one of the parties which is apparently suitable, a conference is called, and the various advantages thereof discussed. If mutually agreeable, further examinations cease, and building operations are begun. In cultivated grounds, a decayed branch of the apple or cherry is chosen for this purpose; but in more retired situations, the maple, ash, elm or tulip-tree is given the preference.

In the Southern States, nest-building commences about the middle of April; in the Middle Atlantic, seldom later than the fifteenth of May; in New England, from the fifteenth of May to the tenth of June; and in the extreme northerly portions of its habitat, about the fifteenth of the latter month.

All things being in readiness, the male is the first to commence operations. Stationing himself upon the spot which is to constitute the doorway to his home, with claws imbedded in the wood to prevent from falling, he digs the bark away in the form of a semi-circle. Then reversing his position, he goes through the same difficult but trying task, his little bill his only implement of execution, until he has wrought a perfect circle. Continuing the labor, he delves away into the soft or hardened interior, like a veritable Trojan, until an inch or more of the wood has yielded to the blows of his small but powerful chisel. Tired, at last, he resigns the work to his companion, and settles himself upon a branch close-by to rest. Having recuperated his exhausted energies, he starts off in quest of food, but to return in the course of a half-hour to the relief of the female. Thus the work goes on, day after day, with an industry and patience truly commendable, until success crowns the undertaking.

The opening to the chamber is perfectly circular, and quite as accurate as a skilful mechanic could make it with compasses. The cavity is first directed downwards at an angle of forty degrees, for the space of five inches, when it takes a perpendicular course for nearly ten inches further, widening perceptibly at the bottom. Such is the capacity of the latter that the sitting-bird is able to turn around therein with considerable ease, but the external orifice is just large enough to admit the bodies of herself and partner.

Few species are more careful to direct attention from the scene of their labors than the subjects of our sketch. The chips produced during the work of excavation are usually carried to some distance, so as to remove all traces that might lead to detection. But howsoever clandestinely they may act, and whatever precaution they may exercise, their home does not always escape the keen eye of the experienced oologist, or the sharpness and sagacity of the mischievous and insinuating little House Wren—one of the most annoying enemies with which it has to contend.

Wilson gives an interesting account of the impudent coolness of this bird, who coveting the neatly built home of this Woodpecker, and powerless to construct such an apartment for herself, waits until the Woodpeckers have finished their work, when she attacks them with violence, and expels them from the nest which they have prepared with so much pains. Another example is mentioned by the same distinguished authority. In this instance, the Woodpeckers had commenced the work of excavation in a cherry-tree, within a few yards of the house in which he lived, and had made considerable progress, when they were assailed by the Wrens, and compelled to withdraw. They then began a second nest in a pear-tree, a few yards off, when after digging out a most complete chamber, and laying one egg, they were once more attacked by the same impertinent intruder, and finally forced to desert the place.

Having constructed their home, which is usually the work of a week, the female, after a day of recreation and rest, begins the labor of oviposition. This continues for four or six days, the time being regulated by the number of eggs which is to constitute a setting, but a single egg being deposited daily. Incubation now follows, and is the exclusive task of the female for nearly twelve days. The male, although he takes no direct part in this business, is an important factor in the successful accomplishment of the undertaking, as he, like an affectionate and dutiful husband, supplies her with the necessary food. When not thus occupied, he may be seen foraging the fields and woods, or perched upon a twig in the calm enjoyment of ease and sober thought. He is seldom to be observed in the immediate vicinity of the nest, save when carrying food to his mate, or in times of great calamity. It has been affirmed by Mr. Paine, of Randolph, Vermont, that the male occasionally constructs a hole for himself close-by that of his mate, as he has taken males in such apartments which were always unoccupied by eggs. He thinks that they repair thither for shelter. Careful explorations for several years have failed to show us that any such protection is practised in the Middle States, nor do we find any record to substantiate this statement.

The young, when first hatched, are very helpless creatures, and require the greatest care and attention from parental hands, so to speak. Caterpillars, small moths, aphides and beetles constitute the bulk of their fare, from the time they leave the egg until they are four weeks old, when they quit the nest, to be instructed in the ways of the outside world. For a fortnight the young birds rove in company, but finally separate, each bird leading the life of a recluse.

The eggs of this species are nearly spherical, of a crystalline whiteness, and measure .82 of an inch in length, and .71 in width. Specimens from Eastern Texas and Southern Michigan differ but little, if any, from others obtainable in New England and the Middle sections of our country. In the Plate the eggs are shown in position, the wood being cut away over the bottom of the chamber, to produce this result. The egg in front, as well as the birds upon the branch, are three-fourths of the natural size. The remaining eggs are in part concealed, and do not show so fully. In the southern and middle portions of the range of this Woodpecker, two broods are annually raised, one in June, and the other in August, but further north seldom more than one.



RED-EYED VIREO

PLATE X.

VIREOSYLVA OLIVACEUS, BONAPARTE.

Red-eyed Vireo.

THE RED-EYED VIREO is quite an abundant species throughout Eastern North America, ranging from Florida in a northeasterly direction to Nova Scotia, thence northwesterly to Lake Winnipeg and Washington Territory, and westerly to Ogden, Utah. Accidental specimens have been procured in Greenland and England, but never more than a single individual in each locality.

Many of these birds winter in Florida, and as specimens have been met with in Central America, Cuba, Trinidad, and on the Isthmus of Panama, it is highly probable that many betake themselves thither when the period of breeding is over in their northern homes.

Early in March the latter enter the United States, possibly by way of Texas and Florida, and wend their movements northward, reaching the Middle States late in April; the New England, about the middle of May; and the extreme northwest, a fortnight later.

Like all of its peculiar and characteristic genus, this species affects a fondness for forests, or the summits of tall trees, but seldom ventures upon the ground. It is, however, not wholly sylvan. At times it may be found around dwellings, or along the shaded streets of rural towns, in quest of the various insects which contribute to its sustenance.

As it gleans among the tree-tops, the simple, pleasing and musical notes of the male may be heard at somewhat regular intervals. So unsuspecting and familiar is he then, that passers-by may come and go, and their presence be unheeded.

During the hot and sultry hours of noon when other songsters have ceased their warblings and foraging, and have slunk to the refreshing shades for comfort and security, our little friend continues to pour forth in loud, sonorous notes his peculiar *te-te-tweah-we-ah-tweah-tweah-tweet*. Being the earliest of our vernal choristers, he is also the most constant and untiring, and continues to sing throughout the entire season. Even when about to depart for the smiling scenes of his southern home, he thrills the air of woodland and valley with impassioned song.

His tender and pathetic utterances, which resemble the melodious notes of the Robin, but lacking their volume and power, are produced with so much apparent animation, judging from their sound, as to be in striking contrast to the seeming indifference or unconsciousness of the plain little vocalist who, while regaling the listener, appears all the while to be bent upon the procurement of his daily food, which he pursues with great ardor. But with the female the case is different. Although quite as active a feeder as the male, yet there is apparent none of that bustle and noise which characterize his movements. Her chief concern seems to be the satisfaction of hunger, and a studious avoidance of the male.

But as the days multiply, and insect life becomes more common, which is generally the case about two weeks after their arrival, less anxiety is felt on account of food; consequently, more time is left for the development and play of the social forces. The sexes now begin to manifest less reserve and coolness, and instead of shunning each other, as was their wont, are brought more and more into friendly intercourse. A week or ten days later, and the way is paved for the assumption of matrimonial relations. In this movement, the male takes the lead. The female, somewhat coy, at first listens to the wooings of her suitor at a wary distance, but as time progresses, soon learns to regard him in the light of a lover, throws off her restraint, and confidently advances to receive his caresses. And thus events follow each other in rapid succession until a union is effected.

Having mated, the happy pair, with no more delay than is absolutely necessary, start off together in search of a nesting-place. This is a matter that is easily accomplished, as almost any forest-tree of small or medium height, answers the purpose. In some situations, the beech, maple, sassafras and common laurel are in special demand. Why this is so, it is impossible to divine.

High woods, with an abundance of small trees, are generally chosen. Here, the nests are not often placed higher than five or six feet above the ground. Sometimes, though rarely, they are found swinging from a pendent bough, more than fifty feet high. Nidification seldom occurs in compactly-built cities. Never more than a single instance has ever been observed by us. This happened in the summer of 1876.

A site being chosen, building at once commences. This occurs in the Middle States between the twelfth of May and the fifteenth of June; in New England, about the first of the latter month; in Texas and Louisiana, somewhat earlier; and in Nova Scotia, a trifle later. At Fort Resolution, at the Cumberland House, and at Fort Simpson, nests and eggs have been taken, but we are left in ignorance as to the time.

The construction of a home is the result of the united labors of both birds, each collecting and adjusting its own materials. The time devoted thereto varies from six to seven days, and is regulated by the industry of the builders and the *condition* of the weather. For this purpose a bifurcated branch is first chosen. To this is attached, by means of cobwebs, strips of bark, threads of moss, and the silk of caterpillars, a delicate framework. This is mainly composed of bark, decayed pine-wood, vegetable fibres, etc., held together by silk, and, possibly, in a slight degree, by a gummy secretion supplied by the builders. This structure is long, tenuous, open and narrow, presents a somewhat collapsed appearance, and resembles, though remotely, the perfect fabric. But it lacks shape and symmetry. To give it these essentials, the birds construct an inner nest out of bits of paper, fragments of hornets' nests, and strips of oak bark,

which are so arranged as to protrude through the interstices of the outer. It is now the duty of the female, by a few bodily evolutions, to reduce the whole to form. This accomplished, the labor of building is resumed, and a cozy lining, composed of narrow strips of the inner bark of the wild grape-vine, is added. Often white and black horse-hairs take the place of these articles. That this species builds after the fashion described, is proved by actual observation, and also by the finding of abandoned nests which showed the outer, but not the inner arrangement.

The nest represented in the Plate came from Atlantic Co., N. J. It was built between a forked branch of the common laurel. Externally, it is composed of decayed wood, inner bark of plants, silk of caterpillars, fragments of hornets' nests, cocoons of spiders, etc. Internally, there is a thick lining of the inner bark of the wild grape-vine. The external diameter is three and a half inches; internal, two and a half inches; outside depth, two and a quarter, and inside, one and three-fourths inches. A comparison with specimens from Texas, Michigan, Pennsylvania and Massachusetts, shows marked similarities in structure and details of composition.

In the collection of the Smithsonian Institution there is to be seen a nest which was obtained by Mr. Kennicott at the Cumberland House, on the Saskatchewan River. It is pensile, like all others, but is almost exclusively built of pine-needles—a dry and hard material, difficult of management in the construction of such a domicile. With these are intermingled flax-like vegetable fibres, fine strips of bark, and fragments of moss. Within is placed an inner nest composed of strips of bark, pine leaves and fine, dry grasses. The external fabric is rather loosely put together—an unusual feature—but the inner portion, in the compactness and strength with which it was made, is in striking contrast.

After the nest is finished, the female, on the ensuing day, and occasionally not until the expiration of the third or fourth, commences to lay her eggs, at the rate of one daily, until the entire complement of three or

four has been laid. Incubation follows closely, usually on the day succeeding the last deposit, and continues for nearly eleven days. This is not the exclusive task of the female, as the male sometimes assists her. When the latter is not thus occupied, it is seldom that he may be found in the vicinity, being absent either designedly, or in search of food. Should the nest be approached at this time, the female sits close, and seems to manifest neither timidity nor alarm. We have often surprised her on the nest, and reached out our hand to take her, when she would watch our actions very narrowly, as if seeking to study our motives, but remaining perfectly motionless all the while. A nearer approach was invariably followed by her sudden departure therefrom. The bird would not wholly desert the nest, but demurely station herself upon an adjoining twig, in order to watch our actions. But with the male it is quite different. Any attempt at disturbance or pillage is resented with spirit and courage, especially when the nest contains young birds.

The home of this Vireo is often chosen by the Cowbird as a place of deposit for her eggs. So singularly devoted to their alien guests do these foster-parents become, that they nurture them very tenderly, even to the neglect of their own offspring. A case is mentioned where three of these parasitic eggs had been deposited in the nest of the Vireo before any of her own. Without laying any, the female Vireo proceeded to set upon and hatch the intruders. Another case is cited where two Cowbird's eggs were laid alongside of two of the Vireo's. The latter immediately stopped laying and proceeded to incubate. In each of these cases it is evident that the female Vireo forewent her own maternal instincts, and at once conformed to the new situation.

The young are objects of special parental interest. From the time they are hatched, until the period of their leaving the nest to earn a livelihood, they are watched over, and fed with the daintiest fare which Nature affords. Caterpillars, diptera, plant-lice, small spiders and berries, constitute their earliest diet; but as they increase in size and strength, other articles of a coarser nature are added. At the age of twelve days

they vacate the nest, but continue under the watchful eyes of their parents a week longer, when they are able to forage for themselves.

The anxieties of brood-raising being over, both young and old, the former in imitation of their parents, seek the tall tree-tops and glean in company. Later, they come down from these lofty retreats to delve among the grasses. Finally, as if disdainful too near an approach to earth, they quickly forsake such groveling pursuits, and seek the viburnum and dogwood bushes, where they find many a rich repast. Here they remain until the last of September, or the beginning of October, when cold weather and scarcity of food compel them to hunt warmer climes.

The eggs of this Vireo vary considerably in size, according to locality; the further south the smaller they are found. Specimens from Northern Alabama have an average measurement of .77 of an inch by .52; from Nova Scotia, .94 by .65; from Pennsylvania and Massachusetts, intermediate localities, .82 by .56, and .83 by .62. The ground-color of all is a clear crystal-white, and they are marked with spots and fine dots of red-brown, which are chiefly found at the larger extremity. But a single brood is raised, although nests with eggs have been taken early in July, which must be attributed to birds whom accident or design had prevented from obeying their natural instincts earlier.



SPOTTED SANDPIPER.

PLATE XI.

TRINGOIDES MACULARIUS, GRAY.

Spotted Sandpiper.

THE SPOTTED SANDPIPER has an extended and varied distribution throughout North America. Unlike most of its allies, it breeds with equal readiness wherever found, and is one of the best known and most abundant of all its tribe.

From its winter-quarters in the Southern States, and also in the West Indies and Central and South America, to Brazil, it takes up the line of migration about the tenth of April, and gradually spreads itself over nearly the whole country as far north as Labrador and Fort Yukon.

According to Mr. Trippe, it is the only species of its family that resorts to the mountains of Colorado. Here, it arrives early in May, and departs in September. All the larger streams, to an altitude of 8,000 or 9,000 feet, are visited, and, even, in some instances, the shores of the lakes near the timber line.

On their first arrival, the banks of large rivers are frequented; but as the season advances, many trace their way into the interior, along the courses of our creeks and rivulets. Their sole object now is the acquirement of food. For this purpose, a life of solitude is preferable to any other. Although three or four individuals may frequently be discovered together upon the same feeding-grounds, yet careful and repeated observations have convinced us that this occurrence is merely accidental, and not dictated by a desire for company. At such times, the birds become so deeply absorbed in the business before them, that the approach of human beings is unobserved, and the actors are only aroused from the stolidity

and indifference into which they have fallen, by the crackling of a dead branch, or the dislodgment of a pebble from its mooring. Conscious of impending danger, but never stopping to inquire into the cause of the alarm, they seek safety in instant flight, and repair to other scenes, at no great distance from the former, where they think to pursue their gastronomic occupation without fear of being molested.

Such are the colors of this species, that the utmost harmony obtains between them and the hues of surrounding objects. The keen eye of the practised sportsman is often eluded thereby. Were it not for its peculiar habit of wagging the tail, it would be a very difficult bird to locate, especially when in a standing attitude; for whether thus occupied, or running on the ground, or along the rails of a fence, or in the water, this motion seems continual. Even the young, as soon as they are released from the shell, are taught by instinct the same remarkable movement.

Usually about the third week from the time of their first appearance, but sometimes later, the sexes, grown corpulent from good feeding, discard in a measure the "joys of the table," and seek each other's society. From stilly bank of inland pond or stream, or where old Neptune lashes in frenzied mood his solid flanks, their strange and simple call, *peet-weet*, *peet-weet*, may be heard in quick succession, louder, and more distinct, than was their wont. Nor do the males alone indulge therein; for the gentler sex oft join their lords in wanton rivalry.

Less whimsical than their aristocratic neighbors who affect the tall tree-tops and shady bushes, the lady Sandpipers are more easily wooed and won. Their ardent lovers have but to make their suits with due obsequiousness, to receive the courted promises. A few more avowals of love, and caresses, and the necessary reciprocations on the part of the females, and the happy lovers having sealed their plighted pledges in a bond of union, the respective parties journey off in search of suitable places for establishing their homes. This event generally occurs about the last of May, in some localities, but sometimes not earlier than the

second week of June, in others, and, perhaps, later in the extreme northern limits of its habitat.

A period of three or four days being spent in examining the surrounding country, the various parties soon settle upon localities. While some prefer the borders of ponds and streams, or more retired and secluded situations in the midst of forests, or a corn-field on elevated ground, others, again, have a hankering for low, sandy islands, or marshes by the seacoast, or even the almost barren beach itself.

This part of the business being attended to, each female begins to construct her nest. For this purpose she scratches a slight hollow in the sandy earth, and proceeds to line it with a few pieces of straw, or moss, or sea-weed, the nature of the materials depending upon the *environment*. When the nest is placed in a corn-field, it is generally built at the root of a hill of Indian corn, and is either lined with straws, or mosses; when upon the seashore, various species of algæ are used.

Having finished her rather simple and hastily-constructed home, with as little delay as possible the female commences to deposit her complement of four eggs. This she does at the rate of one egg a day, in as many consecutive days, taking due care to place them with the small ends together in the middle of the nest.

The last egg deposited, the female, on the day thereafter, enters the nest, and commences the duty of incubation. She is not necessarily a very close sitter, especially when her nest is located in a sandy soil, as the heated sand has doubtless much to do with the development of the young. During inclement weather, protection is absolutely essential; consequently, one bird or the other must occupy it, by turns, until the necessity has passed.

While one is incubating, it does not appear that her partner is compelled to play the part of a purveyor of food. Careful examinations have never enabled us to detect the least evidence thereof. When either party

is tired, or is severely pressed by hunger, the other is summoned to the spot, to receive the charge of affairs. Thus the business goes on for eighteen weary days, when the happy parents are blessed with a jolly little family.

The young are not the mere helpless creatures such as we have all along been describing, but as active beings, for the age, as it is possible to conceive of. Clad in silken robes of drab, with beautiful stripes of black adown the back, they constitute a merry, rollicking group of birdies. The world to them is a paradise of beauty, and a garden-spot of pleasure. As soon as they leave the shell, they run with remarkable speed, and otherwise exhibit a precocity which seems unnatural at that period of life. Feeding, like running, is instinctive. It cannot be that it is learned by imitation, any more than the exercise of the cursorial powers can be said to be thus acquired.

Although much of the trouble and care which birds generally bestow upon their offspring are thus saved to these fortunate parents, yet the power to discriminate between bad and good food, has to be learned by attention to the commands and actions of wiser heads. The young are not slow to profit from parental suggestions and instruction, for we find them, at the expiration of a fortnight, engaged in foraging with the judgment and adroitness of adults.

Few species exhibit symptoms of greater distress than these Sandpipers when their breeding-grounds are approached by human beings. The parents resort to every conceivable stratagem in order to draw the intruders away. Counterfeiting lameness, and fluttering along the ground with seeming difficulty, are two of the most characteristic devices which they practise for this purpose. But the appearance of a dog considerably heightens the agitation. It is very interesting to watch the actions of the female on such occasions. In order to lead him away from her terrified young, she throws herself before him, flutters away in a contrary direction, but always managing to keep out of the reach of danger. This she continues for some

time, until the animal has been drawn to a considerable distance, when she throws off the garb of dissimulation, and takes to flight, leaving her pursuer standing stock-still and gazing with astonishment and disappointment at the remarkable transformation which has just been effected. While all this has been going on, the young have scurried away to places of shelter and security, where they are afterwards joined by their beloved parent, glad to have escaped so fearful a calamity, and grateful for such a happy deliverance.

A more substantial proof of the affection of this female for its young could hardly be imagined than that which Wilson gives on the authority of Mr. William Bartram. The scene of action is described as being on the river shore, and the occasion, the repeated attempts made by a ground squirrel to capture two young birds which a parent was trying to defend. In order to ward off the assaults of the squirrel, she had thrown her two young behind her. At every attempt of the animal to seize them by a circuitous sweep, she would raise her wings almost perpendicularly, assume the most formidable expression of which she was capable, rush forward upon the squirrel, who, intimidated by the boldness of her manner, would beat a precipitate retreat. The enemy, recovering from his defeat, would presently return, and renew the attack, but to be ingloriously driven back as before. The young, as though sensible of their perilous situation, would crowd together behind their protector, and shift their position as she advanced or retreated. This interesting scene continued for at least ten minutes, when the strength of the poor parent was observed to flag. The squirrel perceiving his advantage, became more daring, increased the frequency of his assaults, and would have gained an easy victory had not Mr. Bartram stepped forward from his hiding-place and drove him back to his hole, and thus rescued the innocent.

The eggs of this species are usually abruptly pyriform, of a yellowish-buff ground-color, and are marked with blotches and spots of umber and sienna, which are collected chiefly about the greater extremity, where they are sometimes confluent. Occasionally, some specimens present a more

elongated form, and others have the primary color of a yellowish-drab tint, with the markings of a deeper shade. The dimensions vary somewhat in a large collection from widely-separated localities. The largest measure 1.41 by .99 of an inch, and the smallest 1.25 by .94. Considering the size of the bird, they seem to be out of all proportion.



CHIPPING SPARROW

PLATE XII.

SPIZELLA SOCIALIS, BONAPARTE.

Chipping Sparrow.

THE CHIPPING SPARROW, so familiar to everybody, is not only one of the most abundant, but also one of the most widely diffused of all our species. It is found from the Atlantic to the Pacific in its two races, and breeds from Georgia to Nova Scotia on our eastern seaboard, and from Vera Cruz, Mexico, northward through Arizona, Utah and California. Although obtained at different seasons of the year in all portions of North America to Mexico, it is a strange and remarkable fact that its breeding-grounds are not equally extensive.

Large numbers of these birds annually winter in the valley of the Colorado, and thence doubtless spread themselves over the whole Pacific region, as far north as Fort Resolution, on Great Slave Lake. In the East they may be seen in companies of a hundred or more from October to April through Northern Georgia and South Carolina, and possibly in the Gulf States.

On the return of mild weather, which generally follows the vernal equinox, these flocks forsake in a measure their winter homes, and journey northward. Those from Northern Mexico pursue a northwesterly course, reaching Arizona about the twenty-fourth of March, where a part remain to breed; but the greater portion pass up the valley of the Colorado, and after receiving fresh accessions to their number, continue their migratory course until they have reached their destination. On the other hand, our Eastern variety tarries longer in the South, and only takes its departure when Nature, awakened from her winter sleep in our Northern States, has begun to put on her charming robe of green. But unlike its Western

brother, it arrives in pairs, and never with the show and pomp of a large army. The tardiness of vegetation, and the paucity of insect life incident thereto, have doubtless much to do with the time and manner of its coming. In the Middle States this event happens during the last week of April, and in New England about the fifteenth, but the birds do not seem to become very abundant in the latter section until the beginning of May.

The Field and Song Sparrows, near relatives, are much earlier comers, and are already in full song, making the groves and fields vocal with praises, long before the Chippy has made his appearance. But when the latter does arrive, we must look for his presence in our gardens and orchards, rather than along the borders of thickets, where he commends himself to our favor and esteem by his tameness and sociability. About our doorsides he loves to glean his fare, and when an opportunity offers, will often enter our houses during meal-times. So accustomed to man does the species become, that individuals have been known to present themselves regularly for food, as often as thrice a day, and even to accept the same from human hands.

The male is so absorbed in feeding during the first ten days of his stay that no attempt at singing is made. His only note then is a simple *chip*, indicative of unrest. This is slowly uttered, and at somewhat measured intervals. But later, he essays a song, and throughout the month of roses, his unpretending ditty, which consists of a repetition of the same sound, is kept up for hours together with scarce an intermission. Though poor his reputation as a singer, yet individuals have actually been known to sing, and very sweetly, too, but such cases are wholly exceptional, *et lusus nature*. Mr. Flagg, in speaking of the male, says, "He seems to be the sentinel whom Nature has appointed to watch for the first glimmerings of dawn, which he always faithfully announces before any other bird is awake. Two or three strains from his octave pipe are the signal for a general awaking of the birds, and one by one they join the song, until the whole air resounds with an harmonious medley of voices." Again,

says the same happy writer, "His continued trilling note is to the warbling band of morning musicians which may be heard before sunrise during May and June like the octave flute as heard in a grand concert of artificial instruments."

The singing of the males is the inauguration of a new era in bird-life. The search for food no longer engrosses the attention as of yore, but the all-absorbing passion of love. The sexes cease their solitary wanderings. The females, moved by the touching appeals of the males, leave their native haunts, and join their masculine companions. All is now a scene of bustle and activity. The wooer and the wooed meet and lavish upon each other the most endearing attentions. Happiness reigns supreme. But the acme of felicity has not yet been reached. This is brought about by degrees, and is only perfectly attained when conjugal relationship is assumed.

In some parts of the country this important business is entered into as early as the fifteenth of May, but in others it is necessarily deferred until the succeeding month. The event is unattended by any peculiar demonstrations of joy, and is mostly celebrated in a matter-of-fact, business-like way; the happy couple proceeding at once to an exploration of the surrounding scenery for a suitable place in which to build a home. This is a matter of little moment, as almost any small tree or low bush is available for the purpose. The nest is never placed on the ground, even in Arctic regions, where so many of our tree-builders vary from this custom to nidificate on the ground. In the vicinity of houses, small trees, shrubbery and vines are utilized; but in pasture grounds, and on the borders of small thickets, the common red-cedar is chosen. Having selected a suitable site, both birds apply themselves to the task of building for a period of four or five days, when a neat and rather cosy structure is the result. Considerable variation is discernible in the architecture of different individuals. Some nests are rudely constructed, and rather loose and tenuous. Others have much of periphery, but little of thickness and internal depth.

A typical nest is hemispherical, neatly but loosely built, and possesses a cavity very symmetrical in contour. It is usually composed on the outside, except in rare cases, of fine rootlets, and is lined with black and white horse-hairs. In a beautiful domicile before us very few roots are noticeable, the bulk of the fabric being composed of horse-hairs, densely and compactly interwoven, and covered exteriorly with a few fine twigs and lint. Other nests before us are built entirely of fine rootlets. When such structures are found in bushes, and are well secured and protected by enveloping leaves and twigs, a curious anomaly often presents itself. A case of the kind came under our observation in August, 1876. Since that time others have been met with. It is where the nest, instead of occupying a nearly horizontal position, which is the natural one, is placed at an angle of inclination, and bears in the superior third a circular opening. What the object of this aperture can be, it is impossible to say, as the bird could never be surprised while on the nest. Possibly it was designed for the accommodation of the head of the owner while the process of incubation was going on; or, it may have been intended as a mode of ingress and egress, which opinion the position of the nest and its surroundings would seem to warrant.

One of the most curious and exceptional nests which we have ever seen, was obtained in the summer of 1870, in Northumberland Co., Pa. This nest was built upon a small bush, at an elevation of two feet above the ground. Externally, it is composed of dried plants, of an herbaceous character, with seed vessels intact. Internally, there is a slight lining of white horse-hairs. The diameter, on the outside, measures nearly four inches, and the thickness three and a half inches. The diameter of the cavity is three inches, and the depth nearly two. It is a magnificent structure, closely and compactly woven, and exactly hemispherical.

The drawing represents the usual style of nest. The position upon a branch of the red-cedar is one that is frequently chosen. The outside is mainly composed of fine roots of a reddish-brown color, and the inside of an equal mixture of white and black horse-hairs. The dimensions are as

follows: External diameter, three inches; internal, two and a quarter inches; depth inside, three-fourths, and outside, one and an eighth inches.

The nest being finished, oviposition commences on the ensuing day, and proceeds at the rate of one egg daily, until the entire number is laid. This varies from three to five, even in the same locality. Incubation commences on the day after the last deposit has been made, and continues for a period of ten days. It is chiefly the duty of the female, although the male occasionally lends his assistance by taking the nest. When not thus occupied, he either polices the premises to guard against intrusion, or is away in search of food. When with young both birds become devoted parents, and evince the greatest anxiety and consternation when their nest is disturbed.

Their actions at such times bespeak fear rather than courage. We have never known them to assume the threatening attitude which characterizes so many of our small species, nor seek to drive intruders away by sharp scoldings and angry gesticulations. But knowing that resistance would be useless, they quietly submit to circumstances, and repair to other scenes where they think to be secure from molestation and harm in carrying out the chief object of their being.

The young are fed at first on various larvæ, especially those of a lepidopterous character. To these, earth-worms, aphides, beetles and flies are added as condition and age require. When twelve days old they are persuaded to leave the nest, and, under the direction of the paternal sire, receive instruction in bird-lore. A period of eight or nine days more, and they earn their own living. They do not forsake their parents, however, but follow them into their old hunting-grounds, and thus help to constitute the small flocks which are generally observed in the fall of the year in our Eastern and Middle States, previous to migration.

The eggs are oblong-oval in shape, and vary considerably in size. They are of a bluish-green color, and are sparingly spotted with umber and dark brown markings about the larger extremity. In some specimens,

the latter are grouped after the fashion of a wreath, but this is the exception rather than the rule. The largest specimen we have ever seen measures .80 by .57 of an inch; the smallest, .58 by .47. The average measurement is .72 of an inch in length, and .54 in breadth. The species as far as known is single-brooded.



SCARLET TANAGER

PLATE XIII.

PYRANGA RUBRA, VIEILLOT.

Scarlet Tanager.

THE SCARLET TANAGER, a species but little known outside of the ornithological world, is more generally distributed than the casual observer is aware. According to various authorities, it ranges from Texas to Maine, and from South Carolina in a northwesterly direction to the southern limits of Lake Huron.

In the Eastern parts of Maine and Massachusetts it is but an occasional migrant; while in the western counties of the latter State, it is somewhat more plentiful, and nests in high, open woods and time-bewasted orchards. But it is in the States of Pennsylvania, New Jersey and Virginia, and throughout the great Valley of the Mississippi, that the birds more especially abound and rear their young.

Few species are more susceptible to cold and sudden atmospheric changes than the subject of our sketch. As a necessary consequence it is by no means a very early comer. However fond it may be of the scenes of last year's labors and pleasures, it does not forsake the genial climate and perennial groves of its tropical American home, until balmy April has yielded her crown and sceptre to the lovely goddess of May.

The male is usually the first to appear, the time of his arrival antedating that of his sombre-colored, less-favored companion by three or four days, although cases are cited where the sexes seemed to have performed the journey together.

For some time subsequent to his advent, the male is shy and suspicious, keeping away from the habitations of man, lest his brilliant suit

of scarlet and black should excite the envy of some cruel and conscienceless collector, and he be summarily called upon, at the peril of his life, to part therewith.

The female, on the contrary, less attractive in style and dress, has fewer human admirers, and is permitted to roam *ad libitum*, and with as much freedom and confidence as any of the little feathered creatures that crowd about our doors.

But a change comes over the males after the lapse of a week or ten days. They may now be seen along our thoroughfares, and in our fields and gardens, acting with none of their former timidity, but endeavoring, by their beautiful plumage, agreeable manners, sweet song and useful service, to ingratiate themselves into the favor and esteem of their human brethren.

Thus affairs continue for nearly a month, the sexes crossing and recrossing each other's paths in their many journeyings, and so intent upon the procurement of food, that the object of their mission is either entirely lost sight of, or else is held in check, for the nonce, by some strong impulse of their being.

Events, however, are ripening for a speedy fulfilment of the business that has called them hither. The males exhibit less anxiety about food-questions, and a positive distaste for the unsettled and lonely lives which they have been leading. A similar feeling, but less conspicuously manifested, pervades and animates the gentler sexes, if outward actions afford proper criteria for judging of internal emotions. But exceedingly more coy than their imperial lords, they keep at a respectable distance, preferring to be wooed and won, rather than assume any other *role* in the drama.

The duty of taking the initiative step falls to the lot of the male. In order to accomplish this purpose more effectively, perhaps, as he thinks, he seeks the tall tree-tops, and for many a long and weary hour, thrills the ambient air with his sweetest music. We have seen many a venture-

some fellow, seemingly unconscious of his surroundings, and wholly absorbed in his voluntarily-imposed task, take his station upon a lofty tree by the road-side, in full view of passers-by, and pour forth his harmonious utterances with all the animation and pathos of his being. Tired at last, he ceases his efforts, preens his feathers, and is off to try his fortunes elsewhere. Thus he keeps up these movements, with necessary intermissions of rest and recreation, during the livelong day, until his song has arrested the attention of some impressible female. This ditty, which is uttered in a low and pensive manner, and which may be rather accurately represented by the syllables *chi-chi-chi-char-ee-char-ee-chi*, has been likened to the well-known notes of the Baltimore Oriole, but we are unable to trace the least resemblance thereto.

His efforts being finally crowned with success, the happy lover is profuse in his attentions and caresses, and leads his willing bride to other scenes, where they spend a brief season of enjoyment, before entering into preparations for establishing a home. As they move through the branches and foliage together, they utter their affection in a low whispering warble, and in tones of singular sweetness and tenderness.

Having celebrated their nuptials, they settle down to the duties of nest-building in earnest. The selection of a site is the first thing that commands attention. This is a matter of no little importance, and one that requires the exercise of considerable judgment. Both birds generally go together on this essential business, and carefully ransack the fields and thickets until a location is obtained which is wholly eligible. Nothing occurs in these examinations, if we are to judge from the behavior of the participants therein, to give offence, or mar the happiness of the wedded pair.

The places selected vary according to latitude and the fancy of the builders. Orchards, and groves of chestnuts, oaks, and nut-trees are frequented, and often a preference is manifested for swampy woods if not too dense. In places contiguous to human habitations the builders, especially

the male, act with less carefulness than in more retired localities. They are here more secure from the depredations of rapacious birds, the latter having a decided aversion to man, their inveterate and merciless foe.

Building operations are usually begun about the fifteenth of May in the latitude of Philadelphia, towards the close of the month in New England, but never later than the first or second week of June. In its southern breeding-quarters, following the examples of its more distant relatives, it doubtless nests earlier.

The nest is placed upon the horizontal branch of a fruit-tree, usually on the edge of a wood, but occasionally in an orchard. Sometimes it is built over a crotch, which constitutes a more stable position. When a nest is located on the outskirts of a thicket, some species of oak, or the tulip-tree, is generally selected as the recipient thereof. In an orchard, the apple claims and receives this honor. Its height above the ground is mostly from fifteen to twenty feet in sequestered situations, but in cultivated districts, a much lower elevation is chosen.

The labor of building is performed mainly by the female, her partner lending but little assistance. The time devoted to the task seldom exceeds a period of four days, and so loosely are the fabrics put together, in the majority of cases, that they scarcely survive the season for which they were intended.

A structure before us is rather symmetrical and neatly built for the species, and quite shallow. Externally, it is composed of dried twigs, weeds and grasses, variously intermingled. Internally, there is a lining of fine roots, grass-stems, and the inner bark of the chestnut and oak. The outside diameter is five and a half inches, height two inches, diameter of cavity three and a half inches, and depth about half an inch.

Mr. Nuttall describes a nest examined by him as composed of rigid stalks of weeds and slender fir-twigs joined together with narrow strips of apocynum and pea-vine runners, and wound around with thin wiry stalks

of the helianthemum, the whole so loosely and thinly plaited as to admit the light quite readily through the interstices.

The Plate represents the average structure. On examination it will be found to be nearly circular above, although somewhat irregular towards the lower two-thirds. The base is rather loosely constructed of strips of bark, fine stems of vegetables with dried flowers attached, and rootlets of woody plants. Upon this as a basis is wrought, with more compactness and finish, a framework, which is beautifully lined with reddish-brown stems of herbaceous plants, and fine strips of inner bark. The external diameter is five inches, and the height, two inches. The diameter of the cavity is three inches, and the depth one-half of an inch. This nest is shown in its natural position over and partly between a forked branch of one of our common species of oak. The female bird is placed upon the right, as though about to assume the duty of incubation; while her illustrious partner occupies a very dignified position on the left of the picture. All the figures, however, are reduced one-third, so as to bring them within the scope of the page.

Having completed her home, the female almost immediately commences to deposit her complement of four or five eggs, at the rate of one a day, in as many consecutive days. This business being attended to, on the day succeeding the last extrusion, she takes the nest, and for a period of twelve or thirteen days of rather close sitting, supplies the warmth necessary to develop her house-full of children.

It is a remarkable fact, and one that beautifully displays the wonderful wisdom which is taught by Nature, that the brilliantly-colored males studiously avoid the nest, and only approach it, when necessary, with caution and stealth, for fear of betraying its presence; while the females, with their plain coloring in harmony with the surrounding foliage, sit thereon, and care for their helpless offspring without danger of molestation. But if the nest is approached with hostile intention, or is actually invaded, the males emerge from their places of concealment, and assist in

carrying its precious treasures away. But how this is accomplished, it is impossible to say. Mr. Minot has known instances where the young have been removed, although many of the cases seemed to be beyond the ability of bird-ingenuity to accomplish.

On one occasion, while our worthy friend was ascending a tree which contained a nest of this species, and that, too, with as much care and quietness as was possible under the circumstances, he was surprised to see the parent birds return several times to the tree upon his arrival at a point which commanded full view of the inside of the domicile. Although the nest was known to contain eggs, which were seen through the interstices from below, his astonishment was undoubtedly heightened, when he discovered it to be empty. He immediately began an examination of the premises, but could find no pieces of broken shells, or traces of yolk on branch, or on the ground beneath. The eggs had certainly been spirited away, but whether they were afterwards returned and successfully hatched or not, he was unable to say.

Notwithstanding the precaution which these birds take in the selection of a building-spot, and the artfulness with which they seek to conceal their home by means of the surrounding leaves, it is a fact, not generally known, but nevertheless true, that much of their prudence and painstaking counts for naught. They may deceive the trained collector, but they cannot elude the sagacity and watchfulness of the female Cowbird, who is ever on the alert and ready to slip into their unoccupied nest and deposit her own egg.

We have known instances where as many as three of these parasitic eggs had been left in the nest alongside of one of the rightful occupant's eggs. A case of the kind came to notice last summer. But whether the owners of the nest would have hatched the intruders or not, we cannot say, as its contents were rifled shortly after the discovery had been made. Owing to its shallowness, it is highly probable that the owners would have thrown them out on becoming cognizant of their presence. With small

birds, and also with those which are in the habit of building deep nests, there is considerable difficulty attending such an attempt. The birds are generally obliged to submit to circumstances, and hatch the aliens.

The food of the young is chiefly collected by the mother-bird, and consists of the larvæ of beetles, various species of lepidoptera with mature forms of the same, spiders, plant-lice, diptera and earthworms. These are fed to them for the space of a fortnight subsequent to their leaving the eggs, when they quit for the first time the close precincts of their shallow home, to receive their earliest impressions of the outside world, or to take some lessons in the secrets of bird-lore. Another week more, and they are thrown upon the cold and pitiless world to fight their way as others have done before.

The devotion of the parent to her young is shown not only in the assiduity with which she labors to supply them with the essential articles of diet, but also in the distress which she manifests when they are in perilous situations, and in her efforts to extricate them from the same.

Wilson relates a very touching instance of such devotion. Having taken a very young bird from the nest, he carried it to his friend, Mr. Bartram. The latter gentleman placed it in a cage, which he suspended near a nest containing young Orioles, in hopes that the parents of these birds would be moved to feed it. This they failed to do. Its cries, however, attracted its own parent, who diligently attended it, and supplied it with food for several days. At length she became so solicitous for its liberation, as evidenced by repeated cries of entreaty, that Mr. Bartram could bear it no longer. He immediately mounted to the cage, took out the captive, and restored it to its parents, who accompanied it to the woods with notes of great exultation.

Early in August the male begins to moult, when, after a little, he appears in the greenish livery of the female. In this stage he is not distinguishable from her or his young family. Now is the time for departure, and parents and young forsake with many regrets the land where

they have experienced so much real happiness, for the sunny groves of Mexico and Peru, or the breezy forests of their West Indian home.

The eggs of this species vary from an inch to .90 in length, and have an average width of .65. The ground-color passes from a well-marked shade of greenish-blue to a dull white with scarcely the faintest tinge of blue. In some the spots differ in size, are more or less confluent, and chiefly of a reddish-brown color intermingled with a few others of an obscure purple. As a rule, there is a notable resemblance to each other, in the eggs of the same nest-complement, except where, by reason of pillage, or some adventitious circumstance, the female is called upon to deposit, after she has already furnished the necessary number, in order to compensate for those that have been taken or destroyed. It may be the earliest-laid eggs that have escaped the avaricious oologist. In that event, the additional ones must necessarily be lighter in colors, and contrast very strongly with those which remain. Locality has doubtless much to do with color-variations, southern specimens being more sharply defined than those from colder latitudes.



MARY S. WALLACE

PLATE XIV.

HIRUNDO HORREORUM, BARTON.

Barn Swallow.

THE BARN SWALLOW, the chief of its fellows, is the most widely diffused, most generally abundant, and, wherever found, the best known of all our species. None are more universally or deservedly popular.

It ranges throughout North America from Florida to Greenland, and from the Atlantic to the Pacific Ocean, breeding, strange to say, over nearly the whole of this vast territory.

Such is its attachment to last year's scenes and associations, that it leaves its far-off home in the sunny South rather early, gathering its forces from the plains of Brazil, the spicy isles of the Indies, and the lofty plateau of Mexico, and wends its graceful flight northward.

Unlike many of its kin, this familiar little species does not wait until the soft mild days of May have visited the earth, but, actuated by an overmastering instinct to revisit the land of its nativity, it comes ere the dying throes of the winter-demon have ceased to be heard in the wild March winds.

But the more genial fields and streams of our Southern border-states first invite its presence, and offer it an abiding-place, until its more northern habitats are made to rejoice under the influence of the sun-god. In the Central section of this great land of ours, this generally occurs during the early days of balmy April, when spring may be said to commence in earnest.

Hundreds of these agile creatures, carried away by the exuberance of their feelings, may now be seen either disporting themselves in the atmo-

sphere, or more profitably engaged in pursuing their multifarious prey on swift and noiseless wings.

While some remain in these parts to breed, others retire further north, and take up their quarters in old accustomed haunts; reaching New York and Southern New England towards the close of April, and the more northern portions of the latter section about the first of May. Continuing their migration, a few, according to Sir John Richardson, pass on until they have attained the latitude of $67^{\circ} 31'$, where they stop to breed. This doubtless occurs about the last of May, or the beginning of June, if the fact of their nesting at Fort Chippewayan, ten degrees further south, on the fifteenth of May, affords any basis for computation.

On the Pacific coast these birds are less abundant than on our Eastern shores. This is attributable to the lack or scarcity of suitable building-places. As settlements multiply, they increase in numbers, especially in the neighborhood of farms. Farther inland, the species is conspicuous for its rarity.

From the time of its arrival until its departure about the first of September, and even during the breeding-period, this Swallow delights in society. When foraging for food, it is not unusual to see varying numbers of birds engaged in the same useful occupation. This habit of gregariousness, which evinces a love for the companionship of its kind, instead of dying out, as is generally the case with many species that might be cited, continues to exist, and manifests itself during the time of nesting by a desire to dwell in communities. But this is not everywhere the case.

In some parts of the country, particularly in the extreme north, the sexes appear to come together only upon arrival at their places of destination. Mating commences either while the birds are in transit, or immediately upon the conclusion thereof; and as nesting commences when they have reached the end of their journey, it is reasonable to conclude that the two follow each other in close succession, leaving no time for the display of those curious antics so characteristic of the feathered creatures.

But in lower latitudes, the first two or three weeks after the arrival of these birds, is spent in the procurement of food. The good which is then accomplished, cannot be fully appreciated, and is of such immense value as to gain for the species the high position which it occupies in the affections of mankind.

During the whole of this time, we have seen nothing that would appear to indicate that courtship is indulged in. Perhaps this necessary business of bird-life is practised in mid-air, while the sexes are skimming through the swaying fluid, or circling in joyous company high overhead. May not the pleasing, lively succession of twitterings which drop earthward, when these lovely creatures are careering towards the dome of heaven, be the love-songs which the males are pouring into the ears of listening females? To be fully appreciated, they should be heard during these exciting aerial movements. When perching, the birds seem less animated; consequently, the music is slower, but none the less agreeable.

Whether this business is in vogue or not among these birds, matters little, so long as the important duty which has brought them hither is accomplished. That this is the case, is indisputable, as the sexes are known to separate from the flocks, and repair to accustomed haunts to build.

The period of nesting varies somewhat according to latitude and the conditions of the weather. In the West, nests have been found with eggs as early as the thirtieth of April, but this was in the vicinity of San Francisco. In semi-tropical regions, it is reasonable to look for an early assumption of matrimonial relations. But in the generality of instances, outside of our warm Southern latitudes, the birds commence to build their domiciles from the fifteenth to the last of May, and, in some cases, even running into the first week of the month that follows.

In the construction of a home, which is usually the work of six days, the builders apply themselves with persevering assiduity, only stopping from their labors, for brief spells of time, in order to rest, or to procure the essential articles of food.

The places selected for this purpose are strange and various. In the wild districts of the West, the birds nidificate in caves that abound in the bluffs along the sea-shore. Near Fort Dallas, Oregon, the basaltic cliffs so common thereabouts are utilized. In the vicinity of Pyramid Lake, Nevada, their nests are placed among the "tufa domes" attached to the roofs of caves, seldom more than one or two pairs being found together. In other localities, in the same section of country, limestone cliffs, crevices of rocks, and sides of wooden bridges, serve the same purposes.

Coming East, where they are much more familiar and confiding, we find quite a change in this particular. Venturing into our crowded cities, they often build their elaborate homes in the porches of dwellings. But the various farm-buildings, which are noticeable in agricultural regions, are generally to be preferred. In such places, the nests are erected on horizontal rafters, or secured to the frameworks, underneath the eaves, after the fashion of the Cliff Swallow's nest. Again, bridges and dilapidated spring-houses are occasionally pressed into service. Besides the foregoing, cases have been cited where the nest of the Cliff Swallow was used, and also one where a small building, of very rude structure—which was temporarily occupied as a blacksmith-shop—was utilized.

Their natural breeding-places, before the settlement of this country, were caves, overhanging cliffs, and like situations. Swallow Cave, at Nahant, was formerly a favorite place of resort. As the country becomes settled, these places are forsaken for the more convenient ones which the buildings of the farm afford. Such accommodations, experience has shown, tend to a rapid increase in their numbers, for the birds are not slow to perceive the advantages which result from a close familiarity with man.

The nests are constructed of separate layers of mud, from ten to twelve in number, which are often, though not always, parted by strata of fine grasses. The layers themselves are formed of small pellets composed of clay and fine sand, worked over by the birds, and which are adjusted side by side until each layer is complete. The walls being finished, the

circumscribed cavity is stuffed with fine soft grass, and is warmly lined with downy feathers. The average height and breadth of such structures when placed on the horizontal rafters of barns is about five inches. The cavity is usually three inches wide at the rim—thus making the thickness of the walls an inch—and about two inches in depth. When placed against the side of a house or of a barn, a strong foundation of mud is usually built, upon which the nest is reared. In that event, the nest is more compactly made, and varies from the preceding by its more elongate form.

A striking peculiarity of many of these fabrics, is an additional platform which is placed against the nest proper, but wholly distinct therefrom. This is undoubtedly designed as a roosting-place, and is used during the incubating period by the one or the other parent at night, or when not occupied in the procurement of food, or by both when the young have complete possession thereof.

A nest before us which was built upon a horizontal rafter underneath an overshoot, and which may be regarded as typical in the ordinary scientific sense, is composed externally of ten semi-elliptical series of mud pellets, slightly overlapping each other after the manner of tiles, and intercalated with the stems and blades of fine grasses. Similar vegetable materials are found in small quantities on the outside, which serve to strengthen the pellets, thus acting as substantial girders to the entire structure. On the inside is a small layer of the stems of our common timothy grass, which is followed by another of greater compactness, and, finally, by a lining of soft meadow grass. The entire length of this nest is four inches, and it gradually tapers from above downwards, giving the appearance of a longitudinal section of an inverted cone. The depression is two and a half inches wide in one direction, about four in the line of greatest width, and scarcely an inch in depth, the shallowness being compensated for by the greater length transversally.

The Plate represents a nest which is nearly the exact counterpart of the one just described, differing immaterially therefrom in the lack of

grasses between the layers of mud on the outside, and in having a lining of feathers. The dimensions are about the same in the original, but have been somewhat reduced in the cut, owing to the size of the page. The female is shown upon the edge of the nest, peering therein, while her stronger half is on the wing, and evidently homeward-bound. In the natural position this elaborate structure was completely protected by the eaves of the building against which it reposed, but in order to show the inner arrangement, as well as the eggs *in situ*, the artist was compelled to leave it partially exposed.

The nest being completed, two or three days elapse before the female is ready to deposit her first egg. Having commenced, she continues to do so, at the rate of one a day, until her full number is laid, which, according to what shall constitute her complement, requires from four to six days. Incubation immediately succeeds, and lasts for eleven days. This is not exclusively the work of the female. Sometimes her affectionate husband relieves her for awhile. But when not thus employed, he occupies his spare moments either in fetching her some dainty article of meat, or in guarding his home from intrusion. Few species show less dread of man during these times. Such is the confidence which is reposed in him, that the sitting-bird will keep to the nest, and allow him to pass within a few feet of her. But, on the other hand, if any interference is attempted, she glides noiselessly out, and watches and contemplates his movements with few, if any, murmurs of complaint.

An interesting account is given of these birds by Mr. J. K. Lord. While he and his party were encamped at Schyakwateen, in British Columbia, a small shanty, loosely constructed of poles, and tightly roofed, was erected, and used as a blacksmith's shop. Early one morning, late in June, they were visited by a pair of Swallows, who instantly perched on the roof of this shed, unmindful of the noise of the bellows, or the showers of sparks that flew around. Presently they entered the house, and commenced an examination of the roof and its supporting poles, twit-

tering to each other the while, in the most animated manner. At length the matter appeared to be settled, and on the ensuing day they commenced the erection of a building on one of the poles directly over the anvil. Though the hammer was constantly passing close to the structure, yet the fearless builders kept steadily at work, and in about three days had completed the rough outline thereof. A few days more, and their home was ready for occupancy. The narrator often stationed himself upon a log to watch them, with his face so near, that their feathers frequently brushed against it as they toiled at their task. Suffice it to say, the eggs were laid, the young hatched and successfully reared, and the trustful pair maintained their serenity and fearlessness till the last.

The attentions of the parents to their young are unremitting. The number of small insects which they collect for them is almost incredible. Flies, aquatic larvæ, and small moths form a considerable part of their earliest diet. But as they become older, other insects are added to their bill of fare. When about fourteen days old they are able to leave the nest. The manœuvres of the parents to entice them out, and the assistance which they render them in their first feeble attempts at flight, are among the most curious and interesting of all our ornithological experiences. A few days' training gives them complete control over their alar appendages, and they are soon as merry and happy as any of their older companions, as they sail through the air in quest of insects, or in the pursuit of pleasure. By the first of September, they are strong enough to endure the fatigue incident to the long journey which they are called upon to make, in obedience to the supreme law of their being, at this season of the year.

The eggs of this species are white with a roseate tinge in unblown specimens, and are marked with spots of reddish and purplish brown, varying in size and number, but chiefly collected about the larger end. From the Cliff Swallow's eggs, they differ in having finer spots, and in being smaller and rather more elongated. Specimens from different local-

ities, and even in this region, show marked variations in length, some being .95 of an inch, and others, not more than .74. The same holds good with respect to the width; the greatest being .63 of an inch, and the least .50. The average dimensions are .77 by .55 of an inch. The number of broods generally raised is two, the latter often as late as the last of July, or the beginning of August. This is not always the case, especially when the season has been unusually delayed by means of the weather, or when the natural instinct has been unaccountably restrained.



CALIFORNIA QUAIL OF CALIFORNIA.

PLATE XV.

LOPHORTYX CALIFORNICA, BONAPARTE.

The Valley Quail of California

THE VALLEY QUAIL—so called in contradistinction to the Plumed or Mountain Quail, which inhabits hills and highlands—has an exceedingly limited range. It abounds in all the valleys of California and Oregon, both inland and maritime, but never in the forest-depths, nor on the mountain-tops, nor in the interior basin where there is a dearth of water and vegetation. In the spring of 1857 these birds were introduced into Washington Territory, on the grassy plains near Puget Sound, where they soon established themselves.

According to Dr. Coues, who has paid special attention to the distribution of our birds, the present species ranges from the Columbia River to Cape St. Lucas. In California it is chiefly restricted to the country west of the Sierra Nevada, which, with the Great Colorado Desert, is said to constitute an apparently impassable barrier between it and Gambel's Partridge—a very near relative. Up the mountains a higher elevation than three or four thousand feet is never known to be attained, the region beyond being occupied by the Mountain Quail.

Prairies and grain-fields, and thickets along the borders of streams, are noted places of resort. Coveys of from a dozen to a hundred or more individuals may be seen in such places, during the non-breeding season, busily employed in gleaning, or in some sort of diversion. Although comparatively tame, and permitting a very near approach, yet when disturbed, they betake themselves to the bushes or trees. When to the latter, they squat so closely along the branches, as to escape the keen sight of

pursuers. It will not lie to a dog, as our Eastern species is wont to do, but runs until driven to seek safety in flight.

Throughout California these birds are often domesticated, and made to consort with the common barnyard fowl. A similar practice might be tried in the East with happy results. That it would succeed, there can be no reasonable doubt. A few years ago, an attempt was made to introduce them into Long Island, which was only partially successful. But the demands of New York epicures soon led to their extermination.

The season of flocking being over, which continues from the first of September until about the middle of May, as nearly as we can ascertain, the coveys break up into pairs, and mating is about to commence. This important event is heralded by certain peculiar cries which the male-birds emit while sitting upon a stump or prostrate log in the midst of the surrounding verdure. These notes are very strange, and may be likened to the harsh and disagreeable tones of some of the Woodpeckers. "They may be aptly represented," says Dr. Newberry, "by the syllables *kúck-kúck-kúck-kā*, the first three notes being rapidly repeated, the last prolonged with a falling inflection."

Language can hardly describe the actions of the males during these times. While some may be seen strutting along some fallen log, or gesticulating overhead on the motionless tree-branches, others, less lofty in their aspirations, move with dignified demeanor in and out the bushes, untrammelled by interlacing grasses. All, however, seem animated by one common impulse—the admiration and favor of birds less beautiful, perhaps, but more modest, than themselves.

It is a charming sight, and one ever to be remembered, to watch these enamored birds as they press their several suits. The stately tread, erect but comely carriage, waving plumes, quivering wings, and flashing eyes, bespeak the proud consciousness of superior worth and vigor. The beautiful bird glances defiantly about him, and challenges loudly for a

rival. Again, he throws down the gauntlet, but none appears to take it up. He may now retire; his rights are proven.

But hid away in leafy bower, a gentler being watches his movements, admires his bearing, and fascinated by the courage she sees displayed, hopes that the next movement may bring him to her side, but dreading lest it may. At length their eyes meet, she trembles and attempts to fly, but cannot. Another look; he reads the secret of her heart, and with one loud, exultant cry, flies straight to her, curtsies low, and with wing half-spread above her, whispers softly in her ear the story of his love. She listens, but draws away. He pleads once more. She stands irresolute. Again he makes the attempt. This time with all the eloquence of his being. He conquers, and what a joy is his!

The trial over, the prize secured, the delighted lover, proud of his bride, showers upon her the rich fruitage of his love, guards her with jealous care, and seeks by every means in his power to add to her comfort and happiness. A few days thus spent, and the wedded couple, conscious of the sense of responsibility which attaches to them, cast about for a suitable spot for a home. They search through the tall, rank herbage, among piles of driftwood that lie scattered about, under fallen cacti, or in the shadow of jasmine bushes, and at length make up their minds. Where none of these are to be found, they do not hesitate to take to an open field. Little more is needed than to fix upon a spot, for the nest is far from an elaborate affair, being aught else than a collection of loose, dry grasses arranged without much care. In many instances, even these articles are dispensed with. The Plate represents the ordinary style of nest, containing a set of thirteen eggs drawn to the natural size. On the left of the picture may be seen the male, which differs from the female in his more brilliant and vivid colors, both being placed in the background.

Having finished her simple domicile, or rather having chosen a spot for laying—for in the generality of cases no nest whatever is made—the female deposits day after day the eggs which are to constitute her

complement. These are said to be from twelve to sixteen in number. When not pressed to lay, she rambles about with her lord, in close company, until compelled to take the nest. She now abandons all recreation, becomes sober and maternal, and sets about her duty in earnest. But she is not forgotten because she cannot enter into his idle amusements. Mounted upon some bush or log which projects above the nest, he stands watch, or solaces her weary moments with his best music. This ditty, though far from being harmonious, is presumably satisfactory to the one concerned. The time spent in incubation lasts for two weeks or more, until feeble cries are heard from the nest. The mother-bird now dries and cuddles the queer little beings, and the happy parents soon lead them off in quest of food. When the young are disturbed by human foes, the male-bird utters a sharp *pit*, resembling the common note of the Cardinal Grosbeak, which is doubtless the signal for flight.

The eggs of this Quail differ somewhat in size, and also in ornamentation. The ground-color is usually a creamy-white. The markings sometimes occur in the form of freckles, at other times in large scattered spots, and frequently in the form of confluent blotches. Their colors pass from a uniform shading of olivaceous-drab, through a rusty-drab, into a chestnut-brown. All the specimens that we have seen are sharply defined at one extremity and rounded at the other. In a set of fourteen eggs before us, the largest measures 1.32 by 1.00 inches; the smallest 1.13 in length and .97 in breadth. The average size is 1.23 by .98 inches. From the number of eggs sometimes found in a nest, it becomes a question whether birds, severely pressed, may not sometimes lay in nests not their own. We have no positive information that this does happen, but observation renders it highly probable that such is the case with the Virginia Quail, and, also, with some other birds. But however this may be, it is tolerably certain that broods of young sometimes coalesce after hatching. It has even been inferred that several females belong to one male, and with their varying broods run together.



GOLDEN-CROWNED KINGLET.

PLATE XVI.

REGULUS SATRAPA, LICHT.

Golden-crowned Kinglet.

THE GOLDEN-CROWNED KINGLET, or WREN, ranges over nearly the entire continent of North America, from the Atlantic to the Pacific Ocean, and northward from Texas and New Mexico to Sitka on the west, where it seems to replace the Ruby-crown. On our eastern seaboard it doubtless attains as high a latitude. Audubon claims to having found it nesting in Newfoundland, and Baedecker, in Labrador, but recent travelers have certainly not encountered its presence during the breeding-period in those parts, since they have left no record of such occurrence.

In the United States, until recently, it was generally supposed to be a migrant; arriving pretty punctually in October, just as autumn is merging into winter, and remaining till May. But the past five or six years have let in new light upon its history, and shown, what had already been surmised, that it would be found to breed in the coniferous forests and mountainous regions toward our northern border.

Our knowledge of the species is limited, and is mainly restricted to its habits during its long stay with us from October to May. Every one who has left the shadow of home, and strayed out into the fields and woods, or along the margins of ice-bound streams and ponds, must have had his attention directed to its cries as it flitted from tree to tree in search of food. At such times, the sexes remain apart, or but occasionally come together. Although shunning, rather than courting each other's society, their casual meeting is not the harbinger of contention, but is either tacitly acknowledged, or passed by unnoticed. While there seems

to be an indisposition to mingle, yet evidence is not wanting to show that society of some kind is not wholly disagreeable. Either sex manifests, or seems to manifest, some regard for the Black-capped Titmouse. Wherever you discover the one, you are pretty sure to find the other. This occurrence does not appear to be accidental, but rather to be dictated by a desire for company, or by actual necessity.

Although evincing a decided partiality for Nature in her wildness, on warm, sunshiny days in mid-winter our little friend may frequently be seen climbing about our trees after the fashion of a Creeper, or standing beside our doors in anxious expectation of receiving his share of crumbs from the table. He is now the very impersonation of fearlessness, and conducts himself with all the familiarity of a long-trying friend.

But as spring returns, a peculiar cry greets the ear, louder and more frequent than usual. *Tsī-tsī-tsī* comes from wood and glen, from stream and hollow. Once heard, these syllables can never be forgotten, for they are uttered in a running, pleasing rhythm, and with a gently-rising intonation, and seem indicative of joy and satisfaction. But as the season for departure arrives, these sounds give place to others of a more agreeable character. Even in the heart of winter this music may be heard. Perhaps some precious reminiscence of the past has arisen in the memory to evoke this flood of song.

Full of expectancy and unrest, about the middle of May—often earlier, seldom later—the little Golden-crown wings its flight to other scenes. Of the exact time, we know nothing. It does not stop to bid us an affectionate adieu, but is gone before we are hardly aware of the blank which it has left. Its return is as unheralded and mysterious. To-day we admire its graceful actions, sprightly ditty and beautiful plumage. To-morrow we search the old haunts, feeling almost confident that it must be lurking somewhere about, but to be doomed to disappointment. Occasionally our patience is rewarded by finding a couple of individuals, who have either lost their reckoning, or have made up their minds to spend

the summer at home. But the most of their fellows still follow the path which their ancestors have so long trodden.

While some follow the stretch of country between our two great western mountain systems, and breed in Washington Territory and the country to the northward, others forsake their winter-quarters, and travel in a northeasterly direction to the shores of Newfoundland and Labrador. A few, however, lag behind and find suitable summer resorts in the pine forests and Thuja swamps of New Hampshire and Maine. When our mountain regions and dense forests are better known, we hazard the opinion that many will be found to breed nearer home than we are aware. Paired individuals have often been met with along the hills of the Wissahickon, in Pennsylvania, during the breeding-season, which evidently had nests, but diligent search failed to reveal the fact.

Before the discovery of the nest of this species, the presumption was that it built a pensile nest, not unlike the European congener, and that it laid small eggs faintly sprinkled with buff-colored dots on a white background, but differing little in size from those of the common Humming-bird. It was also inferred that two broods were annually raised, from the fact that so much time was spent in its summer abode, and also because full-fledged young were found by Mr. Nuttall in May, on the Columbia, and in August, by Mr. Audubon, in Labrador.

According to Mr. J. K. Lord, who discovered this species to be very common in Vancouver's Island, and also along the entire boundary-line of Washington Territory and British Columbia, where it sometimes reaches an elevation of six thousand feet, it constructs a pensile nest, which it suspends from the extreme end of a pine-branch; and that it lays from five to seven eggs. The materials of the nest, and the color and dimensions of the eggs, were never described.

The world remained in ignorance of these matters until the summer of 1875, when Mr. H. D. Minot discovered, on the sixteenth day of July, a nest of this species. It was built in a forest of the White Mountains,

which consisted chiefly of white birches and evergreens. The nest was securely fastened to the twigs of a spreading hemlock-bough, was globular in shape, and placed about four feet above the ground. The outside was composed of hanging moss and bits of dead leaves; the inside was chiefly lined with feathers. There can be no doubt as to the authenticity of this nest, as Mr. Minot observed the parents in the act of carrying food to their young, and was enabled to track them to their homes.

But the structure from which the drawing was made—found near Bangor, Maine—was presented to Mr. Harry Merrill, in the summer of 1876. It was placed about six feet from the ground in a mass of thick growth so peculiar to many of our fir trees, and is chiefly composed of moss on the outside, with a few small fragments of chips, and is lined with hair and feathers, the latter principally. The external diameter is four and a half inches, and depth outside nearly three inches. The opening is at the top, and measures about one and three-fourths inches across, and two in depth. Although the birds that built this nest were not seen by Mr. Merrill, yet by the pretty sure evidence of exclusion, they cannot belong to any other species than the one under consideration.

Of their habits while with young, our knowledge is small. It is evident, however, from what Mr. Minot says, that both parents supply their nestlings with food. Incubation is doubtless performed by them both, the female assuming the bulk of the labor. Unlike many species, these birds do not pass the breeding-season in silence, but keep up, with occasional intermissions, an animated twittering.

The eggs possibly range from six to ten in number. To the eye they appear of a cream-white color, apparently covered with minute spots. Under the microscope, the ground-color is white, with shell marks of purplish-slate, and a few obscure spots of a deep buff, rather superficial, to which their dirty tinge is probably due. The largest egg measures .52 of an inch in length, and .40 in width; the smallest, .47 by .30 inches. The average dimensions of the ten eggs are .50 by .41 inches.



BOOBY-BOOBY-BOOBY

PLATE XVII.

UTAMANIA TORDA, (LINN.), LEACH.

Razor-billed Auk.

THE RAZOR-BILLED AUK, owing to its boreal residence, is not so well known as many other marine species which breed nearer home. Like its few intimate cousins, it is chiefly restricted to Arctic regions, only coming southward when pressed by severe weather.

Though apparently the best known of its family, yet many of the details of its habits are lacking to render its biography anything like complete. Of its area of distribution we are tolerably well-informed. In the north-eastern portions of North America, particularly along the seaborders of Labrador and Newfoundland, it is quite plentiful, and thence occasionally strays along the coast-lines of New England and the Middle States during the winter. These birds, however, are not confined to this continent, but are identical with the bird of the northern regions of the Old World.

According to Mr. Cory, who has studied them in their haunts, they are remarkably abundant and prolific on some of the Magdalen Islands, Bird Rock and Byron Island especially, where the young birds were observed in their downy robes of black and white.

Visiting the United States only in small numbers during the inclemency of winter, its predilection for the northern homes of its fathers—when the mild breath of spring in its upward march from the South has tempered with mercy the reign of old Boreas in his rocky, ice-bound fastnesses—induces it to take its departure, and wend its longing flight thither.

There is not the slightest evidence, so far as our investigations have extended, to show that any attempts have ever been made to nest along the shores of this country. The fact that the species breeds on the islands in the Bay of Fundy, would seem to warrant the belief that they may yet be found to visit the coast of Maine for this purpose. There seems to be no good reason why they should not do so, as the maritime parts of this State are apparently as well adapted for nesting as the islands just mentioned.

Be this as it may, cool northern localities seem to be more advantageous, and there, along with the Guillemots as their neighbors, the subject of our sketch establishes his home and rears his little family.

In boreal regions where the amatory forces are not called into action as early as in more southern climes, by reason of the greater degrees of cold which prevail, the acquirement of food seems to exercise such a controlling influence over bird-nature, that all other duties are held under temporary restraint. Consequently, matrimonial relations are not entered into as early as in warmer latitudes. This essential business is delayed, and is only warmed into activity when the sun has reached the northern limits of its course.

About the beginning of June, there occurs a lull in foraging transactions, and the sexes become suddenly aware of the object of their creation. Mating is at once entered into, but with what appearance of show, we are unable to say.

Having attended to this duty, without further ado, they seek themselves out a spot in which to lay their egg or eggs. For this purpose a horizontal cavern or some exposed locality is generally chosen. But when they deposit their eggs along with the Guillemots, which they are occasionally disposed to do, they drop them in situations from which the water can escape without offering any material injury thereto.

In deep fissures, many birds lie together, and place their eggs upon small beds of pebbles or broken stones, which are raised a couple of

inches or more, so that the water may readily pass beneath them. Here the eggs are scattered at distances of three or four inches from each other, and are incubated, as in the case of the Ducks, by the birds sitting flat upon them. Whereas, upon an exposed rock, each bird stands almost upright on its egg.

There yet remains a very strange fact concerning this Auk, which needs to be noted. It pertains to the number of eggs which is to constitute a nest-full. When nesting occurs in secluded situations, where security against tidal currents, and divers accidents, is to be gained, in the majority of instances, two eggs are found under a single female. In exposed situations, on the other hand, it is a rare occurrence to find more than one egg as a complement.

The above statements, which are substantially those of Audubon, have been repeatedly verified by other observers, some of whom are among the writer's most reliable correspondents. At first we were disposed to question their accuracy. We could not see what advantages a sequestered situation had over one that was open and exposed, so as to lead the birds to double their number in the former case. Our only way out of the difficulty then, was by supposing the two eggs to be laid by different birds, in close proximity to each other. For want of the necessary room to accommodate the two females, it became the duty of one or the other to assume the responsibility of them. Owing to the great difficulty of distinguishing the eggs of this species from those of the Murre or Foolish Guillemot, which most oölogists have experienced, and which Audubon does not seem to have encountered, it occurred to us that as the Auks are prone to drop their eggs alongside of those of the Guillemots, maybe the two eggs were those of distinct species, and not the product of the one under consideration.

Without further mincing of matters, there does not seem to be any valid reason for doubting the authenticity of Audubon's statements. But as a true student of Nature, it is our duty to receive the facts, confirmed

as they have been by subsequent observations, and seek an explanation thereof which will be both rational and philosophic.

In exposed situations, the eggs are subject to certain perils, such as exposures to storms and violent gusts of wind, which more retired places would guard against. The Auks have doubtless learned this as a lesson of experience. Perhaps, necessity only compels them to occupy such sites, when there is a scarcity of deep fissures and horizontal caverns, by reason of a superabundance of mated individuals. If one egg could be better protected and covered than two, which the nearly erect attitude of the bird would seem to warrant us in believing, some females would certainly not be slow in perceiving the advantages to be acquired. The experiment being tried by birds of unusual sagacity, and with happy results, in course of time all the others would be led to the practice of depositing a single egg. Furthermore, the laying of one egg, in case of breakage, would not be as severely felt as in cases where more than one constituted the complement. The habit of laying one egg in exposed situations, would doubtless be continued for a while at least, should the species so accustomed, ever be called upon to nest in places protected by the rocky munitions of Nature. And, on the other hand, birds habituated to nesting in sheltered situations, would for a while continue to deposit two eggs for a setting.

The eggs being laid, the female soon commences to incubate. This seems to be the exclusive labor of the sex. The fact that she plucks the feathers from her abdomen, forming one or two bare spots (according to the number which is to compose her complement) with a ridge of feathers between them, though circumstantial in character, is the only kind of evidence that we have to offer in support of our assertion. Of the precise time required for hatching, we have no knowledge. From the size of the egg, and the thickness of its shell, we reason from analogy that it cannot be less than twenty-four days. The female is not a constant sitter during the daytime, the heated pebbles on clear, sunshiny days supplying

the necessary warmth during her absence. When the weather is cloudy, and even during the cool nights, she remains on the nest, the male, as a faithful husband, doubtless answering her calls for food, or keeping her company.

That these birds manifest true affection for each other cannot be denied. They may have a different way of showing it from what we are accustomed to see among our small land-birds, but we cannot speak with positiveness. But this much is undisputed, when one is killed, its mate does not desert it, but paddles around it, as if seeking the cause of its stillness. At such times, so absorbed does it become, whether from grief or wonder we cannot say, that it can easily be approached and knocked over with an oar.

The food of the Razor-bills consists of small fishes, roe, shrimps, various marine animals, and floating garbage, which they procure by diving and swimming, or pick up among the rocks which they frequent. The young doubtless subsist upon the same materials, which they receive from their parents, in small pieces, during their earliest life. But after they have passed the downy stage, and are thrown, in a measure, upon their own resources, they imitate the example of their parents.

So much like the eggs of the Foolish Guillemot or Murre, already mentioned, are those of this species, that it is impossible to discern a characteristic so peculiar and persistent as to enable us to distinguish them apart. The ground-color is generally a pure-white; but specimens are often met with which are cream-colored, and others, again, which are tinted with green. The spots and blotches are irregularly distributed, but chiefly about the middle and the larger end. Some are small and nearly round, others large and irregular. In color they show different shades of black and brown. In addition to these markings, there are others scattered over the egg, of an obscure-purple hue, which have the appearance of being beneath the outside of the shell. The eggs vary in shape; occasionally they are pyriform and ovoidal, and, at other times, decidedly ovate.

Their length is 3.19 inches, and breadth 2.13. In the Plate, the egg is figured the natural size, and placed upon the summit of a small pile of stones at the entrance to a cavern along a rocky seashore. The birds are reduced and put in the background, the idea being to show their form, as well as the arrangement of their plumage.



YELLOW WARBLER

PLATE XVIII.

DENDRÆCA DISCOLOR, BAIRD.

Prairie Warbler.

THE PRAIRIE WARBLER is nowhere an abundant species. Throughout the eastern parts of the United States, from Massachusetts to Georgia, it is pretty generally, though somewhat irregularly, diffused. It is also found in Kansas, according to Mr. Allen, although unobserved by Dr. Coues in his western explorations.

Audubon claims to have met it in Louisiana, but his description of its nesting is so palpably inaccurate, that we are compelled to accept his statement with misgivings. Wilson obtained specimens in Kentucky, and to him the species is indebted for the very inappropriate appellation by which it is known. Nuttall regarded it a rare visitor in the New England States, yet subsequent observations do not confirm his opinion, but show, in Massachusetts especially, that it is rather common. In Eastern Tennessee and Northern Georgia, in the summer of 1880, Mr. Alexander M. Reynolds, of Germantown, Pa., met with numerous individuals, which had probably bred in those regions, but no nests were taken.

Although the town of Lynn, Mass., in latitude $42^{\circ} 30'$, had hitherto been accepted as the northern limit of its breeding, yet it was reserved for H. D. Minot, Esq., to prove that the species often reached the latitude of Mt. Washington, nearly three degrees further north. Future explorations will doubtless show that its vernal migration often surpasses this limit, and reaches even to the Canadian dominions.

In the Middle Atlantic States the writer has obtained specimens early in May, and has observed in Southern New Jersey, and elsewhere, young

birds just able to fly, but could never discover any nests. Mr. John Cassin, in his day, expressed the opinion that these birds certainly bred in the same State, near Philadelphia, as he frequently met with the young under similar circumstances. Nests have been taken in Central New York, but we have no evidence of its breeding in the adjoining State of Pennsylvania, although individuals have been seen *in transitu*.

Though chiefly a migrant in the United States, yet a few winter in Florida. But the larger part cross the Channel, after the breeding-season is over, and spend their time in the delightful islands which lie to the southward. Here, in January, these once beautiful birds may be seen in their winter garb sporting amid tropical or sub-tropical foliage, or hunting the insects that contribute to their bill of fare.

About the beginning of April, sometimes later, they deck themselves in their summer array, and while some sojourn in these Isles of the Blest where summer is perennial, and raise their charming little families, others pine for the cooler groves and fields of the North. Accordingly, about the tenth of April, all things being in readiness, and at a season when Nature is weeping herself away in rainy tears, the males apparently leading the way, the sexes bid adieu to the sights about them, and take their departure.

Their arrival in the Middle section of our country varies somewhat, and is dependent upon the season. During some years we have noted their appearance about the twentieth of April, when the weather was fine, and at other times not earlier than the first of May. In the vicinity of Washington, Dr. Coues has found them in pine-trees and cedar-patches, about the same time. Farther south, in Georgia, for example, the birds make their advent as early as the tenth of April, preferring the hillsides to open localities, but it is not until the second or the third week of May that they reach the New England States.

Few species of the family to which this Warbler belongs arrive sooner, and none are less shy and suspicious. For more than two weeks they are

denizens of open plains and thinly-wooded regions, where they may be seen from sunrise until sunset, save during the sultry noontide hours, leisurely moving along the lowermost tree-branches, or among low bushes and herbaceous weeds by the roadside, in search of insects, all the while uttering, at brief intervals, their characteristic *chirr*. Near Boston they frequent "almost exclusively rocky pasture grounds and the 'scrub,'" and instances are recorded by Mr. Minot where shrubbery in cultivated grounds has been visited. According to Mr. Gosse, individuals have been seen to fly from wayside-bushes into the middle of the road, where, hovering in the air, at slight elevations above the ground, they were apparently engaged in the capture of dipterous insects.

But as the mating season approaches, the males become quite restless. They manifest less concern about food, and from some low eminence may be seen pouring forth their slender, filing notes, which, as Nuttall has represented, may be very aptly expressed by the suppressed syllables *'tsh-'tsh-'tsh-tshea*. These notes cannot fail to attract attention, and, when once heard, are sure to leave a lasting impress on the mind. They are uttered in a peculiar tone, each being given in a louder key than the preceding, and frequently with a strange depression of the tail.

The little musicians, however, have not long to wait. For hours we have known some love-lorn minstrel of another species to sing his very soul away, without an answering note to repay him for all his trouble. The one for which he tuned his vocal pipe was too much occupied by other cares to be mindful of the delicious strains which were being wasted on the desert air. But not so in the present instance. The dear ones for whom they watch, and for whom they chant their sweetest, purest music, are not so far removed by hill and dale, by grove and plain, are not so absorbed in food-concerns, as not to hear the sounds which are being uttered for their sole pleasure. But obedient to the call, they cease their feeding, turn listening ears in the directions whence the sounds issue, and hearing once again, with pleasure-beaming eyes and swelling bosoms, seek the lonely haunts of their would-be-suitors. The joy of the males is

now unbounded. They strike their harps afresh, and music, it seems, ten-fold more ravishing, is discoursed. The effect is charming. The gentle beings feel the notes pulsing through their rapt frames, and, all-unconscious, yield themselves willing subjects to their proud conquerors.

Thus it is that mating is accomplished. A few days spent in aimless wanderings and pleasure-seeking, and the happy pair are prepared to build themselves a home. For this purpose they visit in company some wild pasture-land or thinly-wooded tract, where, after a day or two occupied in prospecting, they decide upon some kind of bush or low tree in which to place it. The birds do not seem to be very particular as to the kind. In some localities, a wild rose-bush is preferred. In others, low barberry bushes, or the lower limbs of post-oaks, are rendered subservient.

The site, and the kind of bush or tree being chosen, the birds commence to build. The nest is non-pensile, and is fixed either in a forked branch, or is supported, as is the case when placed in a wild rose, by two or more branches. The elevation above the ground is usually from four to seven feet. No case has come to our knowledge where the latter height has been exceeded. The period of nesting varies according to locality. In Georgia nests have been found with eggs as early as the second of May, which would make it appear that they were constructed towards the close of the preceding month. In one instance, eggs were found as late as the tenth of June. It is probable that the birds commence labor about the first of May, in this section of the country, and sitting, a fortnight later. In New Jersey this essential business is delayed until the middle of this month, while in Massachusetts, it is not undertaken before the first week of June.

Having built their domicile, which is usually the work of a week, both birds laboring with praiseworthy diligence, and only intermitting operations when pressed by bad weather and the approach of night, the female commences to deposit her eggs. These are laid on consecutive days, at the rate of one a day. The time devoted to oviposition lasts from

three to six days, and is dependent upon the number which is to constitute a complement. As soon as the last deposit is made, the female takes the nest, and continues thereon, save when the male relieves her, for a period of eleven days, when she is rewarded for her patience and assiduity, by seeing and hearing a nest-full of callow fledglings. While the female is thus engaged, the male is busy among the branches of low bushes and saplings in search of small caterpillars and insects. Occasionally, he may be seen upon the shrub which supports the nest, apparently on the alert for intruders, which he signals by a low chirp. Should the nest be examined, he and his partner exhibit no outward signs of indignation or lamentation, but remain quietly in the neighborhood until the danger is past, when they return to their home. If the nest is ravaged, they set to work to replenish it, wasting little, if any, time over the contingencies of fate. In case of a second desecration, they quietly forsake the place, and if the season is not too far advanced, seek quarters elsewhere, where they endeavor to build a home and rear their offspring. On approaching the nest the female is very confiding, and exercises no precautions to guard against exposure, as is the case with many of our small birds. Nuttall gives a striking proof of this fact. On one occasion he removed two eggs from the nest, which he subsequently replaced. Each time, on withdrawal, she returned thither, but practised no stratagems to lure him away.

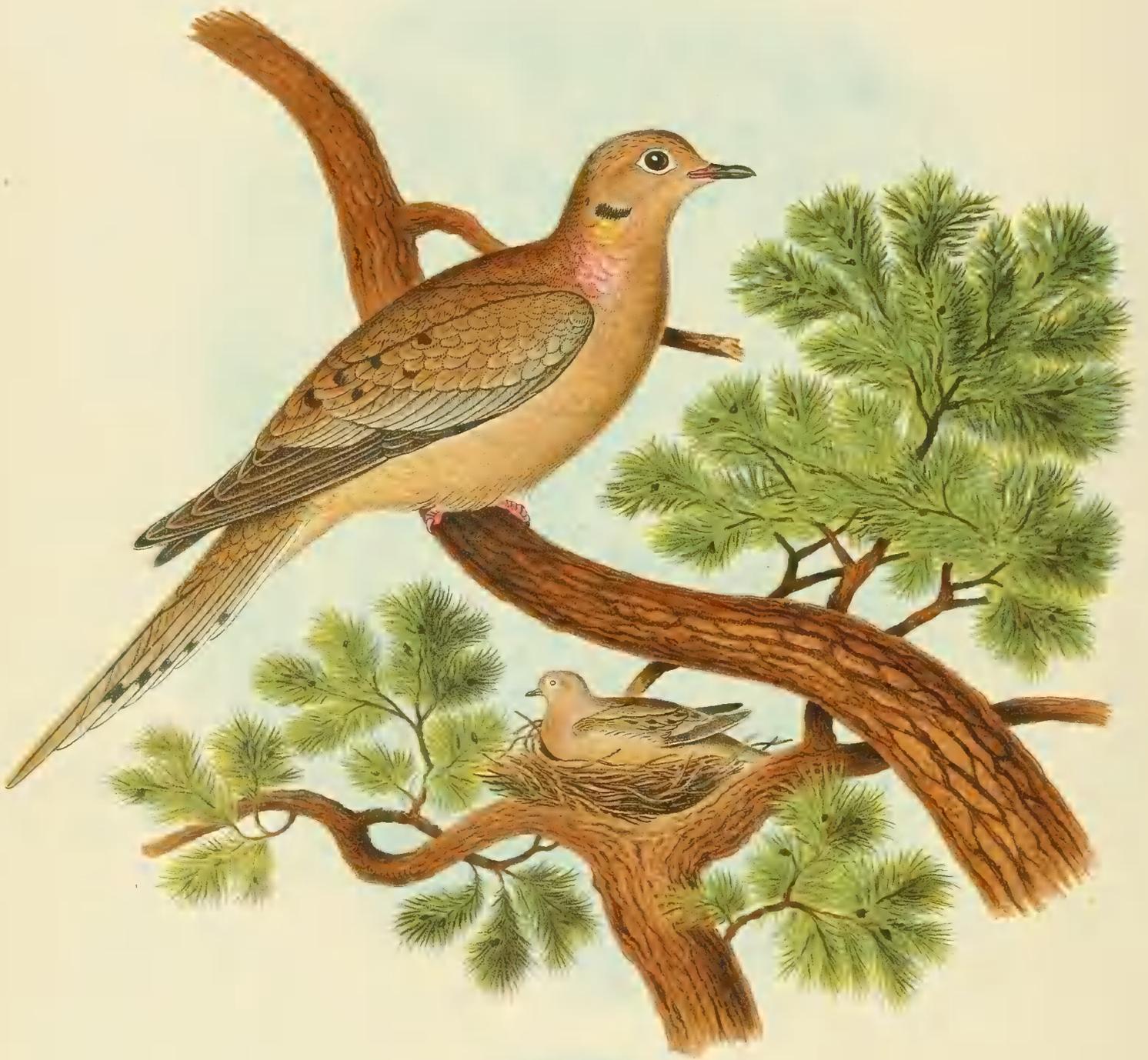
In their descriptions of the nests and eggs of this species both Wilson and Audubon are certainly at fault. They differ from more recent and reliable observations. The nest, as described by them, is never pensile, but is scarcely distinguishable from that of the Yellow Warbler. Nuttall, on the other hand, is not open to the same criticism. The nest which he describes, was placed in a forked branch, and formed of caterpillars' silk, strips of the inner bark of the red cedar, and fibres of asclepias. The inside was lined with the down of a species of everlasting.

A nest found by Mr. Welch, in Lynn, and described by Dr. Brewer, was built upon a wild rose, only a few feet above the ground. It was a compact and elaborately woven fabric, and was composed chiefly of soft

inner bark of small shrubs, bits of dry rose leaves, wood, strips of vegetables, woody fibres, spiders' webs, decayed stems of plants, etc., on the outside, and was lined with fine vegetable fibres and a few horse-hairs. The outside diameter was two and a half inches, and the height, the same. The inside diameter was two inches; depth, one and a half. The above nest, in its general mode of construction, resembled all he had seen. In other nests he found only variations in composing materials. While some had dead and decayed leaves instead of fine strips of bark, others contained the remains of old cocoons, or the pappus of composite plants.

But the structure from which the drawing was made, was found June 4th, 1875, in the vicinity of Newton, Mass., by J. Warren, Esq. It was placed in a rose-bush, about three feet from the ground. Outside it is composed of bark of deciduous trees, vegetable fibres, spiders' webs, old cocoons, dry leaves, pappus of composite plants, and cotton ravellings. The inside is lined with the white silken fibres of the wild flax, constituting a rather dense layer, over which is placed a small stratum of black and white horse-hairs intermingled with vegetable fibres and the inner bark of woody plants. The external diameter is two and a half inches, and the height two. The cavity is one and three-fourths inches, and one and a half deep. In shape, the nest is nearly hemispherical, compactly and elaborately made, and, above all, constitutes a very snug and cosy structure. In these particulars it bears a very close resemblance to the nest of the Summer Yellow-bird, but differs in the character of the composing materials, there being less of the satiny fibres of the flax used in its workmanship.

The eggs are of an oval shape, pointed at one extremity, and measure .69 of an inch in length, and .49 in width. The ground-color is white, and over it are scattered spots of lilac and purple, as well as others of two shades of umber-brown. In all the specimens which we have examined from New England and Northern Georgia the spots are mostly accumulated about the larger half of the egg, those upon the smaller portion being finer and less numerous.



MOURNING DOVE

PLATE XIX.

ZENAIDURA CAROLINENSIS, (LINN.) BONAPARTE.

Mourning Dove.

THE MOURNING DOVE, one of the best known of our American species, is quite generally diffused throughout the United States. It is found from the Gulf of Mexico to Colorado, and from the Atlantic westward to the Pacific Ocean. In the Northern States it is chiefly migratory; in the Middle Atlantic but partially so; while in the country south of Pennsylvania it is a winter resident, and manifests a tendency to gregariousness, flocks of hundreds, and even more, being seen during the winter in the woods of South Carolina and Georgia.

East of the Rocky Mountains, as well as in the vast region stretching westward, they occur in greater or less abundance. To be sure there are localities where they are notably scarce, but only in regions unblessed by Nature with suitable accommodations for nesting purposes, and with the essential means of subsistence.

In the South, breeding occasionally takes place early in March, but ordinarily not before the beginning of April. Not so in more northern sections. The eighth of March, which is also the time of their appearance in the Middle States, marks the period of their arrival in New England, although in Eastern Pennsylvania, during very backward seasons, their visit is often delayed until the fifteenth of April. But, in the extreme northern parts of our country, various circumstances combine to render their coming an event of later occurrence, for we find that they do not reach the States of Michigan and Wisconsin much before the twentieth of the month. The vicissitudes incident to change of climate and new envi-

ronments all operate to prevent the assumption of matrimonial relations as early as in semi-tropical climes.

Upon arrival, they seem to abandon their gregarious habits, and appear only in pairs, seldom more than a half-dozen paired individuals being found in any square mile of territory. During the short period which elapses before building operations are begun, which lasts from three to four weeks, they occupy the time in feeding, in dusting themselves by the roadside, or in the enjoyment of each other's society.

Few species display, where undisturbed, greater confidence in man. It visits the farm-yard and consorts with the poultry, partaking of their food, and even repairs to the drinking-places of the cattle for water. In many localities it courts rather than shuns human society, and exists in a semi-domesticated state. While some of these birds thus deport themselves, others manifest much shyness, and keep away from the habitations of man. But these will mostly be found to be young birds, which have not been able to fling off the timidity which they have probably inherited.

A few years ago, in Eastern Pennsylvania, it was a rare occurrence to find a nest of this species in close proximity to houses. Nowadays it is seldom that one can be found remote therefrom. The kindly spirit which the humane farmer has been wont to show towards the species has doubtless been productive of these happy results. It is an astonishing fact, and one that is worthy of being recorded, that mischievous boys who have a penchant for disturbing the homes of other birds, for some unaccountable reason, permit these gentle creatures to pursue their household duties without fear or trouble. Perhaps their unassuming, trustful disposition, placid demeanor, and winning ways, have the effect of softening rugged human natures, and thus securing them deserved respect. When the subject of our sketch is better known, it is gratifying to think, that much of the same spirit of kindness and mercy will be evinced elsewhere.

Having spent a few weeks in luxurious living and pleasure, and the season of house-keeping being nigh at hand, these birds forsake their

accustomed haunts, abandon the epicurean lives which they have been leading, come more and more into each other's society, and, at last, are brought to confer together on the important business which has called them away from their genial Southern homes. Though carried on in a tongue which is a stranger to our own, the object and meaning of the conference are not entirely enigmatical to us. The language of gestures which accompanies their dark sayings, supplies in a measure the key to the mystery, and enables us to judge thereof with tolerable accuracy.

The conference being over, there is no longer any doubt of the motives which inspired it. But before starting on this important mission of selecting a home-spot, the male must needs congratulate his loving mate on the success of the interview, and renew his pledges of love and fidelity. With dignified carriage and stately tread he parades himself before her, uttering all the while, in sad and plaintive tones, which poorly comport with his happy, sportive demeanor, his peculiar but unmistakable *ah-cōō-rōō-cōō-rōō*. These syllables are repeated in rapid succession, and often for three or four minutes at a time. During the intervals of nesting, and not unfrequently while oviposition and incubation are going on, the male is known to utter the same sounds; but when the trying duties of parentage demand his attention, he has neither the time nor the inclination to indulge in such pastime.

In the selection of a building-spot, but little discrimination is exercised. Almost any locality will answer the purpose. Generally an orchard, a pine-grove, a grain-field, or a swamp is chosen. With some the position seems to be of little moment, as nests are often found upon the tops of rail-fences, on stumps, in bushes, in depressions of the ground, as well as on trees. When an orchard is selected, the apple is preferred to any other fruit-tree. But in the East, the various species of pines outside of orchards are in supreme demand. In Texas, the mesquite tree is made to do service; while in California, according to Dr. J. G. Cooper, the willow and live oak. On the Plains, however, where there is a scarcity of trees, we are told that the nests are placed on the ground, and even, in

some instances, in hollows in the sand, with the merest apology of a nest visible. Occasionally, in Eastern Pennsylvania, the structure is placed in a shallow depression, alongside of an unfrequented path, or in the centre thereof. Experience teaches that such situations are mostly the choice of young birds, or more properly speaking, of birds of the past season. Such sites have certainly some advantage over arboreal ones, for the obvious reason that much valuable time and labor are thus saved in the construction of nests. On the other hand, there is this disadvantage—namely, that they expose the inmates to the attacks of snakes and nocturnal animals of a predatory character, more so than those built upon bushes and trees.

In the building of a home both birds labor jointly. The male, for the sake of variety, often fetches the materials to his partner, which she adjusts. But generally each bird gathers the pieces for itself, and arranges them according to its own notions of beauty and symmetry. The time spent in the work seldom exceeds two days. Under favorable circumstances, and with praiseworthy diligence upon the part of the architects, the work could be done inside of a day. Many of the ground-structures, which, at the best, are but a few dry grasses loosely piled together, are only the labor of a few hours. Judging from the simplicity of the fabric, and the lack of design manifested, it ought not to require much time; but we must recollect that the birds are not continually occupied with the task during the day, and also that they are comparatively slow mechanics.

The nest is usually placed upon a wide, horizontal limb, with partially vertical branches on all sides, or between a crotch formed by a smaller twig meeting a larger one. The height above the ground varies from five to thirty feet, but most nests are placed at elevations ranging from eight to fifteen feet. Ordinarily these structures are composed of small twigs, chiefly pine, gathered from the ground. The pieces are scarcely more than one-fourth of an inch in thickness, and about four inches in length. In position they repose in layers arranged crosswise,

and with a small downward tendency, so as to cause a central depression. Sometimes the first pieces are perfectly level for the space of an inch or more, and the necessary inclination is given to the topmost layers, which are made to dip towards the centre of the nest. Basally, the structure is four inches wide, but gradually increases to four and a half at the top. The height is two and a half inches, and the depth of the cavity often less than a half inch, and so shallow that the superior surfaces of the eggs actually extended above the level of the outside margin. So superficial is the cavity, in some cases, that the eggs and young are often jostled upon the ground when the wind blows with more than ordinary velocity. To obviate this difficulty, as much as possible, a tree is often chosen on the southern aspect of a hill, or in a place carefully protected by natural or artificial defences. From the elevated nest the ground-structure differs immaterially. This difference is to be observed not in size, nor in the manner of construction, but in composition. All nests which we have seen from places both east and west of our great central mountain system, have the ground-work of grass-stems, stubble, etc., loosely arranged, and are lined with fine culms and leaves of soft grasses. In the Plate the nest is considerably reduced, placed in the background, and on a branch of a species of pine. The female is also diminished, and represented as engaged in the duties of incubation; whereas the male, owing to his beauty of form and plumage, is given special prominence, and appears three-fourths of his natural dimensions.

In the Gulf States, Louisiana especially, according to Mr. Audubon, nesting generally begins in April, and sometimes as early as March. In Pennsylvania, frequently as early as the fifteenth of the former month, except in seasons which are unusually backward, when this important business is delayed until May. The fifteenth of this month marks the time in New England. In Illinois, and other Western States, it begins in early April, while along the Pacific coast, the period ranges from the first to the twentieth of May. Two broods are annually raised in most localities. The second does not, it seems, appear at any regular time, but may

show itself as early as the fifteenth of June, or as late as the middle of September, or during any intermediate period.

The nest being prepared for occupancy, on the ensuing day the female commences to deposit her first egg. This is followed by a second on the next day, when further efforts in this direction cease, and incubation at once proceeds. This lasts for fourteen days, and is chiefly the task of the female. Although the male occasionally takes the nest, yet his principal duty is to supply his mistress with food. When not thus occupied, he is seldom observed on the same tree, but stations himself close-by, where he is ready at all times to answer to her summons. Should the nest be approached by human enemies, the female makes no effort to protect it, but vacates in a hurry, and silently contemplates, from a stump, or fence-rail, in the immediate vicinity, the intended desecration. The male, however, is more timid, and surveys the scene with the same quiet, sorrow-stricken expression, but from a safe distance. A few days of lamentation, and their troubles are in a measure forgotten. The disappointed couple, if the season be not too far advanced, not to be frustrated in their plans, now seek other quarters, where they hope to achieve the object of their mission in peace and prosperity. In places where the nest is not interfered with, the same spot is chosen on each return of the breeding-season.

There is one feature about these birds that should not be passed over. We refer to their fidelity. Unlike many females, our lady-bird disdains the meaningless flirtations which characterize the actions of so many of our smaller insessorial birds about the mating-time. In no way does she encourage the attentions of other birds, nor will she even tolerate them. The male is not behind his partner in this particular. To show his appreciation of her, a dozen times a day he comes before her presence, parades himself backward and forward in front of her admiring gaze, trails his wings, and, ever and anon, puffs himself up to more than his ordinary capacity. Assured of her pleasure, he temporarily abandons these pompous manœuvres, and manifests his regard for her by thrusting his bill into her mouth and discharging therein the contents of his crop.

The love which the male lavishes upon his mate, is none the deeper and intenser than that which the sexes bestow upon their offspring. Few birdies are objects of more special regard upon the parental part. From morning until night the parents are constantly on the search for some racy *tidbit* to gratify their fastidious appetites. Beetles, spiders, and such like, which are savory articles of meat to a Robin and Bluebird, are not considered fit for these dainty creatures, who must needs be nurtured with food of a more kingly nature. Prepared food, as rich, as nutritious, doubtless, as the honey which the Brazilian Fairy imbibes from painted tulip and chaliced lily, are their portion. Nature does not prepare it as she does the nectar of flowers, and offer it up to their toothsome appetites, but she has endowed the authors of their being with the power so to do. Deep down in the innermost recesses of their bosom exists a churn, which learned men call the *crop*, and here it is prepared. This tempting food consists of a lacteous secretion and the macreated materials of the crop. Its preparation is the work not of the female exclusively, but of both parents. The method of feeding is quite interesting, and after the fashion of the common domestic pigeon. As in this case, either parent thrusts its bill into the mouth of the young, and by a process of regurgitation, forces the contents of its crop into the stomach of the latter. Nor does their food consist always of such a substance, but only during the first five or six days of their existence, for at the expiration of this time, various caterpillars of the measuring-worm family, and other smooth-skinned larvæ, are gathered, and after being completely killed and mashed, are fed to their rapacious appetites. When seventeen days old, the young are able to leave the nest. They are not, however, ready to seek their own fortunes until a fortnight later. Strange to say, the nest-full usually contains a bird of each sex—a beautiful and wise provision of Nature.

Having attained to maturity, the young still linger with the parents in the old, familiar haunts, until the season for departure arrives—about the middle of September—when they leave together. It is nothing uncom-

mon to find several families associating with each other, forming some sort of society, in which the most perfect harmony and good-will prevail.

When captured, either in the young or adult stages, and confined within cages, these birds soon become reconciled to their lot, and make quite agreeable pets. They quickly recognize their keepers, and learn to come at their call. As to the matter of raising them, there does not seem to be any great difficulty. The different kinds of bird-seeds, rape and canary especially, being very nutritious, can be fed to them with splendid results. When vegetation is in season, chick-weed, grasses, and the tender leaves of the common cultivated salad, will be found equally successful. Care must be taken to see that they are also provided with plenty of gravel and fresh water. In confinement as many as four broods have been known to be raised. In his interesting volume on the "Birds and Seasons of New England," Mr. Flagg gives his experience. When a boy he came into possession of one of these birds. At the time of its capture, it was nearly ready to fly. A strictly farinaceous diet enabled him to bring it to maturity. As it grew, it became very tame, and resembled in its actions the young of a domesticated Dove. This bird was always allowed to wander at will. When hungry, it would fly off to a distance, and having satisfied the demands of its being, would regularly return to its accustomed quarters. At length it grew so docile, that it would often fly to its master and sit upon his hand. Other instances of a similar character might be mentioned, many of which have come under our own immediate observation, but we forbear.

The eggs of this Dove are of an elongated oval form, nearly symmetrical at each end, and of a pure-white color. A clutch from Pennsylvania measures respectively 1.18 by .87 and 1.20 by .88 of an inch. Specimens from Texas, California and Maine manifest not more than ordinary variations of size. The largest egg, out of four sets which were sent to us from the Pacific coast, has a length of 1.21 of an inch, and a width of .86; the smallest, .97 by .84 inches. The same difference holds reasonably true with respect to samples from other localities.



SPARROW HAWK

PLATE XX.

TINNUNCULUS SPARVERIUS, (LINN.) VIEILLLOT.

Sparrow Hawk.

THE SPARROW HAWK is the handsomest of American birds of prey. Few small species are more active in the pursuit of quarry, and none more friendly and sociable in their intercourse with man. It receives its common name from the fringilline character of its fare, our various Sparrows forming a no inconsiderable portion thereof.

From Maine to California, and from Hudson's Bay to the Mexican possessions, these birds abound in greater or less abundance, but are notably scarce, or entirely wanting, in the Arctic regions of British America, and in our newly acquired territory of Alaska. The highest points which they have been supposed to reach are Fort Resolution, on Great Slave Lake, and Fort Rae. Throughout nearly the whole of this vast region they undoubtedly summer, and spend the time in the rearing of families.

Within the United States the species is a *rara avis* in some places, and a very abundant one in others. In the vicinity of Calais, Maine, it is quite common, which is otherwise the case in Eastern Massachusetts, although in the western parts of the latter State, birds have been known to breed. In the Middle Atlantic States, New York and Pennsylvania especially, it is a not uncommon occurrence to find it in great plenty, often as many as a dozen paired individuals being seen within a single square mile of territory. Throughout the West, but more particularly in the canyons of the eastern range of the Humboldt Mountains, Ridgway attests to its abundance, and also to its disposition to nest in hollows of limestone cliffs.

On the approach of winter these birds desert the northern and middle sections of our country, and mostly retire to warm southern latitudes beyond Virginia. According to Mr. Samuels, they are permanent residents of the lower districts of New England, although but slightly so in cold weather, if the observations of other writers of equal prominence are to be relied upon. In Florida they are found at all seasons, but mostly in the higher latitudes of the State during the breeding-season. West of the Rockies, and in the region watered by the "Father of Waters" and its numerous tributaries, they are probably but transient occupants; yet there seems to be no strong reason why they should not find comfortable winter-quarters in Southern California and in the regions situated between the same isothermal lines. When the Western history of this species has been more closely studied, this will doubtless prove the case.

The period of migration in the Middle Atlantic States seems dependent upon climatic influences. When the season is tardy by reason of long, cold winters, the birds do not arrive until after the middle of April; but when the weather is fine, and the prospect favors a continuance thereof, they ordinarily make their appearance early in the month. In New England, doubtless somewhat later, if the time of laying forms any argument upon which to base a conclusion.

Upon its arrival in the vicinity of Philadelphia, the species takes up its abode in old orchards chiefly, where it can be convenient to the homes of man. While here it destroys immense numbers of field-mice and noxious insects, and is certainly one of our foremost feathered benefactors. To be sure it will destroy a few young chickens occasionally, by way of changing the monotony of its life, but the immense good which it otherwise accomplishes, should induce humanity to throw a veil over its thoughtlessness and imprudence, and extend to it a cordial welcome. So small a bird could hardly perpetrate much mischief, and therefore should not be dreaded. Its many visits to the farm-yard are not made solely with the view of depredating upon the poultry, but for the purpose of feeding upon the vermin which infest the out-buildings, and which are so destructive to

the garnered grain. These visits should be encouraged by all means. The adult chicken is too heavy a burden for such apparently frail creatures to bear away, and as for the young, they are generally too well guarded by the parent, to become very easy victims. It is only when the chicks have been scattered, that this Hawk has the audacity and hardihood to venture an assault upon the brood. Unlike many species, our little friend does not pursue its prey, but prefers to watch for it while perched upon a dead tree, or on a projecting twig. Here, solitary and alone, it will remain for hours, without perceptibly changing its position. The only motion visible at the time, is a peculiar jerking of the tail, which seems to betray an over-anxiety for something to turn up. A very common place of resort is a clump of bushes, or a hedge-row. The abundance of small birds which seek such situations being the cause of the attraction thither.

Thus the sexes keep apart from each other, and feast on the fat of the land, until the latter part of April, or the beginning of May, when the male, who is the first to abandon this selfish mode of life, desists therefrom, though hardly without a great effort, and prepares to lead the way by calling his partner from her near or far-off feeding-grounds. Standing upon a dead branch in an open situation, he sounds his peculiar call-note, at somewhat irregular intervals, and, anon, turns himself round as though to catch the well-known response, or to see the agreeable presence. For hours at a time he may be thus seen where undisturbed by bird or man. If no reply is elicited, he darts away in great hurry, and tries his fortunes elsewhere. This is usually the case with young males. But with old birds the rule is different. They mostly select the partners of past years, and there is always less formality in renewals of plighted vows. The suits of the younger and more spirited males are often attended with considerable difficulty. This arises chiefly from the fickleness and waywardness of the young females, who seem hard to woo, and who often indulge in cruel flirtations, much to the annoyance of their respective suitors. These little pranks upon their part are generally of short continuance, and soon decided one way or the other. If settled in

favor of the several actors, the latter become highly elated, and give expression to their feelings in the most ridiculous manner. The females now become as unwavering and devoted in their fidelity and affection as they were before changeable and whimsical. The period of courtship seldom exceeds two days at the utmost. While it lasts, the birds make short tours around the country, and on their return settle down to the prosy realities of wedded life. A suitable spot must be selected for a home. Although both birds spend no little time in searching for one, yet the matter is generally and wisely left to the judgment of the female.

They are never known to construct homes for themselves, but make use of hollow trees, Wookpeckers' holes, and often the old and forsaken nests of the common Crow and the Gray Squirrel. A low, flat shelving of rock beneath an overhanging bluff, in situations remote from the dwellings of man, is not unfrequently chosen. But in places immediately surrounding him, and even within his precincts, unfinished stone-buildings and pigeon-cotes are occupied, the latter much to the dread of their rightful owners, who soon become reconciled to the glaring insult, and live on friendly terms with their courageous neighbors. In Germantown, Pa., many of these birds are accustomed to deposit their eggs in the holes left by the removal of scaffolding from the walls of unfinished buildings. In some instances, they are placed within a slight depression produced by the removal of the mortar; but, generally, a thin covering of leaves and grasses serves to relieve the roughness of the cavity. In one case a rather dense bedding of moss made a soft and cozy lining. Almost any tree that has been pressed into service by the Golden-shafted Woodpecker, and made to answer as a receptacle for its eggs, is utilized by the species under consideration. In an orchard, the apple is mostly a favorite; while in other situations, the swamp maple and common chestnut are as frequently occupied. Their height above the ground varies from ten to fifty feet. In no cases have we discovered it below this figure, and never above it. A nest found April 20th, 1881, near Rowlandville, by William Wentz, in a decayed chestnut branch, was fifty feet from the ground,

and consisted entirely of dry grasses in quite limited quantity. This is the earliest one ever found in this locality. Generally, the nest is completed for oviposition during the last of this month, or the beginning of the succeeding. My son, Alan F. Gentry, on the fourth of May of the same year, met with one in a hollow branch of the chestnut, in Germantown. This was placed about twenty feet up, in a cavity whose width at the mouth was four and a half inches, and whose depth was nine inches. It was lined with a few leaves and fragments of decayed wood, and contained four eggs, which were partially incubated. Another complement of eggs, five in number, before us, was found May 17th, 1880, near Granville, N. Y., by F. T. Pember, Esq. It was placed in an isolated maple, about twenty feet from the ground, in what was once the home of a pair of Flickers. The bottom of the cavity was lined with straw and grass of last year's deposit, little, if any, fresh materials being noticeable. The diameter of the base was seven inches, and depth, twenty inches. The drawing represents a nest in a decayed branch of the red maple. The female bird is considerably reduced, and placed on the edge of the cavity, looking outwardly; whereas the male, in perfectly erect attitude, and with dignified demeanor, stands on a bent branch, at some distance from his home, engaged, as it were, in surveying the surrounding scenery. He is shown in his jauntiest feathers, and with his fair proportions diminished but one-fourth. Owing to the difficulty encountered in figuring the eggs *in situ*, we have been compelled to show a single specimen, the natural size, and on a tinted background below and to the left of the picture.

The nest being ready, the female is not dilatory about laying. Unlike most of the birds which we have previously described, she does not deposit with much regularity. Sometimes the eggs are laid on consecutive days, and, at other times, on each alternate day; never more than one being deposited daily. This business being accomplished, the female proceeds at once to incubate. After she has been thus occupied for a varying period of time, seldom less than two hours at a sitting, she summons her mate to

her side, and resigns to him the laborious task for a season. While one is on the nest, the other, when not in quest of food, is on a tree in the immediate neighborhood, quietly on the alert. If danger is imminent, the sitting-bird is apprised of the fact in time to make its escape. This done, the two endeavor to protect their home from pillage. As long as there is some prospect of frightening away the depredators, they keep up the warfare with a good show of courage. But when constrained to desist from the attack by the too near approach of enemies, they do not forsake their home entirely, but choose a point out of reach of harm, where they station themselves, and behold with profound distress its demolition. In these attacks the female is the superior of her masculine companion, and exhibits the most reckless bravery. The latter is, however, more circumspect and cautious. But should the enemy be a feathered species, and of superior physique, the unequal warfare is waged with terrible fury, and often results in favor of the defendants. Where not interfered with by man, these birds have been known to visit the same locality year after year; but when meddled with, they abandon the site for another of greater security. The period of incubation ranges from fifteen to sixteen days.

The young are very helpless creatures when first hatched, and often tax the patience and vigilance of the parents to the utmost in their efforts to obtain for them a *quantum sufficit* of nourishing food. Both birds are seldom absent together on this important mission. While one is abroad, the other remains at home, and exercises the strictest surveillance. The food of the young at first consists of grasshoppers, crickets, and caterpillars of the family of measuring-worms. Being rapid growers, they are soon able to digest bits of small rodents and birds, which the parents tear from the warm flesh of the quivering victims which they hold in their talons. When four weeks old, parental assistance is in a measure withdrawn, and they are forced to feed themselves. A fortnight longer, they quit the nest, and receive their meals while perched on the tree-branches. But it is not until they attain an age of two months that they are entirely thrown upon their own resources. They, however, continue to reside with

their parents, but for what length of time, we are unable to say. Like the latter, their appetites are very fastidious, tainted and unsavory food being rejected with disgust. When the young have vacated the nest, Audubon asserts that the parents are known to imitate their feeble cries, as they travel together in pursuit of game. Ordinarily, the cry of the adult birds is a peculiar series of notes, which are pronounced in a very shrill manner, and most difficult of imitation. It is said to resemble the call of the European Kestrel, and would doubtless be mistaken for it, were it not for its more powerful intonation.

When taken from the nest, these Hawks are readily domesticated, and make very interesting pets. Audubon once reared a young bird, which he kept about the house. At nights it would roost upon a favorite window-shutter. In the daytime it would wander about the fields, where it was often assailed by its wilder kindred. On these occasions, instead of making a stand and resenting such uncivilized conduct, it would invariably beat a precipitate flight to the house where it was sure of finding protection. At length this poor bird was killed by an enraged hen, one of whose chicks it was essaying to capture. While in Columbia, South Carolina, Dr. Coues saw three of these birds in the possession of a neighbor. They had been taken while quite young, and were perfectly reconciled to their imprisonment. During early life they ate all kinds of meat, but as they approached the age of maturity, they began to display much of their natural disposition. When disturbed they would show their displeasure by snapping the bill, and clutching at the offending cane with their talons. Among the number there was a cripple who was most dreadfully misused and bullied by his companions. One night, being insufficiently fed or unusually irritable, they set upon the poor fellow, killed him, and had nearly made way with him by the returning morn.

The eggs of this species vary in number from four to seven, complements of fives and sixes being oftener found than any other. In one case a set of three was found by a friend of the writer's, but this was probably exceptional in its character. The ground-color is never fixed, but passes

from a beautiful white, through a dark cream, into one that is decidedly buff. In some specimens, under a glass of moderate power, the ground is a perfectly uniform buff, but in others which appear to the unaided vision of the same color, the lens reveals a whitish background very densely covered with minute dottings. There is also noticeable considerable variation in the markings. Three from a nest in Philadelphia, with a pure-white ground-color, are marked with dottings and blotches of light-brown, sparsely scattered over the greater portion of their surfaces, excepting a space of the size of a dime about either extremity, where a dark and almost continuous patch of reddish-brown occurs, relieved by a few small spots of blackish-brown. These eggs are nearly spherical, of the ordinary shape, and have an average measurement of 1.38 by 1.14 inches. Another set, four in number, from near Germantown, Pa., have a light-buff ground, and are completely covered with fine markings of brown, and others of bolder spots of the same, so as almost to conceal the color below. They average the same in dimensions as the preceding, and are similarly shaped. A clutch of five from Granville, N. Y., is the exact counterpart of the Germantown specimens in every particular. All eggs which we have seen from New England, the South, and the West, California in particular, though subject to variations in size and ornamentation, are uniform as to shape. The length usually varies from 1.32 to 1.49, and the width from 1.07 to 1.20 inches.



WOOD DUCK.

PLATE XXI.

AIX SPONSA, (LINN.) BOIE.

Wood Duck ; Summer Duck.

THE WOOD DUCK, appropriately so named because it breeds in trees, surpasses in elegance of plumage and gracefulness of action all North American birds of its family. Although known by the name of Summer Duck, from the fact of its remaining with us during the entire hot season, and not journeying to the cold regions of the North as many of its brethren are wont to do, it is however more commonly designated by the former appellation. Few species are more highly esteemed by lovers of the beautiful in Nature than this, and, where obtainable, it is one of the first that finds its way into the private collection of the amateur naturalist. But by epicures, it is considered as of rather inferior standing, lacking the delicacy of flesh which makes the Green-winged Teal and others of such immense gastronomic value.

Although truly an American species, it is more generally found throughout the United States than any other, nesting wherever suitable localities present themselves. North of the Potomac, and in the various States situated above the parallel which cuts its head-waters, at least so far as the country east of the Rocky Mountains is concerned, it is chiefly a migrant, arriving towards the latter part of March, or the beginning of April. South of this line, from Maryland to Florida, and in a south-westerly direction through the Gulf States into Mexico, the birds are found in more or less abundance during the entire year.

In the South Atlantic and Gulf States, they generally pair, we are told, about the first of March, but in New England and the Middle States, in favorable seasons, from the first to the fifteenth of April, perhaps

later; and in the country bordering on the Great Lakes, about the last of May or the beginning of June. In Iowa, and other Western States of the same latitude, from the fifteenth to the last of May.

Upon its arrival in our Northern States, remarkable to say, unlike many of its numerous family connections, it seldom frequents the seashore, or the adjoining salt marshes, but manifests a predilection for the ponds, mill-dams, and deep muddy streams of the interior. The same is true of its more southern breeding-grounds along creeks and bayous of the land where the orange and palmetto charm the eye with perennial verdure.

During the interval of time between the appearance of these birds and the renewal of their ancient vows at the accustomed trysting-place, the sexes consort together in ever-varying flocks of fours or more, but never in very large numbers, and fatten on acorns, the seeds of the wild oats, and such insects as they can procure from the tree-branches, or the muddy margins of the streams and ponds which they frequent.

On each recurrence of the mating season, there is reason for believing that the same couple come together, and pledge anew the sincerity of their fidelity, and the constancy of their affection, unless debarred from so doing by death, or some other of the numerous vicissitudes to which life is prone. The troth-plight being sealed, the happy lovers are not slow in effecting a union. A few reciprocations of love, mutual and sympathetic, and the *role* is ended. But in cases where the male has lost his partner, doubtless more time is devoted to this important business. Much time is spent in seeking a suitable companion, and even when the seeker is successful in finding one which combines the necessary qualities, no little time is frittered away in rendering himself agreeable to her lady's notions of what a husband should be, for she not unfrequently acts as if she were possessed of some taste and discrimination.

Having settled this important business, the newly-mated couple start off in quest of a spot for the location of a home. In the case of old birds the same locality has been known to be visited for four successive years.

This doubtless is the rule where the birds are permitted to obey their own natural instincts uninterfered with by beast or man. For obvious reasons, these Ducks delight to live in close proximity to bodies of water. Such places afford conveniences to the young when they are sufficiently matured to betake themselves thither. Situations remote from this element entail unnecessary labor upon the female, who is then required, at considerable risk and trouble, to carry them one by one in her bill. When the distance is not too great, and the ground beneath the tree is well covered with dried leaves and grasses, the young scramble to the mouth of the nest, drop themselves down, and under the maternal leadership wend their way to the much-loved fluid. Often the tree or stub which contains their home is found to overshadow the water. All that is necessary then is for the tender creatures after reaching the entrance, to spread their ill-feathered wings and oar-like feet, and fling themselves down. This feat can be performed without jeopardy to life or limb.

The site being agreed upon to the mutual satisfaction of the parties concerned, all that is necessary to be done before going to house-keeping, is to select a place for the nest. For this purpose, almost any tree, or branch thereof, containing the essential hollow, and located reasonably near some stream or expanse of water, can be utilized. According to Audubon, "the holes to which they betake themselves are either over deep swamps, above cane-brakes, or on broken branches of high sycamores, seldom more than forty or fifty feet from the water." Our experience, which is similar to Wilson's, is that these birds do not have a partiality for any particular species. While tree hollows are generally preferred, we have the authority of the illustrious personages whose names we have just cited for saying that such places are not exclusively chosen. The former claims to have met with the home of a pair of these birds in a fissure of a rock, along the Kentucky River, only a few miles from Frankfort; and the latter speaks of having discovered one which was placed in a fork composed of branches, and built out of a few rude sticks. In the South, the forsaken retreat of the Gray Squirrel, or the hole of the Ivory-billed Woodpecker,

are common nesting-places. Often the entrance to the nest is apparently so small compared with the bulk of the occupant, that it is a matter of surprise to many how she can manage to make her way into it without suffering bodily injuries. But she does, which is proof that she knows either how to conform to circumstances, or else is a better judge of size than many of us would-be-wise lords of creation. All structures which we have examined were generally wide enough at the mouth to admit of easy passage, and were from four to six feet deep. The bottom of the cavity invariably consisted of soft decayed wood, and a few feathers which were doubtless plucked by the bird from her own breast. Besides these articles, other writers have observed dry plants, down, and feathers of the Wild Turkey, Wild Goose, and the common barnyard fowl. The height of the entrance above the ground varies from fifteen to thirty feet, according to our experience. Possibly a less, or even a greater elevation may sometimes be attained.

Wilson speaks of a nest which he observed in an old grotesque white oak. It stood on a slope of one of the banks of the Tuckahoe River, in New Jersey, just twenty yards from the water's edge, and had been occupied for four consecutive years. At the time of his visit it contained thirteen young birds, which the maternal head was engaged in carrying down to the water to give them, perhaps, their first experience in the natatorial art. So carefully, and yet so adroitly and quickly did she perform this seemingly difficult task, that she was less than ten minutes in its accomplishment. Although the male usually stands sentry while the diverse processes of laying and sitting are going on, and signals the approach of enemies by a peculiar cry which has been likened to the crowing of a young cock—*oe ēēk! oe ēēk!*—yet from the silence of one writer upon the subject, we infer that the duty of rearing the rather numerous family is left to the mother, her proud and consequential partner, as though disdainful of such ignoble and degrading because slavish work, being off with his gay companions, disporting themselves in mid-air, or trimming, while perched upon some sheltering bough, their rich and varied

plumage. So intent, however, was the mother-bird upon the faithful discharge of her joyous home-duties, that she heeded not the stately sloop, then nearly completed, as it lay upon the stocks close-by, with its hull looming up within twelve feet of her home, darkened with the presence, and reverberating with the noise of workmen, but continued to pass in and out as though unconscious of the so near approach of danger. Audubon claims that the male deserts the female when the period of sitting commences, and joins his sterner brethren, who unite into flocks of considerable numbers, and keep apart from their partners until the young are fully matured, when young and old of both sexes come together, and thus remain until the return of another breeding-season.

From what has been said above, it must be evident to the reader that the female is wholly concerned with the duties of incubation. For a little more than twenty-one days she is thus occupied, and with nothing to relieve the monotony of her task. How often must she despair, and bewail the hardship of her lot, no mortal knows. But it is the decree of inexorable fate, and most willingly does she bow to it. But the ennui of the labor is in a measure forgotten in the vision which hope holds out to the patient little housewife. Weary, and well-nigh spent of her strength, she persists a little while longer, and her patience and assiduity are rewarded. A whole nest-full of happy ducklings gladden her heart, and send a new thrill through her being. While the hatching process is going on, the loving parent only leaves the nest when pressed by the pangs of hunger, and but for a short time. Before leaving, she always takes the precaution to see that her treasures are carefully covered with down.

The young follow the mother the same as our domesticated species do, and gather whatever of vegetable and insect food they happen to meet with. They are passionately fond of the water, and best show their real nature and disposition when gracefully floating upon its glassy surface, or diving beneath its liquid depths. At an early age they respond to the parent's call with a soft and mellow *pee, pee, pee-e*, which is uttered quite rapidly, and at repeated intervals. The call of the mother, when address-

ing the young, at such times, is rather low and soft, and resembles the above sounds, only a little more prolonged.

These beautiful birds have often been domesticated. At such times they become so unsuspecting and familiar as to allow themselves to be stroked upon the back with the hand. Instances are on record. Such being so, what is there to prevent the introduction of them into our yards? Nothing. Then let it be tried. A glance at the picture will show that no handsomer bird could be chosen. Look at the male as he stands upon an embankment on the right of the picture ready at any moment, so it seems, to plunge into the watery fluid below, and tell us if there is anything more beautiful in the world of swimming-birds. We apprehend not. His conspicuous size, some nineteen inches in length, and scope of wing of two and one-third inches, make him a being of no mean proportions. But then it is the richness and variety of his colors that render him an object of attraction. Near the farther shore of the pond, with her shadow reflected in the water, like a thing of grace, floats his loved but less showy companion. She is nearly of the same size as he, but wanting in the same dignity of demeanor. On the other side stands an old tree, festooned with vines, which represents the nest of these birds, with a female just in the act of entering.

The eggs of the Wood Duck range from six to thirteen to a setting. Their shape passes from the ovate form to one that is nearly oval, and, indeed, specimens are often found which are almost perfectly elliptical. Eggs from Massachusetts measure 1.97 by 1.45 inches. Others from Michigan, 2.21 by 1.54; and some from Maine, 2.10 by 1.54. A set of ten from Iowa, but recently received, of a yellowish-white or creamy color, which seems to be the natural hue, are beautifully elliptical in contour, and have an average measurement of 2.08 by 1.59 inches; the largest being 2.19 inches long, and 1.59 wide, and the smallest, 1.96 in length and 1.63 in width.



LEAST TIT.

PLATE XXII.

PSALTRIPARUS MINIMUS, (TOWNSEND) BONAPARTE.

Least Tit.

THE LEAST TIT, introduced to the notice of ornithologists by Mr. Townsend in 1837, is exclusively a denizen of the country bordering on the Pacific Ocean. It inhabits the whole region stretching from Fort Steilacoom, in Washington Territory, to Fort Tejon, in California. According to Dr. Gambel, it is not only abundant throughout California, but is also an occupant of the Rocky Mountains. But as this author wrote at a period anterior to that which marked the separation of this species from its nearest kin—the Plumbeous Tit—it is believed by Dr. Coues that those nice shades of difference which climate or other influences have impressed upon the Rocky Mountain birds were unobserved by him, and that he was thus led to consider the two species identical.

Although these birds have been deemed migratory in Washington Territory, as the writings of Drs. Cooper and Suckley would lead us to infer, yet there is strong evidence for believing that it is not wholly the case. From observations made by Mr. Townsend, we learn that they are quite common during the winter, and may be seen in great numbers hopping around among the bushes, or hanging head downwards from leafless twigs after the fashion of other Titmice. While thus engaged in search of the pupa of insects, they are very reckless, and keep up a continual twittering. Their notes are rapidly enunciated, and have been likened to the words *thshish tshist-tsee-twee*, the last two syllables bearing a slight resemblance to the concluding strains of our Eastern Chickadee.

While gleaning for food, these noisy beings go in companies. Troops of fifties and sixties, and some say hundreds, travel through the woods,

and make their otherwise cheerless depths resound with din and chatter. Nor do they journey alone, for they are often accompanied by the Kinglets and other kindred species. So intent are they upon the procurement of food at such times, that they seem utterly unconscious of danger. It is not uncommon for a bystander to be so surrounded by one of these flocks as to be almost able to capture the birds with the hand.

Nuttall, in speaking of this species, affirms that it arrives on the banks of the Willamette River, in Oregon, about the fifteenth of May, which would lead one to believe that even in this State it is a migrant. As this date is about the period of breeding in slightly lower latitudes, may not this writer have been somewhat hasty in expressing his opinion? In the East, birds that are reputed permanent residents during mild, open winters, can be seen in moderate abundance in accustomed haunts, and at all times. But let the weather become severe, and there will be a notable scarcity of birds. They do not certainly migrate to warmer regions, but seek hidden recesses or nooks where they can obtain the necessary shelter and protection. A recurrence of warmer days, after a little, soon causes them to return to old, familiar haunts, which could not be, had they journeyed to lower and semi-tropical climes. Perhaps some such event had occurred on the occasion to which Nuttall alludes, or a short time before, or the birds, by reason of a paucity of food-stuffs, may have been forced to move to adjoining localities in the same latitude, and had just returned for purposes of nesting. If such was the case, an eye-witness of the scene would be likely to pronounce it a veritable migration, not knowing the facts.

But whether these birds do actually migrate or not, matters little for present purposes. What concerns us most, is their history at the mating-time. Of this we know little. But not unlike their many kin, the desire for food is so strong, that most of the time in early spring is spent in its search. The precarious lives which most migratory birds are forced to lead during the unprolific season of the year, when the reign of plenty begins, forces them into habits of gormandizing. Life seems to have

acquired new zest. The collection of food, and its application to the wants of the body, exercise supreme control, all other considerations being swallowed up thereby. But this cannot last long. Satiety, like pleasure, soon o'erdoes itself, and reason comes to the rescue.

A few weeks of such a life are enough. Grown weary of its monotony, and surfeited with delights, the flocks now dissolve into pairs. All is now a scene of bustle and activity. Actuated by amatory influences, the males seek themselves partners, and matrimonial relations are assumed. There is good reason to believe that mating happens early during some seasons. Dr. Cooper mentions the finding of a nest on the first of March, which would lead us to infer that it had occurred during the preceding month. Finished structures in our collection from Santa Paula, California, which were discovered by Prof. B. W. Evermann, bear the respective dates of April 14 and 17. Making allowances for building, it is probable that the sexes do not pair until the middle or the last of March. Of the precise time we are left in darkness. Nor are we the wiser about the general behavior of the birds, much less those pleasing little episodes of bird-life which are then called into existence.

Having mated, the happy couple start off together in quest of a suitable bush or tree in which to build. The live oak, the willow, occasionally the mistletoe, and perhaps others, are selected. These structures are sometimes suspended from a forked twig, but more generally from a single branch. A remarkable peculiarity about their building is the elevation at which their dwellings are placed. The height varies from four to eight feet, and we cannot find that the latter distance has been exceeded.

Few nests, if any, surpass in beauty and comfort the nest of this species. It is the most artistic of all pensile structures, and resembles an old-fashioned silken purse. In form, texture and finish it is a perfect model of architectural design and skill. When we consider its size, the durability and smoothness of its outside periphery, and coziness of interior, we are lost in wonder and admiration. What ingenuity and perseverance

are here displayed! It seems almost impossible that such wee specimens of the feathered creation could have built such a monument. But the naked truth, real and substantial, lies before us. When we contemplate this wonderful work of art, we know not whether to admire most the indefatigable industry of the builders, or their cunning workmanship.

A typical structure before us is closely and evenly woven of slender spears of grass, fine rootlets, fragments of branching and crustaceous lichens, small stems, fibrous rootlets, down, vegetable cotton and mosses. These substances are pretty regularly distributed, like the colors in a carpet, so that the fabric presents uniformity in appearance. The interior is lined with down and other soft vegetable materials, producing thereby a chamber of which the daintiest Sybarite of the palmy days of Magna Græcia would delight to be the proud possessor. Some structures are cozily lined with large masses of feathers, which are made to project from the entrance, and which, in some instances, become a part of the walls of the building itself. Ordinarily, the nest retains the greenish-gray color which the mosses and lichens impart to its exterior, long after it has been detached from its point of suspension. The length of these fabrics varies from six to nine inches. The width is generally three inches, and the thickness of the walls, three-fourths of an inch. Inside, the depth ranges from four to five inches, according to the length of the structure, and width, from seven-eighths to one inch. The entrance is most generally near the top, and measures one inch in diameter. The specimen from which the drawing is made, is six inches long, nearly cylindrical, with rounded extremities, and about three inches in width. The walls are an inch thick, and the opening, which is near the top, is exactly one inch in diameter. For convenience we were compelled to reduce the dimensions, and put it slightly in the background. The female bird, which has a length of 4.30 inches, and an expanse of wings of 2.15, is proportionally diminished, while the male occupies a position in front, and appears with uncurtailed proportions. The nest is represented as hanging from a branch, a species of cherry, which is popularly known as the soft-leaved cherry.

We mention, in this connection, a very fine nest of this species, which has lately come into our possession, through the kindness of Prof. Evermann, of Indiana. This nest was suspended from a branch of the live oak, and was discovered on the fifteenth of April, 1880. It is largely composed of down, grass-stems and spears of the same, lichens, mosses, vegetable down and cotton, on the outside, and is comfortably lined with the down and wool of plants. In structure and composition it resembles all other nests of this species, but differs therefrom in form and dimensions. This beautiful fabric measures twenty-two inches in length, and is somewhat shaped like an elongated spindle. It is three inches wide in the middle, one and a half at the summit, and two and a half at the base. The opening is three-fourths of an inch in diameter, and placed fully five inches from the top of the nest. From the entrance to the bottom of the chamber, the cavity does not perceptibly widen, but maintains the width at the mouth. This affects the thickness of the walls, which is greatest in the middle, and least above. But owing to their elasticity, they can be made to conform to the volume of either occupant. The depth of the cavity is twelve inches. When we consider the size of this nest, it does not seem possible that such diminutive specimens of bird-life could have the enterprise and courage to enter into such a gigantic project, and the patience and perseverance to carry it to completion. Prof. Evermann does not inform us whether it was accomplished by the pair of occupants, or by them with the assistance of others. Even the ordinary structure is so wondrously large compared with the individual bulk of the builders, as to suggest to the mind of Dr. Cooper the possibility of its being the result of the united labors of an entire flock. What would our worthy friend say should he meet with another just like the one we have described? We think he would be inclined to attribute it to the labor of several flocks, or else imagine it the work of supernatural beings. Such disparity as exists between the cyclopean monument before us and the pigmy architects thereof, would almost persuade us to one or the other conclusion.

From information gleaned from the recorded observations of others, and from personal knowledge of closely-related species, we incline to the

opinion that these birds manifest a great fondness for their homes, and guard them with the most jealous care. Nuttall makes mention of a circumstance occurring under his notice, which confirms this belief. During one of his excursions, he met with a male-bird, whose over-anxiety about the safety of the nest induced him to keep a lookout for anything that might happen. Following his guide, who, though unwilling to expose its whereabouts, was driven to it by an irresistible influence, he came to a low bush, where, dangling from a branch, and only about four feet from the ground, flashed upon his vision the lovely spectacle. It was a beautiful affair, in shape like a long purse, and having a neat circular opening near the top which answered for a doorway. The lint of plants, moss and down entered into its manufacture, and within there was a soft lining of feathers. This nest contained six perfectly white treasures, which were only awaiting the mysterious and miraculous powers of a few more days, perhaps hours, of heat, to transform them into restless, active, yet helpless beings. When a bird is killed, we are told, others will gather around it with manifestations of anxiety, calling plaintively upon it to follow them in their sports and wanderings. So fearless do they become at such times that it is almost possible to take them by the hand. Assuredly, such exhibitions of sorrow and solicitude as we have depicted, are not only to be met with then, but also, to an infinitely greater extent, on those more trying occasions when their homes are about being desecrated and despoiled by sacrilegious hands.

The eggs of the Least Tit are quite small, beautifully oval in shape, and of a pure, unspotted white color. They slightly vary in dimensions. In a set of five which we have before us, the largest measures .57 of an inch in length, and .44 in width; the smallest, .56 by .45 inches. The average measurement is .57 by .44 of an inch. The number of eggs constituting a complement ranges from five to nine. Nothing has been stated in regard to the number of broods annually raised, but it is probable the species is single-brooded.



WHIPPOORWILL

PLATE XXIII.

CAPRIMULGUS VOCIFERUS, WILSON.

Whippoorwill.

THE WHIPPOORWILL, in its migrations, passes from Mexico, Guatemala, and, perhaps, Cuba, through the eastern parts of the United States, northward into the British Provinces as far as the 50th parallel of latitude, and from the Atlantic westward to the valley of the Missouri, where it is replaced by a closely-allied species. Throughout New England, the Middle States, and the Southern Atlantic region, the Carolinas especially, it is rather abundant, and the same may be affirmed of the western limits of its range. In New Brunswick and Nova Scotia, lying outside of our possessions, it is met with but rarely; whereas, in the vicinity of Montreal, and around Hamilton, it is far from being an uncommon summer visitor. There seems to be a notable scarcity of birds in Eastern Maine as we approach the Canadian territory in the north-east. Why the species should dwindle into numbers insignificant as the seaboard is neared, while in the contrary direction it is apparently as abundant as in Pennsylvania, it is not our province to speak with positiveness. Perhaps the somewhat different conditions of soil and climate which prevail in the north-west have much to do with this seeming preference. Unlike most species, the subject of our sketch will, doubtless, when its history has been as carefully studied in every part of its habitat as it has been in the East, be found to breed throughout the vast area of its United States range.

These birds never arrive in old, familiar haunts until the weather has assumed the mild, placid demeanor of spring, and everything points to the complete vanquishment of the winter-god and his merciless hordes of invaders. A chorus of strange, weird voices from the solemn depths of

the forest-shades, when night has thrown her sable curtain o'er earthly landscapes, is the first reminder that we have of their mysterious presence. Like an evil genius from the land of dreams they come among us to disturb our slumbers by their lugubrious utterances. But in the daytime, when all respectable beings, whether beast or man, do most delight to be seen and heard, these sylph-like denizens of the air shrink away to the uncertain shadows of the grove, where they spend their time in sleep, or moody silence, or, mayhap, in the concocting of ways to terrify poor, timid human beings. Coming down from these flights of imagination to the prose of real life, we may truthfully say, that they "love darkness rather than light." From the time of their first appearance during the early nights of May until their departure in August or September for the Gulf country and the land stretching southward, they maintain the same shy and retired disposition, concealing themselves from the glare of full-orbed day in close-set forests among fallen leaves and underbrush, and only venturing out in quest of food when the sun has sought his rosy couch beyond the Western wave. With the setting of the day-star, and the stir of the myriads of moths that now make night lively with their graceful motions and riotings, these Night-jars, as they are sometimes appropriately called, emerge from their hiding-places, and rejoice in wanton and luxurious feasting. They are far from being the dull, stupid beings which we would have been disposed to designate them only a few hours before. They are now all nimbleness and grace. Watch them as they sail through the bending, swaying ether as noiselessly as a thistle-down, and as lightly as a balloon afloat, and tell us were there ever more graceful creatures, and any better adapted to the purposes of their being? We apprehend not. What a beautiful and nice adaptation of means to end is here exemplified! Being designed and created to hold in check, in common with others of their kin, the various and multitudinous swarms of insects which fill the nocturnal atmosphere, the Wisdom that never errs has given them a peculiar structure, and peculiar habits. They must seek the darkness of night, and shun the light of day. And in order to cap-

ture their prey without startling it, they must move on swift and noiseless pinions, and with the greatest caution. Their prey often being large, a wide gape of mouth is necessary. Everything, even down to the minutest details of structure, declare their eminent fitness for the part which they have to play in the *role* of life.

Such a decided partiality has our friend for the lovely woods, that he seldom forsakes its time-honored precincts for the open field. The sombre shadows cast by the motionless or quivering leaves upon the ground, and the melancholy streaks of light which fitfully play through the spaces between them, combined with the dark colors of the leaves that repose upon the soil beneath, produce a sort of gray and mellow light which beautifully harmonizes with the sober tints of these birds, and thus adds to their protection. In our travels we have frequently surprised an individual in his slumbers only a few paces away. Alarmed at this unexpected intrusion, the bird would wing its somewhat uncertain flight on swift and noiseless pinions to a place a few hundred feet distant, where it would alight upon a branch, or on the ground. After indicating the spot by a fallen log, or an adjoining bush, we would stealthily and quietly approach the place, straining our vision all the while in hopes of gaining a glimpse of the squatting bird. But before the desire could be gratified, the object of our search would become apprised of our presence, and take to wing. Again and again we have made the attempt to steal upon the bird unawares, but it invariably failed in accomplishment, even when the greatest caution was observed. The means which these birds employ for the detection of danger are both remarkable and wonderful. The visual organs being ill-suited to the bright light of day, and even the mellowed glow of the woods being seemingly too powerful a stimulus, it certainly depends upon other functions than those of sight. The sense of hearing being well-developed, may not this function be called into requisition at such times?

The common appellation of this species is derived from the cry which it emits at night. This cry has a slight resemblance to *whip-poor-will*,

but, by a fertile fancy, it can be construed into a variety of sounds. The syllables are rapidly enunciated only when the bird is squatting on a bush or fence, or any other object near the ground, but never while in flight. It is always heard at night. As the day begins to dawn, it measurably diminishes in frequency and intensity, and finally ceases altogether. The absence of song while on the wing may be accounted for by the fact that the birds are such vigorous feeders, and are so absorbed with the business before them, that they have neither the time nor the disposition to indulge in such pastime. Besides, the wide-open position of the mouth which is assumed while sailing through the air, is hardly one which would favor a free exercise of the vocal powers. When in a restful state, the cry is perhaps the call which the sexes address to each other, or it may be interpreted sometimes as the signal for the resumption of the night's carousal after the day-sleep is over.

For nearly two weeks after their appearance the sexes, although already paired, continue to sleep the daylight away, and spend the nighttime in feasting and revelling. It is not until the middle of May that they become alive to the business which has called them from the land of the agave and loblolly-tree. With due diligence, and with but little time spent in preliminaries, they seek themselves out a spot for a home, where they construct, if at all, the merest apology of a nest. By a prostrate and decayed log, usually where the deepest shadow prevails, the female is wont to deposit her eggs. A slight concavity is ordinarily scooped out by her, in Eastern Pennsylvania, and lined with decayed wood or dried leaves. In other localities, and, to some extent, in the writer's own State, she does not even go to this trouble, but deposits her treasures, without thought of what she is doing, upon the ground. Whether they rest upon a few loose leaves, or on the bare earth, is all the same to her. Having chosen her humble home, the female begins immediately to lay her first egg. This is followed on the ensuing day by another, and this completes her nest-complement. Incubation is at once assumed by the lady-bird, and seems to be her exclusive business for the space of fourteen or fifteen

days. While she is thus occupied during the day, her illustrious partner is seldom to be seen, although it is possible that he is generally at no great distance from the spot, quietly preparing for the night's adventures. Perhaps he is then more considerate, and either sits upon the nest while his wife is away in quest of food, or else acts the part of an affectionate and indulgent husband, and conveys to her lonely chamber the necessary food wherewith to strengthen her for the trying duty which she is engaged in performing.

Few mothers manifest greater love for their children. She will often imperil her own life in their behalf. Her vigilance is wonderful, and the stratagems she practises to draw intruders away from her eggs and young are almost unsurpassed by those of any of our feathered species, excepting the female Maryland Yellow-Throat. On an occasion of disturbance her actions are strange and curious. She flutters as if wounded, beats the ground with her wings as though unable to rise, and performs these movements so successfully as to deceive the most wary and experienced collector. While thus seeking to divert attention from her home, she has even been known to spirit her young away when danger seemed imminent. Mr. Wilson cites a case that came under his own observation. This writer once set to work to delineate a young bird. Having accomplished the desired object, he left the spot, and, on missing his pencil, retraced his steps. On arriving thither, to his great surprise he discovered that the young bird had been carried away to a place of safety, but by what means, he doubtless never learned.

The young leave the nest when they are about seven days old, and are then able to move with considerable swiftness. At brief intervals, while nestlings, they utter a low, plaintive note, which has been likened by Nuttall to the syllables *pé-ūgh*. A fortnight longer at home, under the guardianship of the maternal head, prepares them for the stern realities and cold charities of the outside world. They are now able to supply themselves with food, although still members of the same household. At first their food consists of caterpillars which are procured by the parents from

the leaves and branches of trees. The different species of measuring-worms, and mature forms of noctuids and tineids among lepidoptera, constitute a considerable portion of their diet. But as they grow older, and are able to feed themselves, they devour immense numbers of ants and grasshoppers. When first hatched, in their helplessness, they depend for safety upon the close similarity which obtains between them and their immediate surroundings.

The eggs of this species are elliptical, being nearly or quite equal at both extremities. The ground-color is a pure creamy-white, and is irregularly scratched and marbled all over with reddish-brown and purplish-lavender lines and blotches, the former predominating. There is considerable variation in the intensity of coloration, some specimens being heavily marked, while others, from the faintness of the tracery, appear bleached or faded. Eggs from New England measure from 1.21 to 1.26 inches in length, and from .75 to .78 in width; from the Middle States they average 1.26 by .89; while specimens from the South and the North-west offer no material differences. In many particulars these eggs resemble those of the Chuck-will's-widow, but are purer and more beautiful. There is also a notable resemblance to the eggs of the two European Goatsuckers, which is what the real scientist would naturally expect. In the drawing, the eggs are represented the natural size, and by the side of a fallen log. The male is considerably reduced, and may be readily distinguished from his partner by the white collar of the throat, and by his larger size. He measures ten inches in length, and has an expanse of wings of six and a half inches. The female is proportionally diminished, and is characterized by a light fulvous gorget, and in the absence of the white patch of the tail.



AMERICAN WOODCOCK

PLATE XXIV.

PHILOHELA MINOR, (GMEL.) GRAY.

American Woodcock.

THE WOODCOCK is somewhat restricted in its distribution. In this respect it differs from its numerous congeneric brethren, which have a wide dispersion. It is chiefly a denizen of the eastern parts of the United States, and of the British territory immediately adjacent thereto. Fort Rice, in North-western Dakota, according to Coues, and Kansas and Nebraska in the west, seem to be the limits of its range in those directions. Although notable for its scarcity in regions beyond the Mississippi, Iowa excepted, yet it abundantly compensates therefore as we advance eastward. In the Middle and Eastern States they are probably found in greater numbers than elsewhere. While the greater bulk pass north to breed, some abide in the South, and raise their happy little families, in spite of the ardor of the climate.

Few species, if any, arrive earlier. It generally appears from the fifth to the tenth of March in New England and the Middle Atlantic States, although instances are known where birds have been observed as early as the twenty-fourth of February. These cases are, however, rare, and only happen, if at all, when the weather has been remarkably propitious for a lengthy spell. As a few of them have been known to remain all winter in Pennsylvania, and elsewhere, when the season has been fine, may not their emergence from sheltered localities, at such times, be construed by persons who are not cognizant of their presence, or of their occasional disposition to permanence of residence, as but a case of recent arrival? In view of this latter habit, it would be difficult to prove that the visitor had just come from the South, unless it had been discerned *in transitu*.

Having decided upon their migratory tour, they start in small companies, from four to six in number. These settle down in small tracts of country of a few rods in area on reaching their destination. Low, swampy thickets generally invite their presence. Here they conceal themselves during the day. But when night has dethroned her rival, and temporarily assumed the reins of power, they come out of their grassy retreats, and wander about in search of food. The setting of the sun behind the western hill-tops is the signal for their nocturnal rambles to begin. And well do they keep them up. For it is not until the first streak of morning is seen to glow in the East that they abandon their foragings and retire to accustomed haunts. Few there are who have visited these birds at such times. Let us take our readers to yon neighboring swamp, or by the side of some lowly woodland, which these strange beings delight to frequent. The utmost silence must be maintained, or our friends will be frightened away. While we may not be able to see the objects that have called us hither, we know they are not far away by the rustle which they produce among the dry leaves, and by the peculiar notes which they emit, for there are two or three individuals together, as they move restlessly about in the undergrowth, in their search for worms. *Chip-per, chip-per, chip* may be heard from the right, and almost in the next instant it is varied to *bleat* or *bleat ta bleat ta*, produced in the contrary direction, or off in the distance, showing that the authors thereof have changed their positions. While these birds have an habitual fondness for humid thickets, they not unfrequently betake themselves to corn-fields and other cultivated tracts in close proximity thereto, and even to elevated woods.

For more than a fortnight after their arrival the sexes, though feeding in company, do not apparently manifest a disposition to assume conjugal relationship. The desire for food seems to be uppermost in their minds. The inclemency of the weather, and the coldness of the ground in consequence, may have much to do with holding the amatory forces in check. But when the opportune moment arrives, which it does in the course of events, the sexes stop from their feeding, in a measure, and give the nobler

instincts of their being a chance for development. The males are the first to feel the changes which are being wrought in their natures. For more than a week from this time, in the early morning and evening hours, they may be seen exercising themselves by means of "curious spiral gyrations" in mid-air, and uttering, as they descend earthwards, a note which Audubon has likened to the word *kwank*. This note may be a call for the female in the spring, but as it is often uttered in the fall after the breeding-season is past, it may also be a summons for the gathering together of the members of the same household. The production of these sounds seems to be a labor of much effort. The movements of the bird then, must be seen to be appreciated. The head and bill are bent forward until the latter comes into contact with the ground, and, just as the sound is being emitted, the body is urged violently forward. These spasmodic exertions being over, the actor in this drama, twitches its abbreviated, half-spread tail, assumes an erect attitude of listening, and, if no response is elicited, repeats its characteristic cry, with all the accompanying movements. If the call awakes an answering note, the happy lover flies to the presence of the one he seeks, and lavishes upon her the most endearing caresses. Sometimes, as Audubon affirms, the male awaits the arrival of the loved one, and does not fly to meet her. According to the same authority, the summons seems sometimes to be replied to by one of the same sex, which is always the prelude to a fierce encounter between the two, for, on these occasions, when the feelings are in a high state of tension, the utmost enmity exists between the males. These contentions are usually short-lived, and cease with the assumption of matrimonial relations.

The happiness of the male is now complete. With his homely, but, doubtless, to him, prepossessing bride, by his side, he soon journeys off in search of a home. This is a matter of some consequence, and tasks the patience to the utmost. But their labors in this direction are eventually crowned with success. They frequent the most secluded resorts, and hide their nest away in some low, dense and swampy woods or brake, difficult of access, and one that none but the cruel collector would be likely to

visit. The nest is generally placed on the ground, at the foot of a bush or tussock, in the midst of small birches or alders, or on a decayed stump or prostrate log. In some localities it is snugly nestled in the midst of a meadow. It is not an elaborate affair by any means, but merely consists of a few dried leaves or grasses which are scratched together by the female—the work of a few hours at the most.

The domicile being ready for occupancy, the female soon commences to deposit her beautiful treasures. One by one they are laid on consecutive days, until her complement of three or four is reached. In the Southern States, oviposition commences in March or February, while in the northern limits of the range of this species, from the tenth to the fifteenth of April; seldom later. Incubation is mutual, and so attentive are the birds to the task, that it is an unusual occurrence to find them both absent therefrom at the same time. When the female is sitting, her partner improves the time by attending to the demands which hunger makes upon him. The same is true of the female when she has resigned her charge to the care of her noble and conscientious lord. So faithfully do they keep to the nest, that nothing but the most menacing danger will compel them to quit it. The approach of a team, or of a pedestrian, within a foot of it, has not been known to startle them. But when the danger is quite imminent, the sitting-bird slips out of it, and makes its way into the tall grasses, at some distance therefrom, and becomes a silent and sorrowful witness of the disaster to be accomplished. Should no destruction be perpetrated, and the intruder has gone his way, it cautiously comes out of its hiding-place, and resumes labors. But it has learned a lesson by this experience. For on a second visit to the same spot, no bird is to be found. Apprised of approaching danger, it has slipped out of the nest in time to escape detection. Thus patiently, persistently, and seemingly unweariedly, these faithful beings, by turns, apply themselves to the task, until success has crowned their willing labors. The time spent in hatching, under the most favorable circumstances, varies from seventeen to eighteen days.

The young are very timid creatures, and keep close to their parents, who manifest considerable solicitude for their well-being. They watch over their helpless infancy, so to speak, with a care which a human mother only knows, and when their lives are imperiled, resort to many a *ruse* to deceive their enemies, and bring them into places of safety. By a peculiar alarm, when severely pressed, the mother warns them of the condition of things, and while they are scattering in different directions, she seeks to attract attention to herself in many a well-feigned artifice. After the danger is past, by a familiar call she summons them together, and doubtless relates to them the story of her adventures, and the dangers to which they were exposed. Their food consists of worms, animalcula, ants and other soft-bodied insects, which the parents assist them in procuring from the soft earth, and beneath the grass and dead leaves that abound in the places which they frequent. Later on, they are able to obtain their subsistence with the address of older birds, by thrusting their bills into the soil, and in such other places as would be likely to contain the objects desired. Their tongues being covered with a viscid saliva, the food adheres thereto, and is drawn into the mouth without danger of being lost. Gunners, as well as those who have made these birds a study, have often met with holes which have been made in the soft mud by their bills. The presence of these "borings," as they are called, is always considered as an indication that game is not very far distant, which a thorough exploration of the surrounding country soon reveals to be the fact. The young having thoroughly matured, continue in the same haunts with their parents, and, unless brought to an untimely death by the merciless gun of the hunter, repair to the warm, sunny, smiling South with the return of frost.

The eggs of this species are less pyriform than waders' mostly are, being, in some instances, almost ovoidal. Their ground-color varies from a light clay to one of buffy-brown, and the markings occur in the form of fine spots and blotches of chocolate-brown, interspersed with others of obscure lilac, scattered more or less thickly over the surface of the egg.

According to Dr. Coues, their size and intensity of color bear, in general, a direct correspondence with the depth of the background. In Massachusetts these eggs exhibit remarkable variation, passing from 1.45 to 1.80 inches in length, and from 1.15 to 1.25 in width. Out of a collection of a dozen specimens, Dr. Coues found the shortest and broadest egg to measure 1.40 by 1.20, and the longest, narrowest one, 1.55 by 1.15 inches. A set of three before us, from Pennsylvania, has an average measurement of 1.54 by 1.21 inches. In the Middle States, and the same is doubtless true of other sections of our great country, there is never more than a single brood raised, although the early breeding of the species would certainly give ample time for a second hatching before the close of the season. The drawing shows not merely the eggs *in situ*, although considerably reduced, but at the same time gives a beautiful and accurate figure of a typical specimen, alone and isolated. The female is represented as standing in the vicinity of the nest, while her partner occupies a sitting posture in the foreground of the picture. The total length of this species, from tip of bill to extremity of tail, is eleven inches. The wing has a stretch of two and a quarter inches. So well have the birds been portrayed by the artist, that we shall not attempt a description.



RED THROATED DIVER.

PLATE XXV.

COLYMBUS SEPTENTRIONALIS, LINNÆUS.

Red-throated Diver.

CHIEFLY a boreal species, especially during the breeding-season, the Red-throated Diver is only known to visit us during the winter. On our eastern sea-board it seldom attains a lower latitude than Maryland, while in the West it has been met with along the coast as far south as San Diego, California. Farther north, however, on the shore-line, around the inlets of Washington Territory adjacent to the British possessions, it is more abundant. Although of rare occurrence along the Atlantic coast of the United States (and it is mostly the young and immature birds that are to be seen) yet in Arctic regions the species meets with the essential conditions of soil and climate which render life a pleasure, and not a burden. Consequently, the birds abound in great numbers, and carry on their worldly affairs unexposed to the dangers which would most likely affect them in less severe localities that are the common resorts of man.

Like most of its kin, this Diver is seen to the best advantage in winter. Here several may be seen together, when the weather is favorable, moving lightly over the surface of the sea by means of their broad seal-like paddles, with gently-curving neck and flashing eyes, and on the *qui vive* for whatever of life may stir in the depths below. But let some luckless sprat cross the keen-sighted vision of one of these birds, and its whole demeanor becomes changed. It is now no longer the peaceful bird pursuing its way leisurely over the waters, but the terror of the finny tribes. Like an arrow, it darts downward, and with marvellous swiftness, urged by its powerful webbed feet and wings, it shoots through the limpid fluid, and by means of one fell stroke of its strong-pointed bill, transfixes its

victim and rises to the surface again. With a gentle shiver of the body, the thousand drops of water that adhere to its sleek plumage, like span-gled dew-drops upon glittering grass-spears, fly in every direction, leaving the feathers as dry as if the bird had never taken this sub-aqueous journey. Divested of its borrowed jewels, it now prepares to enjoy its well-won and precious morsel. For this purpose, with a peculiar jerking movement, the prey is swallowed, head foremost, and while the process of digestion is going forward, the perpetrator of this late sanguinary deed settles down into quiet life, or pursues, with majestic and dignified mien, its customary movement athwart the glassy bosom of the deep.

Although affecting great fondness for the sea, yet, when awakened to a true sense of its being by the unseen forces of Nature, and the amatory feelings have become aroused, it bids a temporary adieu thereto, and seeks some small, sequestered island in the midst of a lake or pond of fresh water, in close proximity to the ocean, where it places its nest. The sexes enter into this business with due consideration and dispatch, and apparently waste but few precious moments in the indulgence of idle fancies, or in the gratification of cherished whims. There is little of the heartlessness and fickleness shown by the wooed when her wooer makes his suit, as characterize many of our land denizens. The male, tired of the utter aimlessness of the social life which he has been leading, retires from the scenes once so dear, seeks his mate, doubtless the partner of former joys and sorrows, and leads her to the hymeneal altar a willing bride. A few mutual recognitions of love, and the happy pair are sealed for another season.

Their chief concern now seems to be the establishment of a home. This is a work of short duration. A few blades of rank grass, hastily gathered in the neighborhood, are brought together, and, by the joint labors of both birds, are circularly arranged, and made to subserve the necessary purposes. The nest is very shallow, quite bulky, and well hidden by the surrounding verdure. There is always noticeable a lack of down or of feathers, which so many sea-birds are accustomed to utilize for warmth

and concealment. Well-beaten paths may be seen diverging from the nest, which the birds follow in going to and returning from the same. When either desires to go thither, it is never known to resort to flight, as this would apparently betray its whereabouts. But the object desired is gained by a safer method. The bird swims quietly around the nest, carefully reconnoitres the spot, and if the land is free from peril, crawls silently out of the water and waddles her way up to it.

By reason of the severity of northern winters, as is usually the case with most birds that breed in Labrador and kindred regions the subject of our sketch is necessarily compelled to delay nesting until the close of May, or the beginning of June. By this time the sun has nearly attained the limit of his course in this direction, and his influence is begun to be felt with considerable force. The female is not long in occupying the rude domicile with her small complement of two or three eggs.

In the duty of incubation, which closely follows that of laying, the male does not shirk the responsibility, and seek the companionship of others of the same sex to while away the hours in piscatorial diversions, but, gallant knight that he is, he never forsakes his mate, unless called away by hunger. He is ever ready to respond to her call, and assumes the charge of the house and its precious, undeveloped inmates, with cheerfulness. The period of incubation has never been determined.

The young from the first are active creatures, and take to the water almost as soon as they are hatched. On their first introduction to this fluid they prove themselves to be equally expert both in swimming and in diving. Few parents are more solicitous for the safety of their progeny. When assailed by dangers, they watch over them with assiduous care, and lead them in many a devious route through the watery waste, and inculcate into their minds many a bit of information and advice which could not be better taught otherwise. The young profit by these teachings by example, and soon become as shy and vigilant as their illustrious parents. In their fresh-water home, they feed upon snails, leeches, shrimps,

small fish and aquatic insects. But after they have betaken themselves to the sea, they discard, in a measure, such small fry, and seek larger game, as they sport freely and lustily about in the exuberance of happy spirits. They are not long in acquiring their full stature, and in rendering themselves acquainted with the vocabulary of their parents. The vocal expressions of the latter are harsh and loud, and may be aptly represented by the syllables *cac, cac, carah, carah*, delivered in rapid succession. The birds are slow, however, in obtaining their full plumage. This does not occur until the fourth year of their existence.

The eggs of this species differ from those of the Loon, a near cousin, chiefly in size; being somewhat smaller. They pass from an oval form to one that is ovate, and, in some instances, are rather elongated. Their general color is an olivaceous-brown, although specimens sometimes show a decided tendency to olivaceous-drab. We have seen others whose primary color was of a reddish-brown order. Scattered over the ground-color, but mainly about the larger extremity, spots of black or dark-brownish, varying in size from a pin-point to an eighth of an inch, may be found more or less abundantly. A clutch of two before us from Greenland are olivaceous-brown tending slightly to drab, and are marked with blackish spots of varying sizes. They measure respectively 3.13 and 3.07 inches in length, and 1.88 and 1.75 inches in diameter, giving a mean average measurement of 3.10 by 1.82 inches. In the cut they are figured as large as they appear in nature, and in the foreground. The birds are faithfully delineated as to colors and markings, but show considerable diminution in size. In the natural state, the male has a length of twenty-seven, and a wing-expanse of eleven and a half inches; the bill and tail each being two and a quarter inches. The female is a trifle smaller than her partner, weighing, on an average, about a pound less. Her plumage is the exact counterpart of his, or differs in no material particulars therefrom.



BLUE GRAY GNATCATCHER.

PLATE XXVI.

POLIOPTILA CÆRULEA, (LINN.) SCLATER.

Blue-gray Gnatcatcher.

WHEN the first breath of spring, on zephyr wings, blows over the South, laden with dewy moisture and balm from regions beyond the Gulf, this tiny speck of bird-life feels the glowing influence, and hails it with delight. Weary and restless, it seeks to break away from its winter-home, or change the monotony of its existence. While some are inclined to newness of climate, and leisurely wend their way northward, others are happy and contented where they are. Those, imbued with a spirit of migration, quit their less ambitious neighbors in March or April, to spend their summers abroad. All reach their destination by three great routes. Those on the east, that winter in the isles to the southward, follow the trend of the great Atlantic slope as far north as the valley of the Connecticut and kindred latitudes. Others, doubtless, from our southernmost States and the Mexican possessions, pursue a central direction, one part passing through the eastern half of the Mississippi Valley to the Lake country, and the other ceasing from their toilsome journey when the northern frontiers of Nebraska and Iowa are attained. While the western wave, so to speak, collect from their winter-retreats in the valleys of the Colorado and Rio Grande Rivers and follow these streams to their headwaters, or turn aside from their course and make their way through the fertile slopes of the Pacific to the latitude of 42 degrees.

Though an early migrant, yet, by reason of the tardiness of its movements, this species does not arrive in the Middle States until the last of April, or the beginning of May. In Maryland and Virginia, according to Coues, its advent occurs during the early part of April. The Carolinas,

Northern Alabama and Tennessee witness its appearance about the fifteenth of March when the season is not retarded by a long, cold winter, and the Northern Central States, towards the close of the ensuing month, which, by some inexplicable cause, seems also to be the date of its coming in the great Colorado Basin.

Appearing at a time when the trees are beginning to clothe themselves in shimmering robes of green, and often before the oaks and hickories have burst their tumid buds into the rich drapery of foliage which is to cover their unsightly nakedness, our little friend is none the less welcome. From the tall tree-tops we are first made aware of his presence by the shrill, wiry notes with which he salutes the morn, and which he is accustomed to utter during the livelong day as he moves in and out among the branches in tireless pursuit of prey. Not a tree-crevice escapes his keen scrutiny. While thus eagerly prying into every cranny or crack that meets his gaze in quest of the lurking culprit, should the buzz of a fly or the hum of a beetle be borne to his hearing, in an instant he is off with a dash that is wonderful to behold, and the unhappy insect is made to repent the folly and temerity of its action. At such times, his behavior seems to be all hurry and bustle, as though the work of a life must be crowded into a few short days.

We have but pictured to the minds of our readers the selfish side of his character, as manifested in the uncontrollable rapacity which sways him. But when the finer and more ennobling impulses of his nature, stimulated by returning warmth, have once more gained the mastery, a milder grace attends his every movement, and sweeter accents attune his voice. We no longer hear those peculiar sounds, which to the human ear resemble *tsee-tsee-tsee*, repeated in rapid succession, and which, a few short weeks before, were everywhere to be heard—a fit accompaniment to his reckless life—but instead, are regaled with the sweetest, tenderest music. This is so low, that to appreciate its effect, the auditor must be but a few yards distant from the tree which our modest vocalist has selected to be the scene of his endeavors. So well sustained is the effort, and, above all,

so faultlessly rendered, that the most austere critic could hardly fail to assign the performer a high place among the feathered choir.

Like many of his kith, he does not seek the bare branch of some tall tree, where he can be seen, and thrill the air of vale and wood around with ear-splitting utterances. He despises such notoriety. Hid away in the leafy canopy that wreathes the brow of some gnarled oak, he loves to take his stand, and there pour out his soul in all the ecstasy of subdued song. Unpretentious as his music may be, and undervalued for its lack of force by the vast choir of singers around, yet it has a depth of power and feeling, which, as it is borne aloft upon the bosom of the gentle air, strikes the ears of some timid, modest creature, and startles the slumbering chords of her being into harmony. Life to her now acquires new vitality and enjoyment. With heart beating high with rapturous emotions, and urged by an irresistible desire, she betakes herself on swiftest pinions to the spot whence emanate the sounds. As she nears it, the music comes to her with fuller distinctness, and sends the heart-throbs following one another in happy, swift succession. The singer does not abate his efforts, but keeps them up with scarce an intermission, until they elicit a response, or the gentle, loving one is wafted to his immediate presence. On the reception of a reply, his movements are restless and animated. But let the object of his thoughts but flit before his excited vision, and in a moment he is by her side. In a variety of actions which, from a human standpoint, seem meaningless and frivolous, he conveys to her his love, and the boundless appreciation of her worth. This done, he next attempts a song, which seems to soothe her hitherto agitated feelings, and awakens confidence and resignation. He is not slow in perceiving the advantage thus acquired, and, consequently, follows it up with other advances, which completely place her at the disposal of his mercy and power. Conquered at last, she yields herself a willing subject to the potency of love, and becomes his wedded wife.

The selection of a home-spot now claims the attention. High, open woods are preferred for this purpose, although trees along the borders of

streams, and in low, damp situations, are sometimes chosen. There seems to be no particular fancy for one tree more than another, provided it be lichen-clad. Those whose branches are thus ornamented, the oak especially, will be found to be more frequently favored. Instances are known, however, of nests being placed upon the maple, a tree remarkable for its dearth of such vegetation. Having chosen the site, the erection of a dwelling is next in order. Accordingly, the pair set about this business.

The time chosen for the work is generally the month of May, when insect-life runs riot, and mother earth is ablaze with a thousand floral beauties, the free-will offering of the queen that now presides. From its dawn to its close, these curious structures may be seen in various stages of completion, with eggs and without, tenantless and occupied. Specimens from Texas, with egg-complements, have been found on or near the fifteenth, which had doubtless been commenced two weeks before. Others from New Jersey and Pennsylvania contained incubated eggs as late as the twenty-eighth, while one from Eastern Tennessee with two fresh eggs was found on the sixth of the month following. But this may have been a case where the early efforts of the birds to nest had been prevented by circumstances beyond their control. Reports from the extreme northern and western limits of the range of these birds point to the same conclusion.

The height which these nests occupy above the ground varies with the locality. In some places they seldom attain a greater elevation than ten feet, but, in the majority of cases, this limit is exceeded, and the heights of fifty, and even sixty feet, are reached. There is less variation in form noticeable, their shape being generally that of a truncated cone. One nest before us from the South differs somewhat from this figure, and may be pronounced as inversely conical. The position, too, is quite uniform. Most of them are placed among slender branches, to which they are woven by the ingenuity of the architects, and, although non-pensile, are the sport of every breeze. But so securely are they fastened, that to dislodge them from their moorings, is a matter of no little difficulty.

Though jostled most readily by the winds, and in danger of destruction, yet, by a wise provision of instinct, their contents are insured against accident. This is prevented not so much by the depth of the cavity, as by the purse-like contraction of the rim.

Few structures of bird-architecture are more handsome than the home of this little Gnatcatcher, and none so worthily excite our wonder and admiration. Like the nests of the Humming-bird and Wood Pewee, it is a perfect model of beauty and design. So cunningly contrived a structure, and one so comfortably, durably and tastefully arranged, would doubtless be attributed by us to the work of superior beings, were we not acquainted with the artificers. In the foregoing particulars, it stands almost unrivalled. Like the colors which glow upon the bosom of the mother of pearl, it must be seen to be fully appreciated. No description, however faithfully portrayed, can give an adequate conception of its beauty. But we shall make the attempt. Even the picture gives but a meagre idea of the elegance of this cosy chamber. Its walls are of felt, closely and compactly woven, and made of slender stems of grass, the down of thistles, spider's webs, and vegetable-like fibres. As if dissatisfied with such a fine piece of mechanism, our little architects must needs go further. With a love for the beautiful and picturesque, they almost startle the beholder by investing the exterior with a fine stucco-work of bluish-gray lichens which serves the two-fold purpose of ornamentation and protection. So like a natural excrescence does the nest now appear, that only the experienced eye can detect the difference. Compared with the size of its tiny builder, who measures but four and three-tenths inches from tip of bill to caudal extremity, the nest seems bulky. These structures are, however, by no means uniform in size. A specimen from New Jersey has a width of two and seven-eighths inches, and a height of three. Another from Texas measures two and five-eighths inches in length, and but two and a half in external diameter. The smallest we have seen are from Tennessee and California. The former has a width of two and a quarter inches, and a height of two and five-eighths, while the latter differs there-

from only in length, being half an inch less. The cavities offer less striking differences, varying slightly from one and a half inches in either direction. In composition the Western nest presents some points of difference. The exterior is composed of yellowish-green and greenish-gray lichens, specifically distinct from Eastern specimens, a slight intersprinkling of brown catkins, feathers, cobwebs, and small bits of vegetable stems. The inside does not present much variation, but is lined with feathers, horse-hairs and vegetable wool, as many of our own are. When feathers are utilized for a lining, the quills are generally placed in the walls of the nest, only the soft plume-like parts being allowed to come into contact with the eggs. The nest from California was found by Prof. Evermann, in the vicinity of Santa Paula, during the summer of 1881. It is the prettiest, as well as the most elaborately perfected nest which we have yet seen. The one from which the drawing was made, while less artistic, deserves mention, from the peculiar position which it occupies, being wedged in between two diverging branches from a sweet-gum, and fastened thereto by cobwebs passing from its outside to the wing-like expansions of the wood.

Such finished and complicated structures are assuredly not the work of a few hours, but the labor of unwearied perseverance and industry upon the part of the builders for a week. No division of the work is allowed, but each bird toils as suits its inclination. Whether the rearing of the fabric proper with its finely-felted walls, or the laying on of the tiles afterwards, requires the longer time to accomplish, it is difficult to say. Our experience teaches that the latter is the more trying and difficult task, and consumes one-third more time. It must not be presumed that the builders work steadily through the entire day. This is not the case. Rest, recreation, and the procurement of food, are matters that require attention, and prolong the labor.

Having finished their home, the female is not slow in providing it with tenants. From four to six eggs are deposited in as many days, and incubation entered into. This lasts fourteen days, and is as much the

work of one sex as the other. While thus occupied, the birds are jealous of their property, and resent all intrusions with a valor worthy of admiration. This is especially the case when their home is visited by the Cowbird. So determined and fierce are the attacks which they wage against these birds, that in the *melee* which ensues, their fragile home is often entirely destroyed. In Cooke County, Texas, where this Gnatcatcher is abundant, fully half the nests that have been found by Mr. Ragsdale, the narrator of this fact, are despoiled before completion, and, in many instances, completely obliterated. But let the intruder be some conscienceless collector, knowing that resistance is useless the birds do not make a stand, but seek some safe spot where they can observe the proceedings. But as soon as the premises have been deserted they return, and if the home remains untouched, resume possession as though nothing had happened. In the event of desecration, they forsake the spot with sorrow and reluctance, and try their fortunes elsewhere. But a single brood is raised, although the tardiness of some pairs to nidificate has led to the belief that in some seasons the species may be double-brooded.

The young birds, for a week or ten days subsequent to hatching, are quite weak and tender, and but for the attention and care bestowed by parental love, would quickly perish. Endowed by Nature with vigorous appetites, and being blessed with kind and thoughtful parents, they are soon able to help themselves. Their food at first consists of larvæ of various kinds, but chiefly those of a lepidopterous character, and small diptera. With age comes an increase in the quantity and character of their food, and at the age of four weeks they desert the home-shelter, and forage in common with their parents. Thus they spend their lives, careless and happy, until the first appearance of the "sere and yellow leaf" in September warns them of the growing scarcity of food-stuffs, and bids them retire to the groves of our southernmost States, or to scenes beyond the Mexic line.

Their eggs are oval in form, and slightly pointed. In ground-color they are white, and spotted and blotched with reddish-brown, slate and

lilac. Cabinet specimens, however, show sometimes a faint bluish- or greenish-white tint. The markings, though varying considerably, are uniformly distributed. In size, there is noticeable but little variation in specimens from diverse localities; eggs from Michigan differing but slightly from those from Texas, and these sustaining the same relation to sets from Pennsylvania. The average dimensions of a clutch of four from New Jersey are .59 by .48 inches. The depth of the nest precludes us from showing the eggs *in situ*. We are therefore compelled to give a drawing below, which will be found to be of the natural proportions. The female-bird, which is placed in close contiguity to the nest, may be easily distinguished from her mate, by the absence of black upon the head.



PAINTED BUNTING.

PLATE XXVII.

PASSERINA CIRIS, (LINN.) GRAY.

Nonpareil; Painted Bunting

FOR variety and brilliancy of coloring none of our North American finches can compare with the one which constitutes the subject of this sketch. The euphonious French title by which it is designated has been most aptly chosen. For, verily, it is the nonpareil of avian beauty. Nature seems to have spared no pains in making this her handiwork the perfection of artistic design and ornamentation. Such an array of colors, and the beautiful harmony which characterizes their blending, bespeak no mean, unskilful painter, but a master-hand, before whose paltriest, weakest efforts the noblest of man's productions sinks into insignificance.

Contrasted with its less showy associates that frequent the same delightful, sunny landscapes to breed, this lovely species seems altogether out of place. It is a fitter denizen for realms beyond the tropic, where the broad-leaved banana hangs its clustering, golden flagons temptingly to the gaze, and where many-hued, various life rejoices in wanton prodigality.

Though reared amid the rich savannas and fertile slopes of South Carolina, and the belt of country thence westward to the Pecos River, of Texas, it is only a temporary sojourner. With the first breath that comes from the north, in the fall, it takes its departure, and wings its flight to warmer latitudes. The land of the Aztec, and the warm isles of the sea to the southward, are its destination. A few individuals, fond of travel and change of scenery, do not, however, pause from their journey until they have reached the Isthmus which weds the two great halves of the American continent.

As spring approaches, an anxious spirit of restlessness seizes the males, which sooner or later communicates itself to the opposite sex. This is manifest some time before setting out. But guided by a never-erring instinct, they curb their impatience, and thus bring it under restraint. Hence, like many kindred species, they are not very early comers. The middle of April—the season of sunshine and of showers—usually dates their first appearance in the Gulf States, and from this time they are not slow in reaching their most northern homes. The lords, in their spruce and rich attires, generally lead their sober, unadorned companions by several days, and may be seen in low thickets along the borders of streams, among the rice plantations, or in the vicinity of the sad, cheerless sea. Fond of the lowlands, at such times, one would imagine that such situations would have a depressing effect, and render them gloomy and despondent. But this is far from being the truth. Almost from the beginning of their arrival, they are endowed with the propensity to sing, even before their partners have come. From the summit of a wayside bush, a fence-rail, or from out the hedges of some suburban villa, their rich, mellifluous warblings may be heard to the infinite pleasure and joy of the weary pedestrian. These musical utterances resemble the notes of the common Indigo Bird, but lack their energy and power of sustentation. It is not now that their songs are heard to the best advantage, but when the season of mating occurs, a fortnight later. They are then in their happiest moods. The presence of the dear ones excites within them the passion of love, and calls forth the highest capabilities of their natures. In the days of Wilson these were recognized, and many a male-bird was captured and confined to a cage, by the French inhabitants of the lower parishes of Louisiana, not more for the splendor of his plumage, the docility of his manners, than for the sweetness of his song. Great numbers were not only decoyed into traps, and other devices, to satisfy the growing desire for such pets at home, but hundreds were shipped to other countries. But it is only of late years that their introduction into our northern cities has been an object of pecuniary profit, and now almost

every fancier's store is made to rejoice with the dulcet strains of this beautiful and active little Finch.

Coming back from this digression, let us view, for a few moments, the character of the sexes, and their behavior at the time of mating. Naturally pugnacious in the presence of a rival, the male is all gentleness and kindness when in the society of females, and exerts his best efforts to please and conciliate. The character of the female is the exact antithesis of his, and wins admiration by its sweetness and simplicity. Modest and plain in dress, she is equally artless and unassuming in demeanor. The courage which she sees displayed by her masculine protector does not impress her with feelings of awe and timidity, but challenges her admiration, confidence and esteem. Knowing that such conduct, so thoroughly devoid of civility as it seemeth, is but the outgrowth of jealous affection, she is drawn to him by an influence which she cannot control nor resist. Consequently, his road to happiness and bliss is one untrammelled by the cares and trials which beset the paths of less fortunate claimants for female favors. He has only to present his suit accompanied by the usual protestations of love, to have it honored with a prompt and willing acceptance. While these amours are being enacted, a rival dare not intrude upon the hallowed precincts. Such an act of temerity would but be the prelude to a bitter encounter, which must result in one or the other of the combatants being driven away discomfited and disgraced. The females are never known to take part in these affrays, but maintain, at a safe distance, an attitude of passivity. So well known to the bird-dealers of New Orleans is this peculiar disposition about which we have been writing, that advantage is taken thereof for the purposes of the trade. It is on this wise: A mounted male-bird is placed in a position of defence upon the platform of a trap-cage. As soon as discovered, it is attacked by a male-bird with determined vigor, and even after the trap is sprung, and the assailant has become an unwilling prisoner, these assaults are continued with zealous and unremitting pertinacity.

Events now follow each other in close succession. Pairing being solemnized, the birds seek themselves out a spot for a home. Low growths are usually selected. In Texas, thick mezquite-bushes and live oaks, and, in Louisiana, orange hedges, bramble and blackberry bushes, and, occasionally, the lower branches of trees are occupied. The height above the ground seldom exceeds ten feet, the usual elevation being from four to five feet. A crotch is generally the recipient of the fabric, except in cases where tangled bushes are used, when their hooked and prong-like branches serve as girders of support.

By the first of May, everything being in readiness, the ground-floor of the domicile is laid, and little by little the walls are raised, through the cool, united efforts of the two patient workers. By no means as artistic as some we have already described, yet it is, withal, a neat, comfortable and staid structure. The materials of composition are not at all varied, but usually consist of dried grass, vegetable stems, leaves in small quantities, fine rootlets, and silk of caterpillars, on the exterior, and horse-hairs, or the slender culms of grasses, on the interior. In many instances, the stems are clothed with long hairs, which serve as points of attachment to the cottony and silken fibres which bind the coarser substances together. A nest before us presents to the unaided vision a slight lustrous appearance from the vast numbers of membranous dessepiments or partitions—relics of seed-vessels that are adherent to most of the stems. The cavity has an even, unragged margin, which is due to the great pains taken in the disposition of the flaxen fibres which, in a great measure, compose it. On the whole, the outside is remarkably smooth and uniform, while the interior, with its circularly-arranged layers, is a perfect model of elegance and comfort. The height of the nest which we have figured, and the same may be reasonably true of all such structures, is two and one-tenth inches, and the width, two and nine-tenths. The opening is one and nine-tenths inches in diameter, and nearly the same in depth. This nest was collected in Comal County, Texas, on the ninth of May, 1881, and is a fair representation of the typical structure. In the drawing it

is shown upon a live oak branch, of natural dimensions, and with the female in the distance. Her partner is figured in the foreground, and may be readily distinguished. His head and neck are a beautiful ultramarine-blue, excepting a narrow patch from the chin to the breast, which inclines to vermillion-red. The eye-lids, and the under parts generally, are of this latter shade, while the rump is tinged with purplish. All other parts (the lesser wing coverts, tail feathers, and outer webs of quills excluded) are green, excepting the interscapular region, which reflects a gloss of yellow, while the undescribed portions are purplish-blue. What a contrast to the female-bird, which can only boast of a dark green habit with a yellowish front. The young are the likeness of their mothers. The length of the adult is five and a half inches, and expanse of wings, two and seven-tenths.

From the first commencement of the home, to its final completion for occupancy, not more than a week elapses, and the female is ready to deposit her first instalment of eggs. This is succeeded by similar payments, to the number of four or five, of the great debt which Nature demands of her. Having settled the last obligation, she nestles down into her cosy chamber with the determination to watch and wait for the priceless treasures which she knows must be her ultimate reward. While she is thus about her agreeable business, her proud and dignified companion is abroad in quest of enjoyment and luxurious living. He seems to be the happiest of fellows. Could you hear him as he wends his way among the orangeries, in the full tide of song, you could not help feeling that he is the most thoughtless and cruel fellow of your acquaintance. Never a care does he appear to have for the patient little being who is sitting her life away, in order that his loneliness and hers shall be blessed with a happy house-full of children. But it is otherwise. Seemingly unmindful, he is at heart a clever being. Let but his home be invaded, and he is on the spot in an instant, ready to avenge any wrong, in his own summary manner, that may be attempted or committed. But his loving and Quaker-like housewife is possessed of greater forbearance. Trustful and gentle, she

will often permit herself to be lifted from the nest rather than expose her jewels to the greed and cruelty of an unsympathizing world. While a comparatively close prisoner at home for a period of fourteen days during the incubating process, she, however, does occasionally quit its shadows, when sorely pressed by hunger, but only for a brief time.

The appearance of the young is the inauguration of a change in the male's demeanor. Proud of his progeny, he breaks away from his hitherto aimless habits, and makes amends therefore by becoming a very dutiful and affectionate parent. With equal zeal he assists his partner in collecting the various insects which contribute to their nourishment. As long as their helplessness continues, he may be thus observed. But when, after a period of thirteen or fourteen days, the young are able to quit the nest, he abates his care in a measure, and teaches them to help themselves. When sufficiently matured, like their parents, they feed upon rice, the seeds of figs, and the various grains peculiar to their native haunts, as well as upon insects. The young females soon acquire their proper dress, but the males, on the contrary, are slow in arriving at the same condition. Four years, at the farthest, are necessary to bring about the final change.

The eggs are rounded-oval, of a white or grayish color, and beautifully marked with brown and violet-colored spots chiefly about the larger extremities, but more scattered, smaller and paler ones over the rest of the eggs. In some specimens from Texas and Louisiana, the violet spots predominate, thus contrasting in a marked manner with normal forms. The average dimensions of a set from Texas are as follows: .85 by .60, .80 by .60, .80 by .60 and .85 by .60 inches. Another set from Comal County, of the same State, measure respectively .81 by .63, .81 by .63, .75 by .63 and .75 by .62 inches. Nests with eggs, found as late as June 21st, seem to warrant the belief that two broods are annually raised, but this needs confirmation. In confinement, as many as three are of common occurrence.



BELTED KINGFISHER

PLATE XXVIII.

CERYLE ALCYON, (LINN.) BOIE.

Belted Kingfisher.

EXCEPTING a very near and more powerful cousin which inhabits the seashore and pellucid streams of California, the above species is the sole representative of its family in the United States. No bird is more distinctly characterized, and few are better known. The first sight of it, with its long-pointed, heavily-set bill, ashy-blue crest, robust and well-knit frame, and short but sinewy legs, cannot fail to leave an indelible impression upon the mind, which nothing short of mental amaurosis can obliterate.

Go where we will throughout the length and breadth of the land, and the loud, harsh cry of this bird, which resembles the noise emitted by a watchman's rattle, reminds us of its presence. Nor need we confine our journeyings to such limits. But let us venture into the barren, inhospitable realms of the North, where the stunted and poverty-pinched Esquimau resides and ekes out a somewhat precarious existence, and our friend still bears us company.

Fond of the scenes of its nativity, scarcely have their waters become released from the icy fetters of winter by the breath of Phœbus, than they are made vocal and cheerful by these proverbial and venturesome fishers. The murmuring brook, the rushing torrent, the gentle waterfall, and awe-inspiring sea, all court its presence, and offer a generous and willing support.

Like love-sick swains of whom poets have delighted to sing, they seek such haunts, not more for their soothing, quieting influences, than for

pleasures more substantial which they are sure to find. Here, unmolested by their great arch-enemy man, they can pursue their piscatorial occupation as suits them best. Who has not observed some lonely individual, with, apparently, every trace of care blotted out of his life, thus occupied from early morning until night-time? Those who love to quit the dust and turmoil of the city, to hold sweet communion with the visible forms of wood and dell, have been silent, speechless spectators of what we witness. However, for the benefit of such as have been denied this pleasure and privilege, we would invite them to a stroll into the country where babbling brook and quiet, sunny pond, adorn the prospect. The utmost silence must be maintained in these rambles, would you secure success. The presence of a human being upon the scene where these lordly princes of the piscine craft hold high revel, if detected, is almost sure to produce a stampede, and lead to a hasty departure. Hence, great care must be exercised in approaching their retreats, and even while quartered within the same. Once there, and snugly ensconced by environing bushes from view, you await developments. The object of your search may be but a few paces from you, and you not cognizant of it. Five minutes pass, and nothing is heard but the rumble of some distant cascade, the clatter of the stream as it laves its reedy banks and pebbled bed, or the rustle of the dry leaves around as they echo to the rabbit's heavy tread. Another space of equal length has followed after, and the moments seem lengthened into weary hours as you sit listening, and like results are your reward. But while being tossed to and fro upon the ragged edge of suspense, and almost bereft of hope, a loud, harsh rattle meets your ear. You look in the direction whence the sound came, and there, perched upon an overhanging bough just over your head, or a little to the right or left of you, stands—the very embodiment of majesty and power—the creature for whom you have been looking. Nor does he always occupy such a lofty position. Betimes, he seeks a lower level, and may be found upon a stranded, uplifted snag. Having discovered his whereabouts, you must watch him closely, for the cry which you have just heard, is the signal that precedes

the assault that he is preparing to make upon some scaly denizen of the water that has had the folly to show its gilded, tempting form.

A sudden, circular plunge, accompanied by a dull, heavy splash, and the frightened, squirming fish is wrested from its native element, and swallowed in an instant. In less time than it takes to chronicle the brief event, the daring, cruel deed is accomplished, and the perpetrator thereof has regained his post, and stands ready for similar adventures. Such is the greedy and unsatisfying character of his nature that, where undisturbed, he has been known to watch for hours at a time without changing his point of lookout. It must not be supposed, however, that the quantity of food which he devours is in proportion to the time spent in its procurement. This is not the case. Due allowance must be made for disappointments and reverses, as well as for the failure of the finny tribes to manifest themselves. Tired of watching, he often varies his occupation by coursing along the stream at a small height above its surface, and stopping anon, suspended after the fashion of Hawks, to gaze into the depths below.

Nothing can be more interesting than the behavior of an individual who has miscalculated his chances, and fallen wide of his mark when plunging for prey. The very impersonation of disappointment, he retires to his post, sullen and dejected. His very attitude and looks attest the war of feelings waging within his bosom. But this is of short continuance. The thoughts of past experiences come to his rescue, and he is himself again. With the successful fellow the condition is different. Joy and happiness are depicted where, before, we saw but misery and sadness.

However intently these birds may seem to be occupied with the business before them, they are not so completely absorbed therein as to be utterly oblivious to their surroundings. Blessed with sharp vision, they are as equally favored in the direction of hearing. When the eye is engaged, like a faithful sentinel on duty the ear, whose function it is to receive and communicate vibrations of air to the brain where they are interpreted, is always on the alert, ready to warn its companion of danger.

From what has been written, it is evident that the desire for food seems uppermost in the thoughts of these birds from their first arrival—usually in March or April—until pairing commences. In its gratification, the female is the equal of her lord. Such being the case, it is unreasonable to expect any great degree of familiarity and friendship to exist between the sexes. They, therefore, dwell apart. Accident sometimes brings them together, but beyond a silent recognition, they evince no greater regard. Thus affairs continue for a month, and even for a longer period of time, when they suddenly come to a most glorious end by the assumption of connubial relations. Nothing remarkable or impressive indicates the coming of this event. The male seems to meet his partner unawares, makes overtures of love in his own strange fashion, and becomes at once her uninfluenced choice. And thus the story is ended.

Without further ado, the wedded couple prepare for the duties of house-keeping. Usually they are spared the trouble of searching for a home. Especially is this the case with old birds, who have only to visit the scenes of other years to find a domicile awaiting occupancy. A little repairing of the galleries leading thereto, as well as the cosy, interior chamber, and the place soon wears an aspect of cheerfulness and comfort. But where these structures do not exist, they are excavated at great pains in the sides of ponds, streams, or cliffs contiguous to water. A very common place, in the latitude of Philadelphia, is in sandy, railroad cuttings. Dry, elevated grounds, beyond the reach of inundations, are ordinarily chosen, although there may be exceptions to the rule.

These burrows are the results of the alternate labors of the sexes, who work with diligence and rapidity until the task is accomplished, often making a deep excavation in a single night, when the bank is soft and sandy. The directions and depths of these holes vary: some being less than four feet, while others are more than fifteen feet deep; some being straight, and others turning either to the right or to the left before terminating in the enlarged chamber which is constructed as a place of deposit for the eggs. The time spent in the formation of a burrow depends upon

the nature of the soil and the length of the shaft. Ordinarily two days are required for its completion, although instances are recalled where three, and even four days, have been occupied with the tunneling.

With the successful accomplishment of this task, nothing further remains to be done but to deposit the eggs upon the bare sand. Some birds do not deem their labor finished until they have given their home a warm lining of dried grasses and feathers. Such cases are exceptional, and dependent upon the humidity of the ground.

In 1855, Dr. Brewer discovered a nest of this species on Mt. Washington, alongside of a carriage-drive, and at a distance of a mile from any water-shallows. Another was found in a sand-bank in the village of Hingham, in close proximity to a dwelling, and quite remote from stream or pond. The authors of the latter nest were very cautious and retiring, seldom venturing out during the day, but were continually moving backward and forward at night, as evidenced by their loud, rattling cries. When with young these nocturnal excursions are not infrequent.

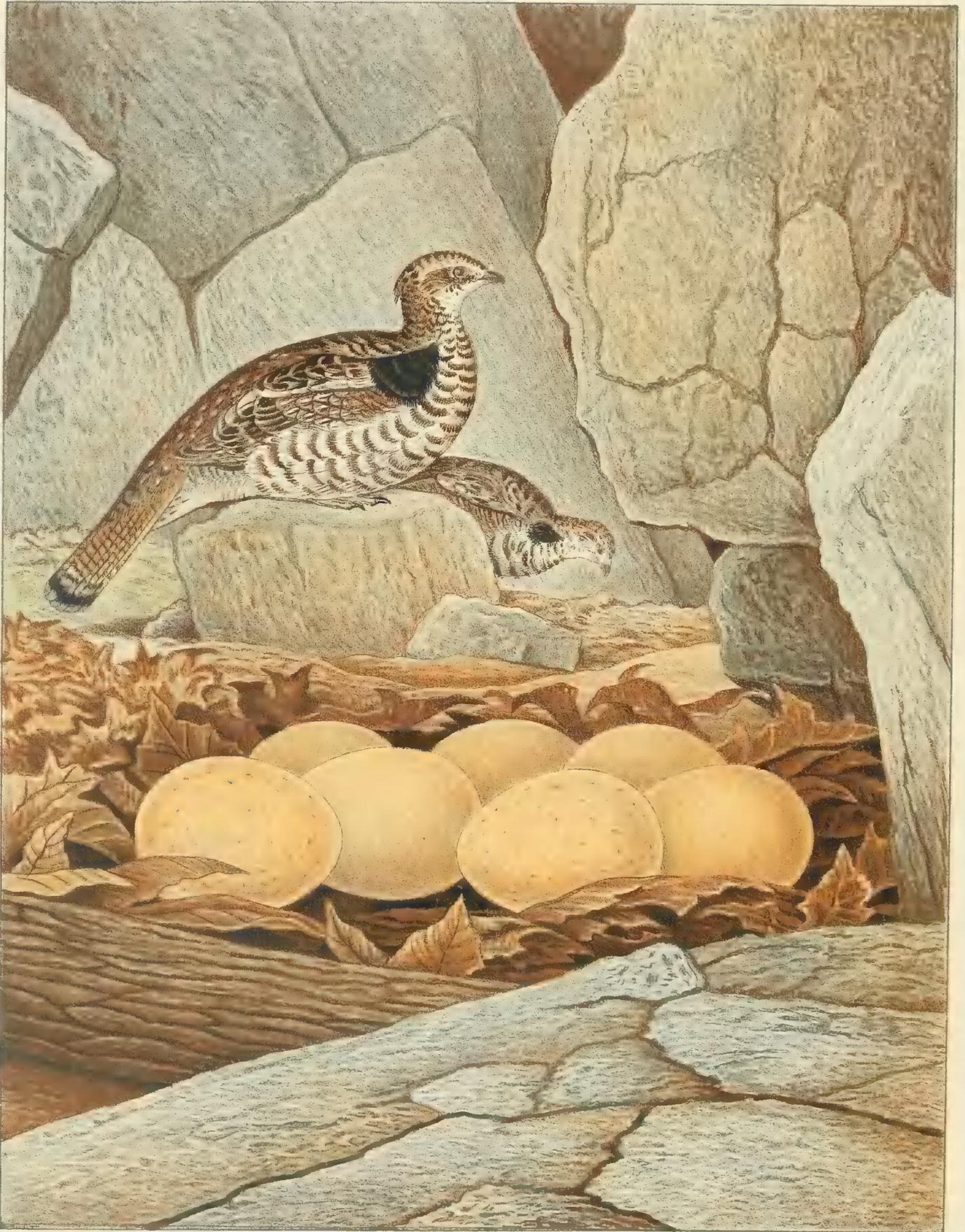
Speaking of the building habits of these birds, reminds us of a curious fact which occurred in the history of a male-bird, of which Mr. Dall, of Washington, was an eye-witness. On a certain occasion his attention was attracted to his lordship engaged in digging holes by the side of his nest, which were two feet in depth and eight inches in diameter, apparently for no other purpose than that of pleasure or occupation. They were invariably abandoned as soon as constructed. Once, he entered one of these burrows to eat a fish which he had captured.

Many fabulous stories have been told in ages that are past of the nest and manner of hatching of the Kingfishers, but they are too absurd and trifling to deserve more than a passing notice. The birds of our day neither construct their nests of glue or fishbones, nor commit them to the mercy of the waters to float about at random with their proprietors, but place them deep down in the earth, where they are secure from wind and rain, and the thousand perils which threaten the homes of their less saga-

cious neighbors. Into these secret recesses the females place their pure white, nearly spherical treasures, to the number of six, on as many consecutive days. These beautiful solids exhibit not more than ordinary variation in size, and rarely exceed 1.31 of an inch in length, and 1.06 in breadth from the most diverse localities.

By the beginning of June, sometimes two months earlier in the semi-tropical sections of our country, the young, through the patient setting of the mother-bird, make their appearance. While she is thus concerned for fourteen long, weary days, her partner plays the role of a very faithful and attentive husband, amply providing for her sustenance. Both parents show great affection for their little family, and watch over it with jealous and assiduous care. Weak and fragile creatures as they are at birth, they cannot digest the unprepared food of adults, but must needs have it reduced to a pulpy state by a process of maceration. Later on this is discontinued, and the birdlings perform the important duty for themselves. At the age of fifteen days they are old enough to quit the nest, but usually remain a brief period longer, when they venture out and try the fortunes of the outside world. At nights they return to the hole where they were fledged, and also during rainy weather, until the last of October, or the middle of November, when they leave their parents, and like the latter, separate and wend their flight to the South, or to regions beyond. When the season is unusually propitious, they seek more sheltered localities, and spend the winter with us.

From the male the female, as shown in the drawing, is readily distinguished, by having the sides of the body and a transverse band across the abdominal region, and slightly posterior to the bluish one of the breast, light-chestnut, the pectoral band being more or less tinged with the same color. The young resemble the mother in the fall, but when spring re-appears, the males present themselves in the paternal garb. The length of the adult is about twelve and three-quarters inches; that of the wing, six, and sometimes more. The small opening in the embankment shows the entrance to a nest, and a female making her way thither.



RUFFED GROUSE.

PLATE XXIX.

BONASA UMBELLUS, (LINN.) STEPHENS.

Ruffed Grouse.

CONSIDERABLE misapprehension exists in relation to the popular appellation applied to this species. In some parts of the country it is dubbed the Partridge, while in others it goes by the name of Pheasant. It is neither. All its affinities point away from these families, in the direction of the True Grouse, of which it constitutes a useful and interesting member. Pheasants are never found in the United States, but are indigenous to Southern Asia. Their nearest representative here is the Wild Turkey. Almost as much may be said of the Partridge, a group of birds which are exclusive denizens of the Old World. To save further confusion, we have thought it best to perpetuate in this work the title given above. While it can offer no violence to scientific accuracy, it cannot be otherwise than acceptable to the common sense of the masses, although it be less euphonious than its contemporaries. The wear and tear of constant use will soften its asperities and harshness, and render it, in the long run, agreeable as it is appropriate.

This matter settled, we shall proceed at once to the subject. Few Grouse are better known, and none more esteemed for its flesh, than the one we have chosen for a few remarks. Everywhere throughout the timbered regions of Eastern North America it is more or less plentiful, ranging from the Atlantic seaboard to the Rocky Mountains, and from Georgia to Nova Scotia. As far north as the 56th parallel it is said by Richardson to abound in small flocks which show considerable lack of suspicion and timidity. In all our Southern States, Louisiana excepted,

they exist to some extent, and are also to be found over limited portions of the Missouri Region, but, doubtless, more especially about the mouth of the river, and the contiguous country. In the western parts of the region it is represented by a form which passes with ornithologists as a well-defined, genuine variety. In California, it is presumed to be wanting, as Dr. Newberry did not encounter any specimens in his explorations; but in the wooded sections of the Cascade Range, where it exists under a new varietal name, and also in the valley of the Willamet in Oregon, it is by no means an uncommon occupant. It is in the New England, Middle Atlantic and Northern Central States that these birds are to be seen to best advantage, and in greatest numbers. West of the Mississippi, if we exclude Eastern Kansas, Southern Iowa and the whole of Missouri, they occur, if at all, in comparatively small and isolated parties.

In regions which these Grouse inhabit, they are permanent residents, and are never known to move southward with the retreat of warm weather. They are capable of adapting themselves to climatic variations with ease, but not so readily to surface irregularities and their natural concomitants. Dense woods, craggy mountain-sides, and the borders of streams, are noted places of resort. Lowlands, especially such as are invested with thick growths of small bushes and tall rank grasses, are not infrequently chosen. When in quest of food and gravel, they are known to quit their favorite haunts, and betake themselves to the open road, where groups may be seen absorbed in feeding. Not to that extent, however, when the rustle of a moving leaf, or the crackling of a twig, would pass unnoticed. The slightest noise causes a temporary suspension of labor, and a shudder of surprise. All of a sudden, and in the most perfect harmony, all heads are raised and pointing in the direction whence the noise proceeded. The keen visions of these birds are not slow in discerning through the gloomy recesses the presence of danger. Should nothing of an alarming character manifest itself, a short parley ensues, and business is resumed, but not with the same earnestness and apparent lack of care as before. Greater caution is observable, and every effort taken to prevent an ambushade. But let

the cause of the alarm, in the shape of dog or man, be close at hand, and the birds immediately strike for the cover, either on foot, or by means of flight. The latter method is only adopted in extreme cases, when the other course would be attended by disaster and probable ruin. In the exercise of their cursorial powers, they move with remarkable swiftness, as with head depressed, and tail expanded, they run for their lives. A pile of brushwood, or an impenetrable jungle, when near, is rendered subservient. There they manage to conceal themselves for a time, and thus recover breath. If closely pursued, and in danger of being trampled upon by the foot of the huntsman, or lacerated by the fangs of his quadrupedal friend, they await the opportune moment when, with sudden, whirring wings, they cleave the elastic ether, and vigorously press forward to some transitory haven of security, but to fall once more in the way of their relentless persecutors. These flights are so well-timed and unexpected that many an experienced gunner is thrown off his guard, and when, at last, he has recovered from his surprise and collected his thoughts, feels vexed at himself for allowing his equanimity to become unsettled by so familiar a stratagem. He finds it useless to repine, but endeavors to choke down the bitter sigh of disappointment that arises, as he presses forward to further adventures.

Like the common domestic Hen, these Grouse are strictly gregarious, especially during the autumnal and winter months. The flocks which they form vary in numbers, and when disturbed while feeding, scatter in all directions, each member seeking only its own individual safety and well-being. But after the lapse of a few minutes, they become reassured, and begin to gather simultaneously about the same spot, traveling the entire distance on foot. The utmost circumspection and vigilance are always exercised in these backward movements. Scarcity of food occasionally causes these birds, where very numerous in mountainous districts, to migrate to other places. These journeys are usually effected about the middle of October, they then being in excellent order and in great demand for the table. Audubon witnessed, in the fall of 1820, an im-

mense number *in transitu* from Ohio, Indiana and Illinois, to Kentucky. Many of these became the prey of man, while their companions who had escaped destruction sought, with the return of Spring, their own cherished haunts. This disposition to lead a roving, migratory life, as a general thing, is not hereditary, and is seldom undertaken. Plenty of food is usually to be found in localities which these birds frequent, and the necessity does not exist. Where there is a paucity of appropriate food-stuffs, such as acorns, the seeds of the beech and of the various species of birch, they do not hesitate to devour the buds of the Mountain Laurel, which imparts a poisonous character to their flesh. When severely pressed by hunger, they feed upon dry bark, the insects that harbor in the creviced trunks and branches of trees, and even stray to the roads that wander through their gloomy retreats, and pick at the hard, frozen horse-droppings which they chance to encounter. But when Spring returns, and renews her bond of faith with mother Earth, they more than make up for their scanty winter fare, and feast with fastidious appetites upon the now tender and juicy buds of the black birch, which gives a peculiar and toothsome flavor to their flesh, that has acquired for them, in some localities, the name of Birch Partridge. For a brief spell every other interest is now absorbed in that of unrestrained feasting to which the sexes submit themselves with all the abandon of civilized humanity. The middle of March, or the close of the month devoted by the ancient Romans to purifications and fastings that precedes, when the weather is favorable, marks a change in their life. This era is announced by a loud drumming noise which is everywhere to be heard. Standing upon a tall rock, or a fallen log, in some secluded woods or other locality, the author of this noise may be found. His altitude and demeanor must be observed to be appreciated. Once seen, he can never be forgotten. Arrayed in his new spring-suit, he is a being not to be despised. But this is not all. His beautifully-contracted neck, broad, expanded, fan-like tail, and elevated feather-tufts that ornament both sides of his neck, as he struts about with all the grace and dignity of some pompous lord or duke, render him of no mean importance, and add greatly to his attractiveness.

But it is its final actions that impress the beholder with wonder and admiration. The hitherto trailing wings now assume a condition of rigidity, and commence a firm, but slow, downward and forward movement, which steadily increases in power and rapidity, until the swiftly-vibrating wings appear only as a semi-circular outline of mist above the bird, thus giving rise to a sound which may be appropriately likened to the reverberations of distant, muttering thunder. These sounds are most generally heard during the cool hours of the morning, when the spirits are buoyant after a night of refreshing slumber. But as the day advances, they are less frequent, and irregular. So nicely can they be imitated, that many a bird is drawn to his doom, when advancing to meet a supposed antagonist.

As the drumming of the Ruffed Grouse is as often heard in fall as in spring, it has long been a mooted question as to its significancy as the call-note of the male during the breeding-period. But there cannot be the least doubt of the correctness of this interpretation, for we have the most incontestable proof of it in the responsive actions of the female. Nuttall is probably correct in ascribing the autumnal exhibition of the same wonderful power to self-gratification, and in affirming it to be, in many instances, "an instinctive expression of hilarity and vigor."

Besides the peculiar drumming sound which the males produce during the love-season, they give expression to vocal utterances which are no less remarkable. These are generally given forth when about to arise from the ground, and consist of two well-defined and characteristic notes. The first may be described as a sort of cackle, repeated several times in lively succession. The other, which closely follows in its wake, is a peculiar lisping whistle, which has not inaptly been compared to the cry of a young bird. These notes doubtless play a part in the reconciliation and bringing together of the sexes after their temporary separation.

While the courting-season continues, it is not an uncommon occurrence to find a single male in the midst of several females, before whom he is engaged in showing off his many good qualities and graces. In such a

dilemma, it is no easy matter to make a selection. Enamored by so many, he is sometimes disposed to be gay and trifling, and to dally with the affections of some pure and simple-minded female. Thus we often find him carrying on the most cruel flirtations. But when he does bring himself earnestly down to the business of choosing a partner, he does not go about it in an uncertain, hesitating manner, but makes his selection with promptness and dispatch. The successful female, proud of the honor conferred, at the call of her lord, forsakes the group of unmarried sisters, and follows him wherever he listeth. The warmest tokens of affection and regard are lavished upon her, and woe to the rival who should appear upon the scene while these amours are being enacted. Should such an event come to pass, the intruder is at once assailed, and a long and bloody encounter ensues, which results in the death of one or other of the combatants, but never in the complete vanquishment of the defensive party. Instances are known where males have treated their first choice with cruel indifference, and ultimately deserted them. Such things could not otherwise be when the question of polygamy comes to be considered, for it is a fact that both birds are slightly promiscuous in their intercourse, although the tendency is more marked upon the part of the male.

The time of mating varies somewhat with climate, and with the conditions of the season. In the warm sections of the South it occurs late in March, or early in April. But further north where winter still lingers with frosty coldness, the latter month is well nigh verging to its close, or gliding into the succeeding period, before this essential business is thought of. But when it does happen, with but little waste of time, the female withdraws herself from the society of her partner, and repairs to a secluded spot in the midst of a woods, where usually beneath a clump of evergreen, or a pile of brush, or perhaps a fallen log or projecting rock, she hastily scratches a few dry leaves together for a nest. Here she deposits, one by one, in as many consecutive days, her complement of six to twelve eggs, and immediately enters upon the duties of incubation. In this she is alone, the male lending no assistance, not even indirectly by attending to

her demands for food. While she is thus occupied, he seeks the company of others of his sex, with whom he remains until the young are nearly full-grown, when he joins the family, and dwells with it until spring. The period of incubation ranges from nineteen to twenty days.

When first hatched, the young follow their mother, and soon learn to comprehend her clucking call, as well as act responsively thereto. Few mothers are more devoted to their children, and it is a rare occasion to find one who is more courageous and wily in their defence. Let her family be surprised by friend or foe, a single note of alarm is all that is necessary to cause the brood to scatter, and with the most clever adroitness to hide themselves beneath a bunch of leaves or grass. So successfully is the concealment accomplished, that a careful and protracted search is often necessary to discover their whereabouts. Often when squatting by the roadside with her brood, the parent is taken unawares. This is the trial which she of all others seems to dread. To save her little ones she perils her own life by venturing upon an assault. Her first impulse is to fly at the face of the intruding party, but sober thought comes to her rescue, and teaches her the folly of such a course. She yields, and the very next moment we find her tumbling over and over upon the ground, apparently in the deepest distress, but soon to recover her self-possession in time to carry out the final piece upon the programme—a *ruse* in which lameness is imitated with wonderful ingenuity. While the mother is thus agitated, the birdlings are seen to scamper in every direction to places of shelter. Having accomplished her allotted part, the happy mother now flies away, and by her well-known cluck soon gathers her brood together. The cry of the young is a simple *peet*, which is heard repeatedly during feeding, but only occasionally while nestling. Their food consists of the seeds of various plants, and berries. While able to search for their own food, they derive considerable assistance from the mother.

Such cunning, wee creatures, when first they leave the egg, can only be compared with the young of our barnyard fowls. Dressed in a simple garb, they look but little like their parents. Above they show a uniform

reddish-brown or rufous color, which fades into a rusty-white hue below. With the exception of a dusky streak which starts from the posterior part of the eye and crosses the auricular regions obliquely downward, and a whitish bill, they have nothing to diversify the monotony of their coloring. But when they have attained the age of four or five months, they show their heredity so plainly that their identity cannot be disputed or mistaken.

In the adult stage the tail is reddish-brown or gray above, with narrow bars of black. Terminally, it is crossed by a slender band of pale ash, which is preceded by a broader one of black, and this by another of an ashy color. The upper parts are ochraceous-brown, and finely mottled with grayish markings. The lower parts are chiefly white, with broad transverse bars of light brown, which are mostly hidden from view upon the abdomen. Upon the shoulders the shafts of the feathers have pale streaks, which exist in those of the wing-coverts. The upper tail-coverts and the wings are marked with pale grayish cordate spots, while the lower tail-coverts are pale ochraceous, each being provided with a terminal delta-shaped spot of white, which is bordered with dusky. The neck-tufts are brownish-black. The male measures eighteen inches in length, and has a breadth of wings of seven and two-tenths inches. The tail is about seven inches long. The female is smaller than the latter, with similar colors, but has less prominent tufts upon the sides of the neck.

The eggs of this species are usually of a uniform dark cream color, but sometimes show a nearly pure-white ground. In most specimens there are no markings at all, but when they do occur, are either quite numerous and conspicuous, or few in number, and obscure. They are usually ovoidal, but forms are occasionally met with which are nearly spherical. Their average dimensions, as obtained from specimens from the most diverse localities, are about 1.64 to 1.18 inches. As far as we have been able to determine the species has never been known to produce more than a single brood. Usually nesting is performed on the ground, as shown in the cut, but instances are recorded by Samuels where the female has occupied a deserted Crow's nest, or the shelter of some tall broken trunk of a tree.



LEAST TERN.

PLATE XXX.

STERNA ANTILLARUM, (LESS.) COUES.

Least Tern.

FOR diminutiveness of size, nimbleness and grace of action, this species stands alone among its kin, and has been very properly likened in its movements to the sprightly, elfish Humming-bird. This comparison holds true in this latter particular, as those who have had the privilege of watching these Terns in their pleasurable aerial diversions can testify, but there is lacking that essentiality which makes the other seem, when fluttering before a tulip, a mere materialized sylph from the land of dreams.

Nothing can give the enthusiastic lover of Nature more true and unalloyed happiness than the study of our aquatic friend in his own loved haunts, and while in the delightful exercise of his volant powers.

His majestic sailing through the pellucid atmosphere, whether for pleasure or game, the beautiful equipoise of body as on motionless wings he hangs suspended above the liquid abyss below, the sudden, impetuous, hawk-like plunge when some luckless sprat rises to view, and last, but not least, the easy manner with which he arrests his downward course and bounds aloft, must be seen to form an adequate conception of the wonderful powers of flight with which the *least* of all our Terns is endowed.

Although fond of the deep-blue sea, with its sad and never-ending monotone, and the dreary, almost barren waste of sands that line its tortuous, plantless shores, it is by no means an exclusive dweller by such haunts. Inspired by a love of adventure, and burning for new sights and forms of life, it quits the shadow of Neptune's trident, and wends its way up the various water-courses that tend seaward, to quieter inland scenes.

While more especially abundant in maritime regions, it is, however, more general in tracts remote therefrom than has been commonly supposed. So that instead of the whole vast army betaking themselves to the thousand miles stretching along the Atlantic, many from the Gulf in the South, may be seen, when the tide of migration has set in, wending their ways in small parties along the vast central artery of our land to the distant valley of the Missouri, and elsewhere. Towards the setting sun, another current takes its northward course, but spends its strength on the mild, equable shores of California before any considerable elevation is attained.

Whence come these birds? This is a question that is often asked, but most difficult of solution. That they winter beyond the borders of the United States there can be no doubt. After quitting our shores, it is highly probable they seek the tropical realms of Central America, or the breezy isles of the Larger Antilles.

But wherever they go, there they remain until the snows of their northern homes have disappeared. So delicate and susceptible to cold are they that even along our Southern sea-bordering States, where the felicitous change first manifests itself, they delay their visit until the early days of April are come. But it is not until this delightful month of the year has stepped aside to welcome her smiling sister, that the cooler shores of New Jersey are reached. From this latitude they pursue their journey to the extreme limits of their habitat.

After a little they settle down to the very important business which has inspired the journey. The twenty-fifth of May, or the beginning of the month sacred to Juno, marks the love-season, which is of short continuance. Having accomplished their loves and selected partners, the sexes now turn their attention to household matters. The first thing to be done is the selection of a spot and the preparation of a home. This part of the business pertains exclusively to the female, and, seemingly, is accounted of trifling moment. Like most of her terrestrial, and many of her aquatic neighbors, she does not build a house, but on the pebbly shingle

just back of the beach, places her eggs on the bare ground, with not so much as a bit of sea-weed or of grass beneath them. The merest apology of a nest is often denied them.

The number of eggs deposited varies from one to two, the latter being the ordinary number. Instances are recorded where as many as three have been found as a nest-complement, but there certainly must be some mistake, which could easily happen in localities where many birds are breeding together. Where more than one is laid, a day usually intervenes between the two deposits. Nothing is more difficult to find, even when plentiful, than the eggs of this species, owing to the similarity of their color to the surroundings. Their ground sometimes presents a greenish-white color, but tends more to olivaceous or dull drab. The markings are numerous, pretty generally diffused, but when of large size, are mostly wreathed about the larger extremity. They consist of irregular blotches and dots of different shades of brown, interspersed with numerous obscure spots of lilac. Their average measurements are 1.26 by 1.02 inches.

Having committed her treasures to mother-earth, the female has little else to do than to guard them from harm. The heat of the sand, when the skies are undimmed by cloud or mist, is sufficient for hatching purposes. The application of living heat, so to speak, is unnecessary, and it is even a question in our minds whether the female could endure the inconvenience and trials of the incubating process, in the midst of a broiling sun upon a sandy sea-shore. But during wet and stormy weather, and at night, this duty is actually incumbent upon her.

The appearance of the young, after a period of sixteen or seventeen days, brings the parents nearer together, and keeps them more at home. While kind and affectionate to each other, it is the attention which they bestow upon their happy little family that commands our admiration, and gives special prominence to their character. With true parental instinct they watch over their early helplessness, and provide them with an abundance of wholesome diet. Beetles, spiders, crickets and other insects,

as well as prawns, shrimps, skippers and small fish, form their dietary. But it is not only by feeding them that they conserve to their well-being, but also by protecting them when assailed by enemies. The sight of an intruder is greeted with shrill cries of remonstrance from a whole chorus of voices. This not having the desired effect, a score of angry birds of both sexes dash boldly upon him, as though to punish him for such rashness.

By the middle of June the earliest broods are on the wing. This, however, is rather premature, for the greater part are not in a condition for flight until the fore part of the month after. Associated with them may often be seen plenty of immature birds of last summer's hatchings, as well as the adults themselves. The yearlings are easily distinguished by the black bill, slightly forked tail, slate-colored occiput and auriculars, imperfect coloration of the primaries, absence of black cap or white crescent, and the presence of a dark band along the edge of the wing. With birds of the season, which show a strangely-variegated dress of grayish-brown and white, there is no possibility of being mistaken or confounded. The assumption of the perfect plumage usually requires a period of two years. Both sexes are similarly clad. During the breeding-season they have the entire upper parts and wings of a clear bluish-gray, variegated with a triangular white spot on the forehead reaching to the eye, and deep black crown and occiput, as well as a line from the eye to the upper mandible of the same color. The first ten primary wing feathers have the shafts black, the outer webs and half the inner next the shaft, grayish-black, ends concolorous, and inner margins white. The remaining primaries are of the same color as the back, with inner margins white. Excepting the outer borders of the external feathers, and the inner webs of the others basally, which are white, the tail is slaty. The whole under parts are of a lustrous white color, while the bill is a pale orange-yellow, iris hazel, and legs and feet a light orange-red. The length of these birds is about nine inches; their wings six and three-quarters, and the tail a trifle more than one-half of the latter measurement. Young birds are correspondingly smaller.



EASTERN BLUEBIRD

PLATE XXXI.

SIALIA SIALIS, (LINN.) HALDEM.

Eastern Bluebird.

INHABITING the vast continents lying to the eastward of our own, exists a family of birds popularly known as Stone-chats. Though mainly denizens of the Old World, yet they are not without their representatives in the New. To this group belongs the genus *Sialia*, notwithstanding the possession of structural peculiarities which ally it to the Thrushes. Of aves claiming such affinity, none is better known than the above species.

Throughout the eastern faunal area of North America, from Georgia and Louisiana to the 48th parallel of north latitude, and westward to the highlands of the Mississippi, our genial, sky-blue friend abounds, in varying numbers, and rears its triple brood. Along the Atlantic seaboard, it never ventures as far north as it does in the interior, being rarely observed beyond the Penobscot River, although Verrill met with it in abundance in Western Maine. Six hundred miles out at sea, in the delightful climate of the Bermudas, it finds a permanent residence, and is also to be seen in Spanish Cuba, but only on rare occasions. Among the lofty ridges and open table-lands of the Rockies, it never occurs, but gives place to an apparently hardier species, the Arctic Bluebird of naturalists; while west of this vast mountain barrier, another form prevails.

So strongly attached to the natal spot do these birds become, that it is with profound feelings of regret that they leave it. It is only when the rigors and snows of our northern winters have denied them a living, and thus rendered a longer sojourn impossible, that they take their departure for the South. Here they while away the dreary hours as best

they can, until the returning footsteps of Sol have announced the glad tidings that the hallowed, time-honored haunts of the north will soon once more appear in beautiful habiliments of green. Excepting such as spend their entire lives in semi-tropical abodes, there is manifest an intense longing to be gone, which must necessarily detract from the happiness of their migratory brethren. This emotion often grows to such strength, that even in the mild, sunny weather of February, with which earth sometimes indulges her children, the brown, scored and pitted face of Nature is often rejoiced with their delightful presence. Amid the desolation which everywhere abounds, they dart upon the vision like the first gleam of sunshine after a day of dark and rainy weather. The bright, ruddy glow that burns upon the breast, as if in cruel mockery of earth's coldness, and the rich depth of coloring of the back, before whose vivid azure the very heavens seem to pale, are in striking contrast to objects around, and thrill the soul of man with gladness as the wearers of these charming hues are the bearers of glad intelligence, for they come to remind us that laughing field and babbling rannel have not entirely deserted us, but will return to enliven the prospect when a few more days have rung their changes on the endless cycle of time.

But while a few home-sick individuals thus come among us, ere the backbone of winter has been broken, to renew old friendships, and point to bonnier times, it is not until the first sunny days of March have made their appearance, that the tide of emigration is said to set in with earnestness. Coming from no great distance, they are not long on the journey, and in a few days are pretty well established in the old habitats. At first they are seen in open fields, or loitering about the outskirts of woods. In rural situations they are not slow in working their way into old orchards, and the yards adjoining human habitations. But wherever they take up their quarters, they are sure to make themselves friends. Few species are more encouraged to build about our domains, and none are in greater repute. While the Robin and Orioles do immense service in the destruction of thousands of obnoxious insects, they frequently offset this

good character by the mischief which they commit upon our fruit-trees while in blossom. Not so with the Bluebird. He disdains such meanness, and labors solely for man's interests.

Arrived in our midst, he does not foolishly waste his time in riotous living, and worse than bacchanalian riot, but goes directly to the work which has called him North. Consequently, from many a field and forest-border may be heard the soft, plaintive notes of the male. These notes are singularly pleasing and touching, and are well calculated to arouse a feeling of sympathy in the bosom of the most inhuman of men. At this period, which marks the incipient stages of courting, he is heard to the best advantage, although occasionally through the summer, and in the fall when preparing to leave us, he is known to descant somewhat similar strains, but with less of pathos and effort. The following syllabic language is as accurate a representation of the song as it is possible to express it by human vocal characters: *tür-r-r-r-wā*, *tür-wüh-tür-r-r-wā*, *tür-r-r-h' wēt*. While engaged in its rendition from the topmost bough of a cedar, or the uppermost rail of a fence, his attitude shows such complete absorption in the subject, and such obliviousness to place and surroundings, as to awaken the profoundest wonder. The approach of footsteps is unheeded, and many a time we have made our way to within a few paces of one of these famous minstrels, without producing momentary surprise, or the least disarrangement of the harmony. All the while the concert is going on, the female is in the immediate vicinity, silent and motionless, and apparently drinking in its full import. But after a little the music ceases. The performer now leaves his post, flies towards the listening and solitary auditor, hangs on quivering wings suspended before her, and thus having made obsequious obeisance, alights a short distance away to ascertain the effects of all these efforts to please. Again and again, at regular intervals, the performance is repeated, and at last the female succumbs to the magnetic influence, and becomes a bride. All this is accomplished in less than a week from the time of arrival, long before most other small birds have thought of conjugal responsibilities.

By the tenth of March the happy couple are ready to go house-hunting. The female assumes the direction, and it is not long before they are suited. Their usual nesting-place is some cranny in a dead tree, or the vacant hole of a departed Woodpecker. The snapping off of a time-honored limb has often opened the way for a snug retreat. Almost any nook or cavity will answer in a pinch. Birds have been known to build in a deep fissure between the branches of a tree, in a broken tin water-spout under the eaves of a building, between the blind and sash of an almost forsaken window, in the stolen home of some eave swallow, in boxes and gourds, or occasionally in the forked branch of an apple-tree.

When a garden or orchard is chosen, objections are sometimes made by other species, and frequent encounters are recorded between the Bluebirds and such Wrens, Martins and Sparrows as deem themselves to have been badly treated by the former. In these affrays, contrary to expectation, the Bluebird is usually victorious, being more than a match for the smallest of our Woodpeckers, and even lording it over such professional fighters as the English Sparrow. But his pluckiest and most inveterate enemy is the House Wren. This tiny buccaneer will often visit the Bluebird's snug house, while the mistress is absent, and after raking out the materials, remain in possession. Any attempt, however, at interference when the family is within, is treated as an insult, and summarily avenged. Generally Madam Bluebird and her husband are such gentle, quiet bodies that they never think of molesting their neighbors. As in well-regulated human communities, there are individuals who are not above such meanness. A case in point came under our observation some five or six years ago. A pair of Great-crested Flycatchers, finding an empty tomato-can secured to the top of a post, had made it their home and treasure-house. Shortly afterwards 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, desirous of ending the disturbance, shot the female Bluebird. The male immediately flew away, but to return in the course of a half-hour with two females. The contest was renewed,

and victory decided in his favor. The Flycatchers, however, did not retire until they had thrown out the nesting-materials, a portion of which they afterwards carried away to use elsewhere. After the defeat the Bluebird selected a partner from his allies, and the unfortunate female gracefully retired. The proprietor, perceiving a strong predilection upon the part of the Bluebirds for the can, determined to annoy them awhile, and fastened a lath across the entrance, and watched the result. The birds set to work, and the piece was dislodged. They built their nest, deposited their eggs, and raised their broods, which they fed upon two species of turnip butterfly, and the wingless bodies of *Spilosoma*, a moth destructive to the grape.

Into their domicile the birds convey a good deal of grass, which they cover with a soft layer of hair, feathers and wool. While the male assists at this labor, the arrangement of details involved in the preparation of the furniture, falls to the lot of his partner. While she is thus busy, he relieves the tedium of the task by a song, and a few caresses. In the Northern States the nest is finished and the first eggs deposited by the 10th of April; in the South much earlier. Why the Bluebird selects cavities as nesting places, does not readily appear. Being an early breeder, such situations best secure warmth and shelter for the young. In primitive times hollow trees were doubtless occupied more generally than at present by all birds, just as now they are constantly used as hospitia by our winter residents during disagreeable weather. The Bluebird learned to build in cavities by first using such places for shelter during cold, vernal storms, and perceiving their comfort, has come to regard them as appropriate quarters for nesting. Thus what was merely accidental to their ancestors, has now become intuitive and habitual to the race. Protection against rapacious birds is also secured, which would not be gained if the bright plumage of the female were exposed in an open nest.

As no dampness is to be dried, laying follows closely upon the completion of the nest, and continues for a period of five days, one egg being laid daily. They are usually of a sky-blue color, spotless, and have an actual measurement of .82 by .61 inches. Mr. Ingersoll once found in

Loraine County, Ohio, a nest of five eggs, all of which were pure lustrous white, like those of a Woodpecker. Similar instances have come to our knowledge since the above was recorded. In the work of incubation, the male occasionally relieves his partner, but when not thus engaged, he is very attentive, 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. If surprised upon the nest, the female makes no effort to escape as long as untouched; but waits until you have withdrawn to a safe distance before flying from the hole. When hatched, the young are watched over with the greatest care, and fed alternately by each parent. Their food consists of flies, earthworms, young of beetles, moths, butterflies, etc. When able to shift for themselves, they are entrusted to the care of the male, while the female busies herself in preparing for the second brood. The old nest is renovated and refurnished, and she again sits, depending upon her affectionate and trustful mate for the support of both herself and the brood which, as it sometimes happens, are not fairly out of the way when the second family of young are ushered into existence. As many as three broods are occasionally raised, when the season has been long and favorable.

Young males of the year are easily distinguished. They are dull brown on the head and back, and have the lesser coverts streaked with white. The throat and fore part of the breast are marked with similar stripes, while the rest of the coloration, with the exception of the brownish edges of the tertial wing-feathers, is somewhat similar to that of the adult. The entire upper parts, including tail and wings, of the latter, are of a continuous and azure-blue color. The cheeks are of the same hue, but duller. The under parts, the abdomen, anal region (and under tail-coverts, which are white, excluded), are reddish-brown. The bill and feet are black, and the same may be said of the shafts of the quills and tail-feathers. From her partner, the female differs in being less blue, and in having a brownish cast upon the head and back. In size, they hardly vary. Their length is six and three-fourths inches, wing four, tail two and nine-tenths.



AMERICAN REDSTART.

PLATE XXXII.

SETOPHAGA RUTICILLA, (LINN.) SWAINSON.

American Redstart

IN the habit of capturing insects upon the wing, the sylvicoline sub-family of birds to which the Redstart belongs, resembles very closely the smaller Flycatchers, but it differs in being less sedentary. When in pursuit of food, it is constantly on the move, in and out among the branches and foliage, seldom, if ever, waiting for some apparently witless insect to manifest itself as our Pewees do. The strictly oscine character of the tarsal scutellæ or plates, and the existence of nine primary wing-feathers, are sufficient to distinguish them from the latter, notwithstanding the orange or yellow crown of some of its members. These birds—the *Setophaginae* of naturalists—have their greatest development in tropical America, where no less than nine genera and sub-genera are known to exist. Only two of them extend into the United States, and of the genus of Redstarts, we have but one of the many that have been described. This species, to which allusion has just been made, has an extended distribution, but chiefly in Eastern North America. It has been found from the Atlantic westward to Utah, and from Florida to Fort Simpson in British America. Throughout the river bottoms of the Missouri, according to various observers, it is one of the most abundant of summer occupants, and is also to be found quite frequently as a breeder in the foot-hills west of Denver. Mr. Allen, who is our authority for this statement, believes it to be sparingly represented in this region wherever woodlands exist. In the mountains it was not observed beyond the limit of 8000 feet.

The time of its arrival is usually about the first of May, never later in the latitude of Philadelphia than the 8th, and occasionally as early as

the 20th of April in certain seasons; in New England from the first to the 15th of May, but not before the last of this month in the moss-clad willows of the marshes that skirt the far Saskatchewan. The red lining of its wings as it flits through the sombre foliage of the trees in pursuit of insects renders it an object of attraction, and one to be easily recognized. Were this mark of identification wanting, its crisp, lovely notes would tell the tale of its presence, and lead the pursuer at once to its whereabouts.

The song of the Redstart resembles very closely that of the Black and White Creeper, but differs in being less prolonged, and in its quicker, sharper intonation. It may be very appropriately represented by the syllables *tsi-tsi-tsiwě*, the last ending rather abruptly. Its ordinary call is a simple *tsich*, which is heard at long and irregular intervals. Singular to say, these sounds are most frequent when the bird is most active, and not while in the enjoyment of the quietude which follows such a life. At such times our hitherto energetic friend maintains the utmost silence. Being an extremely early riser, it is in the cool, calm hours of the morning, ere all Nature is astir, that he regales the listening spirits of the groves with his sweetest music. About four o'clock he awakes from his slumber, arranges his toilet with care, and with a happy heart starts out to breakfast. But few of his neighbors are up, and for a while he has everything his own way. For nearly five hours he is a busy gleaner. Fastidious in appetite, he does not accept whatever he meets with, but prefers his viands to be of the very best that the great market of the world possesses. While beetles are devoured when other articles are not convenient, there is manifestly a strong predilection for the juicier fly and moth, or the honey-bearing aphis.

A remarkable peculiarity of this species whilst feeding deserves a passing notice in this connection. We allude to its habit of opening and closing the wings, and of expanding the feathers of the tail. Whether these movements are done for show or not, we are unable to say. They cannot be considered as designed solely for attracting the sexes to each other, which would doubtless be the correct interpretation if they were

practised only during the season of mating. But as they are to be noticed throughout the entire stay of these birds, and always while engaged in feeding, it seems to us that they are expressive of delight and satisfaction. The capture of an insect evokes them, and from being habitual, it is no more than natural to suppose that the sight of a loved one—the partner of former joys and sorrows—would produce feelings akin, but stronger, and lead to similar manifestations. Unlike what is customary among birds, the female Redstart rivals the male in powers of song.

Never gregarious, for three weeks and more from the time of arrival the sexes lead solitary lives, and spend the time in feeding. At first their foraging is confined to high, open woods, but as the days flit by, they become more friendly and visit orchards and lawns, or glean among the trees that line our roads and lanes. They now become quite tame, and may be approached with comparative ease. In the procurement of food they are as often found upon the upper branches of trees as upon the lower, and do not deem themselves too proud to come down to lower growths, or betake themselves to the ground. As the males are the first to show themselves, it is to be presumed that they are the earliest to migrate. They seem to be several days in advance of the females. But perhaps the latter are more modest and retired, and do not emerge from their sylvan quarters as soon as their lords, which would account for their apparent delay. But whether or not they arrive together, it is evident that they pay little regard to each other for a fortnight, and only care for selfish gratification.

This condition of things continues until the last of May or the beginning of June, when the males seek out their partners, and prepare for the work which has called them through many a weary league of country. From the time of mutual recognition until the construction of the nest, affairs progress with wonderful rapidity. The selection of a building-spot, as also does the labor of building, depends upon the female. She is rather whimsical, and, above all, hard to please. The male occasionally assists, but things often go wrong, and rather than provoke a tempest, he takes a

position where he can inspect the work as it progresses under the critical eye, and by the skilful manipulations of his steady, industrious and persevering housewife. While for these long, weary days she is thus occupied with the structure, her partner sweetens the *ennui* of her life by an agreeable ditty and words of endearment. As if to show his appreciation of her exertions, he now and then rewards her with one of his choicest captures.

Dense woods with plenty of underbrush are generally chosen when nesting. Occasionally, through some freak of the builders, the domicile is placed contiguous to human habitations. Almost any small tree or bush answers for its support. A crotch receives the fabric and renders it secure from violent storms of wind. Upon first examination it seems to be the counterpart of the home of the Summer Yellow-Bird, but this impression is soon abandoned when a comparison is instituted. A typical structure before us, which was built upon a forked branch of the wild plum, at a height of ten feet from the ground, is composed of the fibres of the wild flax, with a few spiders' webs, on the outside, and is lined with a profusion of horse-hairs. In diameter it measures two and three-fourths inches, and three in height. The width of the cavity is two inches, and the depth one and five-eighths. The whole affair is beautifully hemispherical, and neatly and compactly woven.

In the construction of the nest there is visible a marked uniformity in character, although the materials vary with the localities. Shreds of savin-bark, bits of wool, strips of bark, thistle-down, bits of paper, and other fragments are sometimes utilized in the periphery, while vegetable fibres, pine leaves, dry grasses and wool of plants are made to do good service in adding a warm and comfortable lining. From what we read it seems that the Redstart does not always build directly upon a branch, but is occasionally prone to make use of the nest of some other species as a foundation. A case is cited by Dr. Brewer where the Redstarts had placed their nest upon a Blue-eyed Warbler's, which had either been deserted, or from which the rightful owners had been expelled. The base of this fabric was composed of brownish wool plucked from fern leaves,

with a commingling of herbaceous stems and leaves. Within this wonderfully unique structure was placed an entirely distinct nest, firmly and elaborately interwoven of pine needles, stems of grasses and long, slender ribands of bark.

Oviposition is closely attendant upon nest-completion, and proceeds at the rate of one egg daily, until the entire set is laid. Incubation immediately follows, and is the exclusive duty of the female for eleven days. While this is going on, the male bird busies himself with the food-matters, and is a very thoughtful and attentive provider. When not employed in this business, he shows his regard and solicitude by remaining at home. In times of danger he never shirks his responsibility, but comes boldly to the front, and by his clamors and menacing gestures endeavors to frighten the intruder away. Bold and courageous he will often dart with wide-open jaws into the face of the person who dares to disturb his nest or mate. So strongly attached to her nest, on the other hand, is the lady-bird, that she will permit a near approach thereto before abandoning it. In times of assault she is less demonstrative, and when her nest is despoiled before her eyes, expresses but a moderate show of distress. But while the paternal head of the household can be so deeply concerned for the welfare of his family, and the preservation of his home, it is a noteworthy fact that even while bewailing her misfortunes in the most agonizing manner possible, the mother-bird is often known to stop in the midst of her lamentations to seize a passing insect.

The young are objects of the tenderest solicitude, both parents laboring with unremitting zeal in providing them with plenty of suitable nourishment. Young caterpillars and the larvæ of various other insects which the parents often procure at great distances, are fed to them when quite young, but later on they are subsisted upon plant lice, small spiders and mature diptera and ants. Late in the season both young and old devour great quantities of cedar berries, and the seeds of the commoner grasses. When twelve days old the young leave the nest for the first time, but are not prepared to quit entirely until a week older. They now in company

with their parents repair to moist rather than dry thickets, because of the greater abundance of insects to be found in such places, and here they remain until the last of September, when they retire south to winter in Guatemala, and other parts of Central America, as well as in the West Indies and Peru.

About the time of departure, the young male resembles in plumage the mother, but differs in having the upper tail-coverts and tail a deep black color, instead of having the former olive and the latter dusky. In addition the dorsal region is more greenish-olive, and the abdomen and crissum of a purer white. He is slow in acquiring the perfect adult plumage, and does not attain to it until his third year. At or about this time his predominant color is black. This is variegated by the white abdomen and under tail-coverts, and by a central band on the breast of the same color, and still further by the bases of all the quills (excepting the inner and outer proximal halves of all the tail-feathers but the middle,) a patch on each side of the breast, and the axillary region, being of an orange-red hue, which shades to a vermilion on the breast. The female has the black replaced by olive-green above, and brownish-white below. Yellow takes the place of orange, and ash that of black upon the head. There is also a grayish-white line and ring around the eye. Their length is five and a quarter inches, wing two and a half, and tail two and nine-tenths.

The eggs of the Redstart are four in number, and bear some resemblance to those of the common Blue-eyed Yellow Warbler. Their ground-color is a grayish-white, and this is quite thickly sprinkled all over, but more especially about the larger extremity, with shades of brown and black. They vary in length from .54 to .67 of an inch, and in breadth from .44 to .53. Specimens from widely separated localities, when compared with others from the Middle Atlantic States, show the same amount of variation in size and general appearance. In Eastern Pennsylvania the species is single-brooded, and the same may be said of other sections of the country which the birds frequent.



MOTTLED OWL.

PLATE XXXIII.

SCOPS ASIO, (LINN.) BONAPARTE.

Mottled Owl.

THROUGHOUT the temperate regions of North America few species among our nocturnal birds of prey have a wider distribution. In New England, and the Middle, Southern and Western sections of our country, it is more or less common, but on the Pacific as far north as Sitka, it gives place to a different and well-marked variety, one whose habits are not materially dissimilar to our Eastern form. McIlwraith gives it as a resident in portions of Canada, near Hamilton and around Montreal, but further north, if it appears at all, it is notably scarce. In the Arctic regions it is evidently unknown, if the failures on the part of Richardson and others to mention it in their travels afford any basis of judgment. Towards the extreme limits of its range there is reason to believe that it prevails in smaller numbers than elsewhere. In Pennsylvania and New Jersey, where its habits have been especially studied by the author, it is our most abundant species.

It courts rather than shuns human society. In some rural districts this familiarity is more manifest than in others, particularly where unduly harassed by boys and equally offensive birds. The immense good which these Owls accomplish in the destruction of vermin should command for them proper respect, but the most cruel persecutions are the only reward which they receive. The evil which some of their less scrupulous and larger brethren commit, reflects upon them, and they, through ignorance and superstition, are made the scape-goats for a multiplicity of sins. But fortunately there are localities where they are held in high estimation by

persons of sense and education, and amply recompensed. Here they become remarkably unsuspecting, nesting and roosting in hollow trees, and even venturing into barns and out-buildings to spend the night.

More eminently nocturnal than any of its kind, it does not emerge from its darksome quarters until the day has expired, and gloomy night has assumed the rod of empire. In the uncertain twilight a few individuals, pressed by hunger, may often be seen abroad, but it is not until every trace of day has been obliterated that we find the majority on the wing, in noiseless pursuit of game. When aroused during the daytime its movements are somewhat dubious, and it acts very much like a child who has been awakened from a sound sleep in the midst of a brilliantly-lighted room. In cloudy weather less difficulty is experienced, and its actions are freer. Young birds seem to be better adapted to sunlight than their parents. May it not be that the constant habit of sleeping during the day, consequent upon a night's carousal, has so weakened the visual organs as to render them ill-fitted for day-toil? Animals, accustomed to diurnal occupations, suffer considerable inconvenience for a while when compelled to work at night. A return to day-labor is attended, though perhaps in a less degree, by the same discomfort. The irides undoubtedly habituate themselves to a reversal of habit. It is a notorious fact that the young of the Great-horned Owl can endure the intense light of the sun almost equally with the Eagle, although being mainly nocturnal in habits. It is brought about by the voluntary, rather than the automatic, movements of the iris. This fact associated with the already mentioned circumstance in the history of the present species, strongly favors the hypothesis that all our Owls can in time adapt themselves to a change of habit *pari passu* with visual modification, as instanced in the case of the Day Owl.

Appetitive gratification is the sole engrossing thought of these birds outside of the mating season. While they devote much of their time veering through the atmosphere in quest of insects which contribute largely to their diet, still they do not deem themselves too aerial to descend to the earth at times when some purpose is to be subserved. They are fond

of low meadows, and even premises adjoining barns, barracks, etc., where they make terrible onslaughts upon the small quadrupeds which infest such places. Sailing above the tall grasses, the smallest creature is readily descried, and almost in the twinkling of an eye is captured and borne away in the vice-like bill, or firm grasp of the more powerful claws. When pressed for food they often conceal themselves behind tufts of grasses, and await the appearance of their quarry, or even visit our smaller birds upon their perches.

The nightly rampage of the Mottled Owl is always heralded by a peculiar plaintive cry which strongly resembles the whinings of young puppies. It alternates from high to low, and is occasionally varied by deep guttural trills. From dusk until the clock has ushered in the wee hours of the morning the ear of night is startled by these lugubrious utterances. By some they are supposed to be intended as a summons from the female to her partner, and *vice versa*. As they are chiefly heard while in pursuit of prey, it is more than probable that they are designed to startle small birds from their coverts, and thus insure their easy capture. The representation of the notes may be quite accurately expressed by *wha-a-a-a-a*.

Life without variety soon becomes monotonous, and in the case of the human animal often leads to unpleasant results. With birds the dreary autumnal and wintry days, which are spent in sleep and in contriving means for obtaining a subsistence, are no longer a source of enjoyable pleasure when spring returns, and we discover when the proper time arrives that everywhere there exists a feeling to throw off the shackles of such an existence, and to take on newer relationships. This varies with the character of the weather. During favorable seasons the time is earlier, but when the advancing steps of milder days are retarded by frosts and snows, there is sometimes a delay of a fortnight. Not so with the Mottled Owls. The period of mating with them usually begins quite early, on or about the fifteenth of March in extreme southern latitudes, but as late as the tenth of April in cooler northern sections. In the Middle Atlantic

States the time varies from the twentieth of March to about the fifth of the succeeding month. It is then that the sexes manifest more than the usual affection for each other. Their courtship is brief, and business is entered into without the display of any of those amusing antics which pre-eminently mark the smaller oscines. The males, according to our experience, seem to select the same partners on each recurrence of the breeding-time, where not debarred by various fortuitous circumstances. As a proof of this position, we might instance a case. In the vicinity of Philadelphia a pair of birds once laid claim to a particular tree on the premises of a kind-hearted gentleman, who would not suffer them to be disturbed. The breeding-season being over, the female retained possession of the cavity which she had used while rearing her young, and the male sought shelter in the same clump of trees, but in a different hollow. As these were the only birds in that locality, and were observed to occupy the same spot for two successive years, there can be no reason to dispute the above question. By the law of analogy, we presume that others do likewise.

Pairing having been solemnized, the sexes now set to work to re-furnish their domicile. In the case of young birds some time is spent in looking up a suitable hollow of requisite capacity. When preference is shown for an orchard, the apple-tree is selected, especially if it is in close proximity to a farmyard. In other situations, almost any of the species of oaks is made to do good service. The hole generally chosen is one which had been previously wrought by the Golden-shafted Woodpecker at considerable pains. Where this does not exist, a decayed stump is rendered available. The cavity is placed at varying heights, which seem dependent upon the character of the neighborhood. In wooded regions nests are placed at elevations of forty feet and upwards, while in localities contiguous to human habitations, a greater height than ten feet is scarcely reached, and some are never placed more than five or six feet from the ground. The lining of the cavity consists of a few dry leaves and grasses, with an upper stratum of feathers. These are mostly placed in the bottom, and do

not extend for any great distance along the peripheral walls. In some instances the materials constituting their bed are thrown promiscuously into the hollow.

Having provided herself with comfortable quarters, the female commences to deposit her eggs, one a day, until the number is reached which is to constitute her charge. Incubation at once ensues, and continues for fifteen days. This is chiefly the labor of the female, although the male sometimes relieves her when she is in quest of food. When with eggs or young the approach of an enemy is greeted with a sort of hissing sound, and the protrusion of the hand into the nest meets with a sharp reception. If surprised in the daytime, these birds are such stupid, sleepy creatures that your approach is scarcely noticed. A sort of vacant stare, with occasional rapid blinkings, save when partially aroused to consciousness by a sudden thrust with the finger, is the only recognition which they give. But when disturbed with such rudeness they open wide the eyes in a staring manner, throw back the head, and utter a loud hiss of indignation or disgust, which is quickly followed by the elevation and protrusion of the claws of the right foot. All this is of momentary duration, and is quickly succeeded by the same stolid indifference as manifested before.

The young are vigorous feeders, and tax the time and energies of the parents to the utmost in the procurement of suitable nourishment. All night long the latter are constantly on the go, both birds being frequently absent together upon this important mission. Small quadrupeds, birds, lizards and insects are a few of the articles which contribute to their fare. At first these are torn into pieces by the parents, and fed to them, but as they increase in age, the entire animal is deposited in the burrow. Mr. Nuttall cites a case where a full supply of Bluebirds, Blackbirds, and Sparrows was thrown into the nest—a striking illustration of the provident habits of the parents. When five weeks old the young leave the nest and receive their rations while clinging to the tree-branches. A fortnight later they are able to hunt for themselves, but at the dawn of morning

suspend operations and quietly retire to their homes. In the course of events they are obliged to forsake the family-roof, and to seek quarters in hollow trees, the gloomy recesses of dense forests, or the dark corners of out-buildings. The characteristic plumages of the young, which they attain in about four months from the time of hatching, vary, and are entirely independent of age, sex, or season, being purely individual. There can be no doubt about this statement, since in the same nest there may often be observed both gray and red young ones, while their progenitors may either be both red or both gray, the male red and the female gray, or the reverse. The peculiar notes of the adults are assumed at the same time. But the claws have scarcely acquired their normal development until nearly two months more have been added to their age. In the drawing the rufescent and normal plumages of the adults are so well delineated that no description seems necessary. Specimens from different localities show marked variations in dimensions, but those from which the drawings were made, have a length of nine and a half inches, with wing six and seven-tenths, and tail three and one-half. Young of the normal dress have the secondaries, primary and tail as in the adult, but the latter more mottled, and the bands confused. The rest of the plumage is grayish-white, and marked with numerous transverse dusky-brown bars. The eyebrows and lines are a dull white, with scarce a variegation, and the facial circle obsolete. In the other plumage the wings and tail are as in the adult birds. Upon the head and body the markings are as in the young gray bird, but the white bars are more reddish, and the darker ones a more decided brown.

The eggs of this species are from five to six in number, almost spherical, and of a pure white color. Specimens from different localities offer marked variations in size. Those from Florida are smaller than more northern specimens, and measure 1.31 by 1.15 inches. New England eggs average 1.49 by 1.31, and others from Pennsylvania and New Jersey 1.35 inches in length, and 1.18 in width. On comparison with some from Michigan and Iowa we can find but slight differences.



VIRGINIA RAIL.

PLATE XXXIV.

RALLUS VIRGINIANUS, LINN.

Virginia Rail.

OF its delightful winter quarters in the South, and the tropical climes of Guatemala and Cuba with their strange and varied forms of life, this handsome little species takes its adieu when the climate in our northern States warrants such a procedure, and spreads itself across the continent to and slightly beyond our northernmost borders. With the first slight frosts of November it takes its departure, to renew our acquaintance again when the delicate-footed May has returned to beautify the earth. These autumnal migrations are often performed during calm, clear nights, when their cries can be distinctly heard overhead. Persons, while "bobbing" for eels at night, have often been startled from their contemplations by the alighting of Rails in the water close-by, and the din produced as they paddle their way into the adjoining weeds. Their departure is seemingly more sudden than their advent, their appearance in diverse latitudes happening at regular intervals. From their feebleness of wing, it might be conjectured that flight is slow and labored, but experience teaches that it is accomplished with comparative ease and freedom, even in the face of a very strong wind. But these birds are best seen in the exercise of their cursorial powers, which the perfect development of their legs and feet, and the compressed, attenuated shape of the body are admirably adapted to promote. Even the bill, with its sharpened outline, which is wisely formed to cut the opposing air, lends its aid in facilitating advancement.

Along the borders of salt marshes, but generally in fresh-water, it may be found upon its arrival. In such places it is a busy gleaner,

feeding less upon vegetable, but more upon animal, diet than any of its illustrious congeners. Its bill of fare consists of worms, the larvæ of insects, and small shell-fish, which it extracts from the mud, a feat which it most successfully and adroitly accomplishes by means of its great length of bill. This strong partiality to animal diet tends to render its flesh less savory than that of the Carolina Rail whose food is principally the nutritious seeds of various kinds of grasses. In the dexterity with which it conceals itself among the reeds and sedges of its favorite haunts when hunted, and its seeming aversion to flight, it is the exact counterpart of the latter species. In fact there are few traits of character which are not common to them both. When distance intervenes between the observer and either species, it requires considerable judgment to make the necessary discrimination. A little experience, however, soon enables the working naturalist to do so without much difficulty.

While chiefly diurnal in habits, there is good reason for believing all Rails to be partially nocturnal, especially during moonlight nights. At such times they are on the *qui vive*, and from the tall, motionless bullrushes and reeds among which they harbor, the ear of the nightly pedestrian is startled by the peculiar notes of these birds as they pursue their gastronomic occupations, securely hidden from view by interlacing grasses. The movements of these birds would hardly enable you to locate their presence, so noiselessly are they executed. It is to the loud, lusty *crik-crik-rik-k-k-k* of some wide-awake fellow as he patrols his favorite marshes that we are apprised of his whereabouts and presence. Instantly the strain is taken up first by one and then another, until the very reeds shake and tremble, as it were, under the impulsive influence. A silence then ensues, which is unbroken save by the heavy croaking of some disconsolate frog as he tunes his pipe to the shrill falsetto of a love-lorn cricket. But the time thus spent is comparatively short. Other considerations demand attention. Scarcely two weeks from the time of their arrival, the males seek out their partners, pledge their troth anew, and lead the way into some bog or morass, where they are not long in making a

selection of a suitable spot in which to deposit their nest. In the matter of position the male yields due deference to the judgment of his wife. She having decided upon the spot, which may be either a tussock of grass, the bare ground, or a pile of drift-weed, both birds set assiduously to work to construct their nest. This is merely a pile of weeds or grass, arranged very compactly, but with little display of taste or design, and hollowed out to the depth of an inch and a half by the bodily evolutions of the builders. Occasionally, a ground-floor of coarse grasses is laid, and upon this is reared a superstructure of yellowish grasses, which reminds one of the home which the Bobolink is accustomed to build. A few hours of labor at least are all that are necessary to construct one of these domiciles. Wilson mentions a nest that was placed in the bottom of a tuft of grass, and rendered almost inaccessible by the boggy character of the locality. It was composed entirely of old wet grass and rushes. A north-east storm visiting the spot, and an extraordinary rise of tide following, the eggs were floated out, and lay stranded upon the drift-weed. The female being so strongly attached to her home, still lingered near, and permitted herself to be taken by the hand, without showing so much as the least timidity, much less any exhibition of indignation or disgust.

The number of eggs laid ranges from six to ten. These are deposited in daily instalments of one, the first being usually extruded on the third day subsequent to the completion of the nest. The female takes to the nest almost immediately after the last egg is laid, and continues for a term of fifteen days, when, through her constant, persevering efforts, a little family of children, dressed in suits of blackish down, come forth to gladden the hearts of both parents. The male seems to take no direct part in the incubating process, not even so much as to see that his faithful wife is not in want of food. The care of the young devolves also upon her, and when they are endangered, she manifests the most intense solicitude, and seeks by all the devices known to her nature, to lead them into places of safety. Like many smaller, but more courageous species, she is not known to wage a warfare in their defence, but endeavors by strategy, and

at the risk of her own life, to save these jewels of her affection—these pledges of her regard—from the snares of the fowler. As soon as hatched, or shortly afterwards, the young are able to quit the nest, and hide themselves among the grass. Their food consists of worms, insects and seeds of grasses, which they procure in situations which they frequent. In their earliest stage the mother helps them to find the essential articles, pretty much after the fashion of the Quail, but as they grow, her responsibility is in a measure abated, and they are left to their own resources. In about four or five weeks they withdraw themselves from her sheltering care entirely, but continue to dwell in the same haunts until the severity of the weather calls them to warmer climes, when both young and old leave together. Their departure is almost unheralded by vocal manifestations, and is slowly executed, the birds stopping from their migrations, at times, to attend to the demands for food. So the journey often requires a fortnight, and even longer time, for its completion.

With the retiring habits of these birds, and their tendency to settle in almost inaccessible meadows and swamps—the most secluded and farthest recesses of which they seek when approached—it is not surprising that they should be deemed less common than they are in actual reality. When better understood they will be shown to be in other sections as abundant breeders as they are in New England and the Middle Atlantic States. When observed, which is rarely the case, they stand or run with the tail erect. A peculiar jerking of this appendage upwards, is a noticeable feature which gives them a somewhat comical appearance. In flight the legs hang as is usual with waders, and are not tucked up, so to speak, as in the case of our smaller land species. They fly to a short distance, and at the moment of alighting, run off with remarkable speed, a movement which the depending position of the feet enables them to accomplish with comparative ease.

Such is the resemblance which obtains between the eggs of this species and those of the Clapper Rail, that were it not for the much smaller size of the former, they could not be readily discriminated there-

from. In form, color and markings they are such perfect counterparts, that they seem to be the same in miniature. Their form is ovoidal, and they are marked with reddish-brown and obscure spots of lilac, the former predominating, upon a deep buff, or creamy background. They vary somewhat in dimensions, even in specimens from the same locality. In New England eggs are found which range from 1.31 to 1.52 of an inch in length, and from .90 to .95 in width. Others from Pennsylvania have an average measurement of 1.28 by .94; from New Jersey, 1.20 by .95. From the Carolina Rail, which they approach in size, they may be readily distinguished by the color, a fact which all amateurs would do well to bear in mind. A careful observance of the difference in the two grounds, which in the Carolina Rail is a yellow-drab, with a faint olivaceous tinge, will prevent the one from being mistaken for the other. In regard to the number of broods annually raised there may be some difference of opinion. Wilson thought that the species was double-brooded. He was led to this opinion by having come into possession of young birds, a few days old, in the month of July. But these may have been the first hatching of birds whose early efforts had been prevented by tidal overflows, or some other of the numerous disasters, which are the natural concomitants of boggy situations.

The drawing represents a nest of this species, typical in character, and placed in position. The eggs are of the natural size and figured in the foreground, while the birds are diminished and put in the distance. The birds are exhibited in proper colors, and may be easily identified. The upper parts are olivaceous-brown, the monotony of which is relieved by longitudinal stripes of brownish-black. The throat is white, fore-part of the neck and breast bright-rufous, abdomen and under tail coverts transversely banded with black and white, the former being the broader; upper wing coverts bright rufous-chestnut and the under wing coverts with transverse white lines upon a field of black. These sombre colors are rendered less irksome by the presence of a reddish-white line from the base of the bill over the eye, and by the bright-red iris. The female

differs but slightly from the male in being slightly shorter, and in having the breast of a paler hue. The white on the chin and the throat appears also to be more conspicuous and fuller. The total length of the male, from tip of bill to extremity of tail, is seven and three-quarter inches; the wing is four, and the tail about one and a half.



MARYLAND YELLOW-THROAT

PLATE XXXV.

GEOTHYLPIS TRICHAS, (LINN.) CABAN.

Maryland Yellow-Throat.

BEAUTIFUL, active and intelligent, this species claims superiority over most of its fellows, and is an object of interest and admiration to the enthusiastic student. It should be better known among the masses, as few birds are more sociable and confiding, and, on first appearance, none display stronger attachment to man. It visits his fields and by-ways, in company with the Sparrows, and makes itself at home. But as the season advances, and the time of nesting draws near, such places are forsaken for quieter retreats.

Throughout its extended range, which embraces the whole of the United States from the Gulf of Mexico to Canada and Nova Scotia, and from the Atlantic to the Western Ocean, it displays the same peculiar habits which we observe in Eastern Pennsylvania. It combines the attributes of the Titmice with those of the Flycatchers, moving in and out the foliage and branches of bushes with great dexterity, sometimes hanging from the latter with head downward, in its search for food, or, perched upon a small twig, seizing a passing insect with equal ease and skill. Whilst feeding it is not strictly arboreal. Individuals sometimes betake themselves to the ground, and glean among the dead leaves.

Although occasionally found in cultivated grounds, where its presence is due to the noxious insects which there abound, yet a stronger preference is manifested for wild uncultivated fields, especially such as are overgrown with briars and low bushes. Low lands are more attractive than high, the tendency to humidity always insuring a greater supply of favorite

food-stuffs. Its immense service in the destruction of injurious grubs, which contribute largely to its fare, would make it a desirable companion to have about us, but its humble mode of life exposes it to dangers from prowling cats and vicious boys.

When in quest of game its presence is always indicated by the peculiar cry it emits, which resembles that of the Summer Yellow-Bird. These notes are expressed in lively, quick succession, and sound like the syllables *whit-whā-ti-tēē-tēē*. In a state of inactivity, a simple *twich* is all that escapes the hitherto agile creature, and is uttered in such a low voice as to more than half impress the listener that the bird is weary after its long, protracted search, or is verging towards that state when the spirit is well-nigh overcome by sleep. It is during these foraging exploits that our friend's character is seen in its best light. It is not the timid bird that one is disposed to consider it when watching its backward and forward movements among low shrubbery on such occasions. It will permit a near approach by man, even when resting from its labors, and displays not more than half the suspicion which birds ordinarily do.

Like most Warblers, this species regulates its coming, in a measure, by the character of the season. When the spring is early, we have known it to arrive during the last of April. Ordinarily its appearance is noticed from the first to the tenth of May. In California, where the climate is more uniform than in the East, birds have been seen in migration on the seventeenth of April; but in New England, where mild weather is retarded by meteorological causes, their advent does not occur until the beginning of the succeeding month. As is common with most other birds, the sexes do not arrive singly, except in occasional instances, but always in pairs, which seems to warrant the supposition that mating had been solemnized in the land of their winter's sojourn preparatory to leaving.

So little is the attention engrossed by feeding, that the male does not appear to be utterly unmindful of his partner, as is sometimes the case with other species. Should one or the other stray away, the bird that first

becomes apprised of the separation, signals the fact, which is instantly responded to by its companion. Directed by the sounds, they soon come together, and renew operations as before.

A few weeks thus spent suffice to blunt the keen edge of appetite. The male is the first to announce his weariness of such a life. In a few quaint syllables, cognizant to his partner, and perhaps to some of his nearest kin, he states his desire, and awaits her approach. Does she hesitate? In the same lively and pleasing manner he repeats it, this time with greater fullness and variation. Again and again he does the same, and at last his efforts are crowned with success. Pleased with his charming voice, she yields to his pertinacious coaxings, and desists from her labors.

The song of the males, for *such* naturalists have been pleased to designate the language which the lords of the feathered creation are prone to deliver to their intended partners on certain occasions, bears a strong resemblance at first to the song of the Summer Yellow-Bird. But when at its height, about the fifteenth of May, the likeness is not so marked. It consists merely of a few short syllables, repeated rather quickly but uniformly, and with a loud, clear, distinct and ringing intonation. In syllabic language it may be somewhat accurately represented by *tē-whit-tī-tē-whit-tī-tē-whit-tī-tē-whit-tī*.

As fond as this species seems to be of cultivated grounds whilst feeding, we have never known it, from personal observation, to build in similar situations. For purposes of nesting it generally seeks the retirement of woods where there is a dense growth of bushes, or waste fields where brambles are quite abundant. Occasionally the nest occupies the centre of a huge skunk-cabbage, or a tussock of grass, in the midst of a swamp, or alongside of a stream of fresh water. In certain localities moist places are chosen rather than elevated ones. In others the converse is true. Even in the same locality, the birds manifest a preference one year for lowlands, and the very next for those which are high and dry. Perhaps the

character of the season does much in rendering these changes necessary. A wet spring, if long and protracted, would, by increasing the amount of water in swampy situations above the average, make them undesirable resorts, and thus drive the birds to the necessity of seeking less humid and less exposed places. At such times, high grounds, by obtaining more than the usual amount of moisture, would become suited to the existence of insects, which form no mean part of their living. In dry seasons, moist localities would be chosen, as they are more advantageously situated for obtaining supplies of food than others.

The nest is almost invariably placed upon the ground, in a thick bed of dry leaves, in a clump of grass, at the roots of low bushes, or under the shelter of a pile of brush, sometimes being covered by surrounding leaves, and quite as often exposed from above. When built directly upon the ground, it occupies a depression thereof; but when built in a tussock, this precaution is not taken, as the necessary security is afforded by the enveloping grasses or sedges. According to Dr. Brewer, nests are occasionally found four or five feet from the ground, among the matted branches of high weeds. A typical nest consists of loose leaves on the outside, which are held in position by the walls of the cavity in which they are placed, or by surrounding grasses. Within is placed a superstructure of dry grasses, twigs, strips of dry bark, and leaves of sedges. The lining consists of fine strips of the bark of the chestnut and wild grape vine, which are arranged with great care and compactness. In depth these structures vary from five to six inches, and have an external diameter of two and a half inches at the base, and three at the mouth. The cavity is usually three inches deep, and about two and a quarter wide. When we come to compare the entire fabric with the size of the builder, we are at a loss to account for the disproportion.

The work of building such a bulky domicile does not fall to the lot of the female solely, but is the result of the combined labor of both birds, who prosecute their task with commendable diligence and patience for a period of five days, when they are rewarded with the sight of a finished

home. Nothing now remains to be done but to furnish the capacious apartment with its wee, spotted treasures. This cannot be commenced immediately, as sufficient time must be allowed for the walls to become properly seasoned. Two or three days at the utmost are all that are necessary. On the fourth day the female deposits her first jewel, and, where not interrupted, renews the same duty day by day, until she has furnished her allotted quota. She immediately commences the incubating process, occasionally not before the succeeding day, and for ten long days is thus engaged, when the appearance of the young reminds her that the labor is ended. While thus employed the male, actuated by the purest affection, administers to her necessities with commendable alacrity. He only forsakes her for food. When the nest is assailed, by the most pitiful cries and the practise of various ruses, he endeavors to lead his enemies away from it. His stratagems often succeed with the unsophisticated, but with the professional collector they are of little avail.

The young are carefully nurtured. Their food consists of the larvæ of small beetles, caterpillars of various kinds, and diptera. At the age of twelve days they are able to leave the nest, but remain under parental surveillance for a week longer, when they are obliged to shift for themselves, being permitted, however, to enjoy the society of their parents. Early in September, both young and old take their departure, the greater portion retiring to Mexico, Guatemala and the West Indies, while a few remain along our southern borders.

The plumage of the young bird is brownish-olive above, with a tendency to stronger virescence on the rump and tail. The eyelids and entire lower parts are a light buff, which is relieved by a tinge of yellow on breast and lower tail-coverts. The male in the spring is olive-green, somewhat grayer anteriorly, and has the forehead and a broad band through the eye to the neck a pure black, margined superiorly with grayish-ash. The chin, throat, breast, under tail-coverts and edge of wing bright yellow, passing into whitish in the abdominal region. The wings and tail are slightly olive, and devoid of marks. The bill is black, and

the feet flesh-colored. In the female, during the same season, the crown is generally brownish, the black and ash on the head wanting, and the yellow of the under parts pale and restricted. From its congeneric brethren this species differs in the absence of a clear ash upon the throat. Its length is about four and three-fourths inches, wing two and one-fifth, and tail two and three-tenths.

The eggs of the Yellow-Throat range from four to six in number, the complement doubtless depending upon locality, and the peculiarity of the female. In Eastern Pennsylvania, Southern New Jersey and Delaware never more than four have been found in a nest, and this has been the experience of others from even the most widely separated localities. In color the eggs are a beautiful crystalline-white, and are dotted and blotched around the larger extremity with reddish-brown and dark umber. Specimens are often found with curiously-shaped lines and dashes of remarkable fineness. Their size varies with latitude, the largest coming from Kansas, and the smallest from Georgia. The average measurement of several sets from four different localities is .64 by .53 inches. We incline to the opinion that but a single brood is annually raised, although there may be instances where more than one has been observed. In most cases, where the birds have been late in rearing their young, the hasty collector, and even recorder of facts, may conclude that he has a sure proof of his position. Careful watching, carried through a decade, has convinced us that in Philadelphia the species is single-brooded. Like most of our smaller birds, the nest of this species does not escape the visits of the Cowbird, who, taking advantage of the absence of its owners, embraces the opportunity of depositing two of her own eggs, which she trusts the female Yellow-Throat will adopt and rear as her own.



WHITE-BELLIED NUTHATCH

PLATE XXXVI.

SITTA CAROLINENSIS, GMELIN.

White-bellied Nuthatch

THIS well-known species inhabits the eastern portions of the United States from the Atlantic to the Rocky Mountains, being replaced in the territory west of the great central plains by a well-marked variety. In the British Provinces it has not been observed to attain a higher northern range than Nova Scotia. Although rather common in the maritime portions of its somewhat extended habitat, yet it is less so than in regions farther inland.

Being a permanent resident among us, there is no reason why the enthusiastic lover of birds should not render himself familiar with its history. In its own native haunts, notwithstanding, the shyness which seems to characterize its nature, ample opportunities are afforded. From early morning until sunset, except when concerned with domestic relations, but more especially during the season when winter rules the year, its presence may be seen and heard.

When first noticed, its peculiar winding movements around the trunks and branches of trees, in every conceivable direction and position, cannot fail to rivet the attention, and excite surprise. It recalls to mind many of the motions which the smaller Woodpeckers and Titmice assume. To a novice a word of explanation as to the cause thereof may be necessary. But to one who has been accustomed to using his eyes and ears aright, the solution to the problem soon becomes apparent. The loud, sonorous tap against the hardened bark, and the listening attitude which the bird takes on, are the key to the mystery. Let but the stir of some hiber-

nating insect, or the perforations of an undermining grub, be heard, and in almost the twinkling of an eye, its whereabouts is discovered, and the thoughtless culprit dragged out and made to pay the penalty of an inglorious death for such rashness. Quite as often the detection of food is due to the keen vision which these birds possess as to that of a well-trained ear, for in their persistent and indefatigable searchings in crack and crevice, the most apparently lifeless beetle, or even the death-like ovum of the same, does not escape their scrutinizing gaze.

Should the reader, in his rural walks, visit the haunts of the Nut-hatches, it is more than likely that his presence would be greeted by the strong nasal cry of *hōnk-hōnk*, which these birds are accustomed to emit, at somewhat regular intervals, while foraging. Not that they adopt this method of accosting their human brethren upon such occasions, but what we mean is, that the birds will be heard, in most instances, before there are any bodily manifestations. Even after one has located with tolerable precision the tree from which emanated the sounds, a few minutes will generally elapse before the authors thereof are clearly outlined against the dark background of the bark. To insure success, without waste of time, the eyes should be directed upward, as the middle and higher branches of the tallest trees are usually chosen for the purposes of feeding, the lowermost being seldom resorted to.

Besides the larvæ of beetles, mature forms of elaters and buprestians constitute a large share of their winter diet. As winter lapses into spring, and there is a consequent increase in the numbers, as well as kinds of insects, their bill of fare is enlarged, certain new species of coleoptera and a few ants being added thereto. When the tulip-tree is in blossom in May, many may be seen delving into its floral treasures for the numerous small insects which are attracted thither. Earlier, the cone-like fruit is visited, and rifled of its samara-shaped seeds. By some writers it is claimed that, like its European congener, our species collects and stores away the fruits of nut-bearing trees. This is an undisputed fact, as different species of acorns have been seen securely wedged in between the bark and outer

woody layers of trees, and Nuthatches in positions as to lead to the suspicion that they had placed them there. In fine, birds have been seen engaged in this identical business.

Their favorite food being insects, in all their different stages, where abundance of them exist they seldom stray for any considerable distance from their accustomed woods during the breeding-season. When snow or ice debars them from access to the trunk and branches of trees, they have been known to visit houses and out-buildings for the requisite food, and even to hunt among the leaves upon the ground of sheltered localities for the seeds of plants. Ordinarily dry, high thickets are preferred to the noise and bustle of human life. It is chiefly at such times that the sexes part company, and seem engrossed by the most selfish feelings.

While remarkably fond of the joys of the table, as evidenced by the industry and perseverance with which they pursue their gastronomic exploits, they are not so thoroughly epicurean in their lives as to forget the claims of affection. Their devotion to each other is nearly unbounded, and is scarcely excelled, if at all, by that which characterizes our smaller Titmice. This feeling of love, as is natural to suppose, cannot fail to lead to an early assumption of conjugal relations. Accordingly we find that preparations for this work are entered into early. About the time that the Warblers are beginning to make the woods and fields lively with their exhilarating songs and diversions, these loving, sympathetic beings, already mated, are beginning to look themselves out a home. Like the Woodpeckers and Chickadees, they sometimes excavate a hole in the decayed trunk or branch of a forest-tree, or in the solid wood itself. Usually, however, they search for one already prepared, either in the trunk of a tree, in the creviced wall of an out-building, or in a hollow rail in a fence. In any event, more or less work of construction is necessary. When the labor of excavation has commenced, the birds work by turns. The one not thus occupied waits upon its mate, and carries out the chips that are made, to a safe distance from the nest. The cavities thus made vary in depth, some being not more than ten inches deep, while others

are nearly one and a half feet. The entrance thereto is generally wide enough to admit of easy entrance, but towards the bottom the cavity expands into a sort of room. In the North these chambers are lined with warm and soft materials, such as hair, feathers, wool, down and fur, which are loosely thrown together. Audubon affirms that they build no nest, which may have been true in his day, but the statement is not borne out by recent observations. A nest in the writer's collection, from the South, offers no material variation from specimens from the most northern localities.

In the selection of a cavity the birds sometimes make mistakes, as instanced by E. W. Nelson, Esq., in his valuable pamphlet on the Birds of Northeastern Illinois. In this case the Nuthatches had selected for nesting purposes a knot hole in a large oak, at a height of about twenty-five feet from the ground. The hole was large enough to admit the human hand, and several inches in depth. Within were the remnants of a squirrel's nest, which nearly filled the cavity. After working steadily for about a week until the nest was nearly ready for occupancy, a pair of flying-squirrels, the previous owners of the hollow, seized the premises, and the birds, despondent and aggrieved, were compelled to move elsewhere. Had these patient little builders been aware of the method which their European cousin adopts to keep out unfriendly intruders—namely, that of plastering up the entrance to their nest, and thus contracting the opening, they would have been spared the pains of seeing their nearly furnished compartment occupied by creatures of the remotest kinship.

By the first of May, or thereabouts, the female commences to deposit her complement of six eggs, which she does in as many consecutive days. She now immediately enters upon the process of incubation, and after twelve days of close sitting, brings forth her tender brood. All the time that she is thus occupied, the male is very assiduous in his efforts to lighten her cares and solace her ennui. He supplies her with food, and when released from such labor, spends the most of his time in the vicinity of the nest. A score of times during the course of the day, perhaps, she

is summoned to the mouth of the hole to receive some choice bit of food, or the endearments and caresses of her idolizing partner. At the approach of danger he does not desert her, but fearlessly intervenes to give the necessary warning. If the nest is disturbed, his quiet, peaceable disposition will not suffer him to make the slightest defence. His only object seems to reach some place of safety, from which, when attained, he can survey the contemplated demolition. With the female the case is different. So strongly attached to her home is she, that she is not prone to leave it, even under the most trying circumstances. A case is cited by Maynard of a nest having been found in a partially decayed apple-tree by Mr. Brewster. In order to effect an entrance for the hand, and thus secure the female, the latter gentleman was compelled to enlarge the opening. The bird struggled vigorously to escape, but when liberated, returned at once to her eggs. Several times was she taken out, and as often re-entered her domicile the moment she was at large.

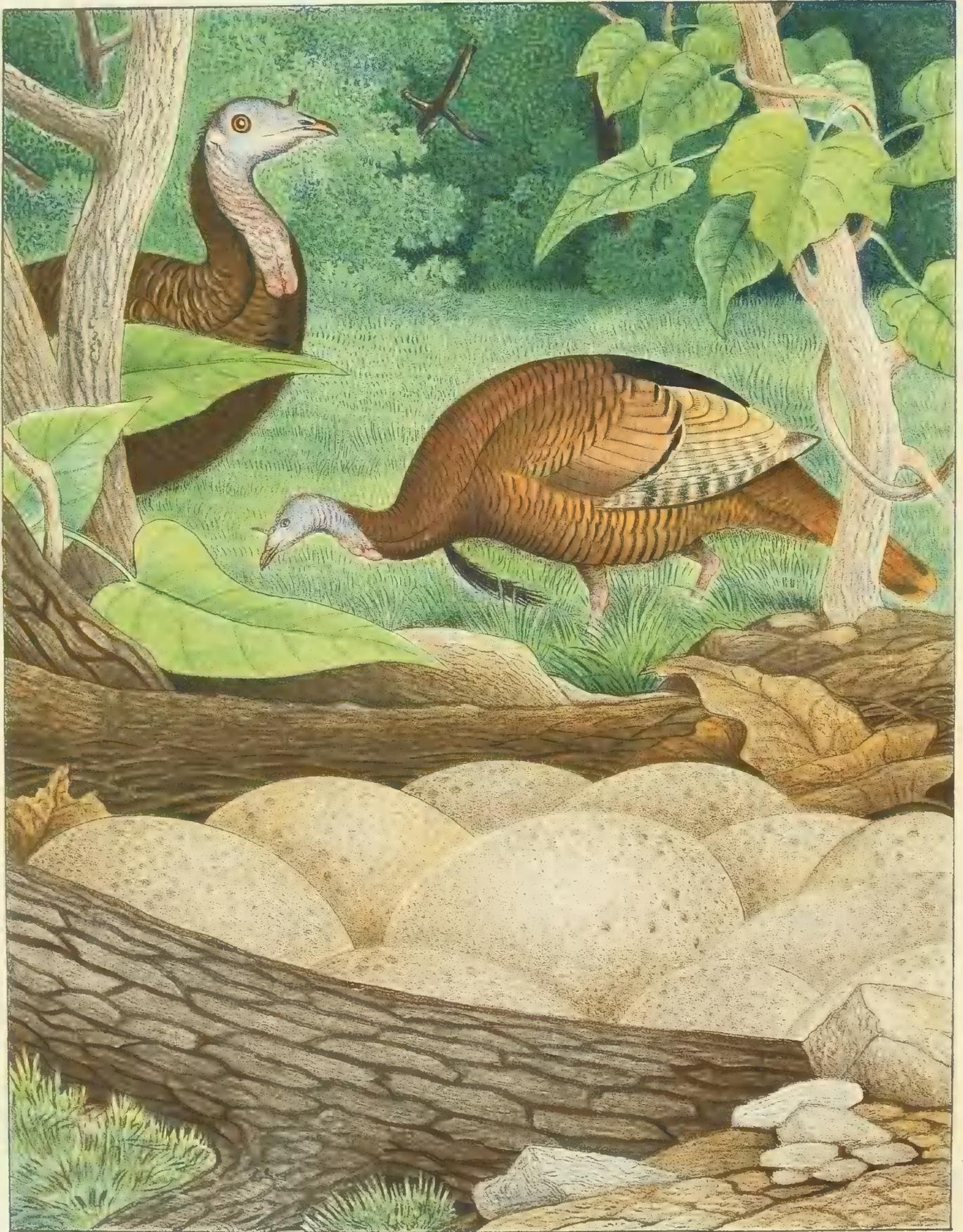
Both parents are strongly attached to the young, and provide them with an abundance of healthy food, of a somewhat varied character, which they receive, soon after they are hatched, by climbing to the opening of the nest. This food consists chiefly, at first, of different kinds of grubs; but after the first week, beetles and ants are fed, and relished with a gusto. When about two weeks old they venture out upon the trunk to try their legs and claws, while their wings are acquiring development and strength, but retire to the nest when the weather is unpleasant, and at nights. A few days more, and they are prepared to earn their own living, after the peculiar fashion of the race.

Young male birds do not immediately put on the plumage of the paternal sire, and it is probable that this condition is not attained until the following spring. In the fall they resemble the mother, who differs from her lord only in having the black of the head glossed with ashy. The latter is ashy-blue above, with top of head and neck black. The under parts, and sides of the head to a brief space above the eye, are white. The under tail-coverts, as well as tibial feathers, are brown, while

the concealed primaries are white. The bill is rather long, stout and awl-shaped. The length is six inches, and the wing about three and three-quarters.

The eggs have a white ground in blown specimens, but when fresh they show a beautiful roseate tinge, with a tendency to a reddish hue, which is apparently due to the ferruginous and purplish spots and blotches with which they are so closely covered. Considerable variations of size prevail in these markings, from fine points to well-pronounced blotches, and there is also noticeable a predominance of the reddish-brown colors. The average dimensions of several sets before us, from half a dozen localities, are .80 by .62 inches. Single specimens may occasionally be found which, like Mr. Samuels's Adirondack specimen, may have a length of .70 of an inch, and a width of .57, but such are certainly abnormal productions. While the rule in our Northern States seems to be, according to the concurrent testimony of numerous writers, but a single brood annually, yet there is reason to believe that in the warm, semi-tropical sections of our country, the species may prove double-brooded.

Whether our species could ever be domesticated or not, it is impossible to say. But there is no doubt that, under similar circumstances, the same confiding tameness would be shown, as the interesting descriptions given in English works tell us is exhibited by the European species. The latter, we are told, when treated with kindness, will come regularly to be fed. Individuals have been known to approach within a foot of their benefactor, and even to capture bits of food thrown to them before the latter could have time to reach the ground.



WILD TURKEY

PLATE XXXVII.

MELEAGRIS GALLOPAVO VAR. AMERICANA, (BARTR.) COUES.

Wild Turkey

A FEW YEARS MORE this handsome bird, which was at one time found in great abundance over nearly the whole of the Eastern Province of the United States, will be numbered with the things that were. Its final extinction is only a question of time, and that not very remote. In the days of Audubon it was found along the entire range of the Alleghanies, where individuals do still exist, but they have been so molested by man, that they can only be approached with the greatest difficulty. At present they are quite abundant in the unsettled parts of our Southern and Western States, and in the regions drained by the Mississippi and Missouri rivers. In New England it has probably become extinct. The same may doubtless be predicated of portions of our Middle Atlantic States. To be sure there are localities where individuals may occasionally be observed, but with the construction of railroads, and the settlement of the country which invariably follows, we may expect the same fate to overtake them. Dr. Woodhouse met with the species in abundance in all the timbered portions of Texas and the Indian Territory, and Mr. Dresser found it common enough in the districts of Mexico and Texas which he visited. This was especially the case on the rivers between San Antonio and the Rio Grande.

Not migratory in the sense in which many of our smaller species are, yet these birds are addicted to roaming from one locality to another. These movements always occur in flocks of varying numbers, and have reference to food-matters. Where the supply of mast becomes exhausted,

an advance is ordered towards richer pastures. If there is an abundance of food, the large flocks dissolve into smaller ones, composed of individuals of all ages and sexes. A paucity of the same, brought about by deep snows, induces the birds to approach the haunts of man, where they obtain a subsistence by consorting with the poultry, or by entering the open doors of corn-cribs.

When the young are nearly grown, in October, the adult females—which dwell apart from their lords, each at the head of her numerous family—gather in the rich bottom-lands of our Western rivers. These families unite with others, until parties of seventies and eighties are the final results. The old males associate in parties of from twenty to a hundred, and move simultaneously into the same territories, but are carefully avoided by the mother-birds, on account of the hatred which the former bear towards their nearly grown children. This unparental disposition, which leads the males to destroy their offspring, is more especially vented upon the young males, and is doubtless inspired by jealousy.

The migration are mostly made on foot. But when a stream intervenes, a stay of one or two days upon its banks occurs before any attempt is made to cross. The manœuvres of the old males are then rather ludicrous. They parade themselves up and down the banks, utter to each other their characteristic gobble, as if to raise their courage to the point necessary to surmount the barrier. The females and the young assume in less degree the same demeanor. After this lengthy preparation, both young and old mount to the summit of a tall tree, and at the leader's signal, wing their flight for the opposite shore. Some, however, overcome by fatigue, drop into the water. These, with wings close-pressed to the body and expanded tail, call their legs into vigorous action, and soon gain the shore, where they are at length able to extricate themselves from the perilous situation. If the stream is wide, the birds are often thrown into a state of bewilderment, and become easy victims to the hunter's rifle. Advantage is not only taken of these movements, but from the fact that the birds are hard to approach in the daytime, many a gunner by watching

where they roost, on clear, moonlight evenings is often able to secure two or three plump fellows for his trouble. Like our domestic Turkey, these birds roost on trees as high up as possible. Various contrivances are often adopted to lure them to their destruction. In the spring, a very common practise is to imitate the voice of the female by drawing the air through one of the wing-joints, the second usually, the sound produced being immediately answered by the male, who ventures out of his place of concealment, only to be shot. The cry of the Barred Owl is also imitated in localities which these birds frequent at night, with the most happy results. A trap known as a Turkey-pen is a very common mode of capture in some parts of the country. This is a covered enclosure, made of small trees of various sizes and of moderate heights. At one end a small opening is left, through which is dug a slight trench, sloping gradually from each extremity to the centre, and continued outwardly for a brief space. For a short distance from the enclosure a passage-way is constructed. This, with the interior of the pen, and a narrow tract of land stretching into the forest, is scattered with corn. Attracted by the grain, the birds follow it into the enclosure, and when once there, become bewildered, or lack the intelligence necessary to make their exit. While in this predicament, many are captured.

But as the love-season approaches, man abandons the amusements of the chase, and these severely persecuted creatures are allowed a chance to cultivate social relations. Early in February the males present their suits, but at first meet with little favor. Still they persist, until their patience is rewarded with success. When these amours commence, the sexes are dwelling apart. If a call is emitted by a perching female within hearing of a male, a response is returned in a voice akin to the sounds with which our domestic bird greets any ordinary noise. But let the female utter the same note while on the ground, and she is soon besieged by several of her masculine admirers, each striving to demonstrate the sincerity of his affection. With wide-spread, erected tails, depressed and quivering wings, and head gracefully poised and carried well back upon the shoulders, they

parade themselves with great pomp in front of the females, who regard such movements, for the nonce, with listlessness or disfavor. All the while the males are thus engaged, they give expression to their feelings in a succession of peculiar puffs. Considerable excitement often attends these love-affairs. Especially is this the case when some hitherto listless female becomes impressed with the pleadings of a particular male. This is the signal for the fiercest encounters, which usually result in some one or more of the participants being killed. When one rival has thus destroyed another, the surviving party, as if feeling remorse, caresses the fallen one with the tenderest affection.

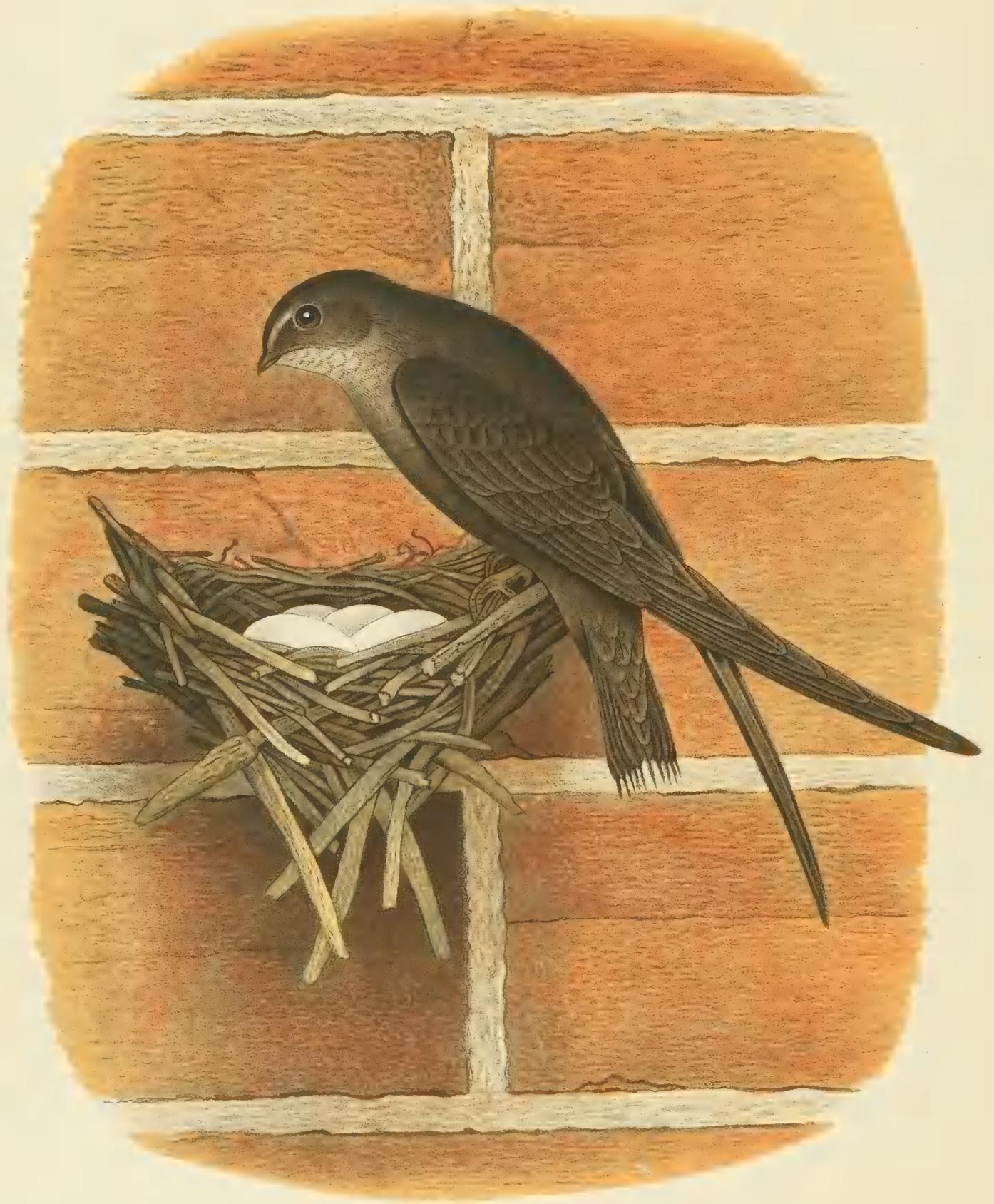
Having mated, the union thus formed usually lasts during the season, although instances are recorded where the same male has been known to possess more than one partner. The female is endued with finer feelings than her lord and, when concerned with domestic relations, continues to keep her treasures hid, well knowing the propensity which he manifests for destroying the same. Consequently, the selection and building of a nest fall exclusive to her lot. At the close of the love-season, the males cease to gobble, and being considerably emaciated, desert the females, and go off by themselves. When they have recuperated their energies, they return, and reunite in small flocks.

About the middle of April the females prepare their nests in secluded localities. These are placed upon the ground, and consist of a few dry leaves placed in a depression by the side of a prostrate log, under a mass of brushwood in a thicket, within the precincts of a corn-brake, or in such places as afford the necessary shelter. Dry spots are always selected. Suited with locality, the female deposits her eggs daily until the entire complement is raised, when she enters the nest, and for nearly four weeks is a close sitter. When she leaves it for food, she always takes the precaution to cover her eggs with leaves, to guard against detection. Small islands are frequently chosen for nesting purposes. The large masses of driftwood which accumulate about their heads, are said to give them security from their numerous enemies.

So closely attached to home is the female, that she will not leave it unless in peril. The approach of human footsteps is unheeded, where no danger is to be apprehended. Its discovery by man is not considered as sufficient cause for desertion, but she is known to forsake it when the eggs have been broken. In such cases another nest is prepared, but otherwise only one brood is annually raised. The most friendly feelings are known to exist among the females during the breeding-season. Several hens have been known to deposit their eggs in the same nest, and rear their broods together. Audubon once met with forty-two eggs in a single nest, the labors of three females, one of whom being always on guard. When the eggs are nearly hatched, the female remains a very vigilant watcher, and will leave the nest under no circumstances. In short, she has often permitted herself to be captured rather than endanger her treasures. Weak, delicate creatures as the young are, it is doubtful that they could extricate themselves from their calcareous coverings, were it not for the timely efforts of the parent. Not only in this manner does she show her love, but also by fondling and drying them, and assisting them to leave the nest. Her cares are now quite manifold. She must needs lead them into suitable feeding pastures, teach them to distinguish good from bad food, and protect them from enemies. Besides, she is careful to keep them from getting wet, which is detrimental to their early lives. At the age of two weeks, they follow the mother with facility, roost upon the same bough with her at night, and seek their food in the daytime. Their diet at first consists of small berries of different kinds, and insects. To this somewhat restricted bill of fare, grass, corn, seeds, fruit, beetles, tadpoles and lizards are added, as they weekly mature. The dry leaves of the woods are turned over with their feet, for they are somewhat rasorial in their habits. Like their parents, the young are able to go for several days without food, which is occasionally the case after a heavy fall of snow. At such times, in the unsettled parts of our country, both young and old associate with domesticated birds, when quarrels often ensue, which chiefly result in favor of the former. Attempts to tame these birds have been made, but with only partial success. Under confinement birds are

apt to lose the brilliancy of their plumage in the third generation, and display in places an intermingling of white feathers throughout the pale brown which they then assume. In the cut accurate representations of the sexes appear, the female differing from the male in being of smaller size, in having less brilliant colors, in the much smaller fleshy protuberance above the base of the bill, and in the absence usually of the pencil of bristles on the breast, and of spur. From the Mexican variety—the supposed parent of the tame species—it differs in having the upper tail-coverts chestnut, but without the light tips, and in having the ends of the tail feathers scarcely paler, instead of brownish-yellow or whitish. The male bird ranges from forty-eight to fifty inches in length, and weighs from sixteen to thirty-five pounds. The wing is twenty-one inches long, and the tail eighteen and a half. The female is smaller proportionally, and weighs about thirteen pounds.

The eggs are usually from eight to fifteen in number, but sometimes amount to eighteen, and even twenty. They are of an elongate oval form, obtuse at one extremity, and pointed at the other. Their ground-color is a dark cream, and there are pretty generally scattered over the surface rounded spots of umber-brown. In dimensions they are apt to differ, even in the same nest-full. Specimens vary from 2.25 to 2.58 inches in length, and from 1.74 to 1.89 in width. In no portion of its habitat is the species other than single-brooded, although nests with eggs are occasionally found in June, but these are due to delays caused by various contingencies.



CHIMNEY SWIFT

PLATE XXXVIII.

CHÆTURA PELASGICA, (LINN.) BAIRD.

Chimney Swift.

THIS SPECIES chiefly confines its migrations to the eastern portions of North America, from the Atlantic westward to the eastern base of the Rocky Mountains, and northward to the 50th parallel of latitude. In the fur-bearing countries it is probably a stranger, as no mention is made of it by Dr. Richardson in his explorations. Mr. Say met with it at Pembina, on the Red River, in Northern Minnesota; Mr. Allen, in great abundance, in Kansas; but it is doubtful as to its occurrence in New Mexico, notwithstanding the high authority of Dr. Woodhouse, as later observers are silent upon the subject. It has also been claimed by the last-mentioned traveler as being found in parts of Texas, but Mr. Dresser was unable to take it, and it does not appear that it has ever been met with by the naturalists of any of our Western expeditions. The accounts given by early writers of its presence along the Pacific region, it is now decided, pertain not to this species, but to a distinct and closely allied one. Respecting its winter-quarters we are in the dark. It is not likely that it remains in any portion of the United States during the autumnal and brumal months, not to any great extent, if it does at all, as it has been observed by Allen entering Florida during the latter days of March. Lawrence, Salvin and Sclater, as well as other writers of note on the birds of Mexico, Central America and the West Indies, make no mention of it. Its southern journey usually occurs about the middle of September, seldom later, and is performed with so much silence and suddenness, that we are only made aware of the vacancy which their departure has produced, by the missing of their confused yet pleasant chatterings at morn and night.

Their vernal advent is marked with the same quietness, and is as much a source of mystery and surprise.

Upon its arrival in the United States late in March, it diffuses itself in various directions throughout the country, reaching the Central and Northern States about the middle of April usually, but, sometimes, when the season has been very much retarded, not before the beginning of the following month. Its entrance into Canada is not looked for until near the close of April—the birds apparently timing their movements with the sun's northward advancement. From Virginia to Canada, along the Atlantic seaboard, and the same is true of our Western States, where the presence of man is seen and felt, these dusky denizens of the air are wont to take up their abode. The chimneys of our houses, especially those that are not called into constant requisition, afford them convenient and comfortable quarters. So accustomed to their odd little ways and notions have we become, that on each recurrence of the breeding-season we naturally look for their coming with as much interest and pleasure as to that of a long absent friend. Their jolly, sociable disposition wins our regard and esteem, and has so completely interwoven their fortunes with our own, that their loss would be keenly felt and universally bewailed. In habits they are widely different from their trans-Atlantic brethren, who display considerable shyness, and breed in caves, or ruined or deserted dwellings.

Since the occupancy of this country by civilized beings, a most wonderful change has been effected in their behavior. Their primitive breeding places have been exchanged for the cosy, soot-begrimmed chimney. To be sure there are localities where breeding is still carried on in hollow trees as of yore, but such places are now but occasionally occupied in the older parts of the country, and merely for roosting purposes. In certain portions of New Brunswick, according to Mr. George A. Boardman, birds still nest in decayed tree-hollows. Even where chimneys are to be found individuals have been known to select places remote therefrom. The writer last mentioned once met with a nest that was built against a board in an old log-house. It was not the lack of a chimney that conduced to

this peculiar deviation, as we are led to infer of the existence of one somewhat remotely situated from what that observer says. Where there is no danger to be apprehended from enemies, a position like the one described, affords the requisite advantages. In buildings that are freely used by man, persistence in this habit might be attended with results, which would be escaped by nidification in chimneys. In Southeastern Illinois, Mr. Ridgway discovered a nest in a hollow sycamore-tree, and also another securely fastened to a plank of an out-building. Mr. Allen met it in Kansas, breeding in hollow trees, for which it seemed to manifest a decided preference. In long-settled sections the species has been forced by circumstances to resort to chimneys, or else abandon the country. In but a single instance have we known from actual experience the nest to be built against the rafter of a deserted out-building.

Nesting usually commences within a week after the birds have reached the accustomed haunts. Whether mating is accomplished preparatory to leaving their southern homes, or subsequent thereto, we are not prepared to assert, but incline to the belief that they arrive already paired, since we have never been able to observe the sexes engaged in their amours. Perhaps these are performed within the sheltering walls of the flues which they choose for their homes. The labor of nest-building requires the united efforts of the builders for three days. The structure is a rather curious and remarkable affair. Its composition consists of small twigs, nearly uniform in dimensions, which are severed from the living branches of trees, by the birds while upon wing, with considerable dexterity and adroitness. They sweep upon the coveted twig much after the fashion of a hawk in rushing upon its prey. These twigs are fastened to each other by the saliva of the builders, and by the same cement the entire fabric is made to adhere to the side of the chimney in which it is placed. This saliva, after a slight exposure, hardens into a glue-like material, which becomes as firm as the branches it joins together. In separating these nests from their reposing surfaces we have even known fragments of the bricks to give way, rather than the cementing substance. When rendered

moist by long-continued rains, they often become precipitated to the bottom of the chimney solely by the weight of their own contents. In such emergencies the young cling with considerable tenacity to the chimney-side by means of bill and claw. In configuration the nest resembles a neat, semi-circular basket, and measures about three and a half inches in diameter, one and a half in width, and about one in depth. Some are found to exceed the above dimensions, and others to fall considerably short of them. Building operations are ordinarily entered into during the early morning hours while the air is cool, the birds then working with praiseworthy diligence, but seldom during the hot, summer noontide. All the time the work is going on the builders are the happiest of creatures, and judging from the continual chatter which they make, there is never an angry word spoken, nor a quarrel indulged in with each other, or with any of their near neighbors who occupy the same chimney. Their lives seem to be as gay and felicitous as the days are long.

A few days elapse after the completion of the fabric, not usually more than two, in which mutual congratulations are passed. Then comes the drama in which the female is the principal actor—namely, the laying of the eggs. This requires four days, in ordinary instances, one egg being deposited daily. Incubation then succeeds, and lasts for eleven days. Here the female displays her true motherly instinct. She enters the nest, and with unwearied perseverance continues thereon, save during brief intervals of absence in quest of food, until she has achieved her heart's desire. The male is said to relieve her, but if such is the case, we have never been a witness of the fact. But while keeping aloof from such fatiguing duty, he is nevertheless a very faithful and devoted father when the young have quit their narrow prison-houses and welcomed the light of a new life. He is now as solicitous for their safety and well-being as the mother, and in case of molestation, unites his cries with hers to frighten away the intruder, or to cause him to desist from any assault he may have in contemplation. When twelve days old the little Swifts are able to climb to the summit of the chimney and receive their food. This

always occurs a few days before their wings are sufficiently developed for flight. Even while quite young, in case of accident to the nest, they are able to make their way to the top of the chimney. In some cases they are carried beyond the reach or notice of their parents. When such occur they stubbornly refuse human assistance, although uttering the most pitiful cries of hunger. When placed upon the roof contiguous to their native chimney, Dr. Brewer has known them to descend to its base, and there receive parental attention. In a fortnight they leave the nest, and are able to care for themselves. As this species is double-brooded in Pennsylvania the young are necessarily forced to self-maintenance at an early age, the thoughts of the parents being engrossed with preparations for a second family. These arrangements are perfected about the middle of June. In New England, and further north, but one brood is raised.

Like the old birds, the young are crepuscular rather than nocturnal in their habits, preferring to hunt for their prey early in the morning and late in the afternoon, or during cloudy weather. At times these predatory excursions occur at noonday in the broad glare of a full-orbed sun. The period for hunting is apparently regulated by the abundance or scarcity of appropriate insects. The adult birds, when with young, have often been known to protract their search for food long after night-fall. Caterpillars, diptera, beetles and lepidoptera of various kinds, constitute their *menu*, vast numbers of injurious, as well as beneficial species, being destroyed. Mature insects are chiefly in demand, which the birds, from being constantly on the wing, procure without much difficulty. Their flight then is varied and difficult of description. It consists of rapid sailing, and divers turnings, with occasional quickly repeated strokes of the wings. They never rest except in their roosting-places, to the walls of which they cling with great tenacity, being partially supported by their rigid tails. When tired of flight, they seek their homes, which they enter by falling head-foremost, without any apparent concern. Their only note in these gastronomic explorations is a simple *chip*, uttered with considerable force, and at times so quickly, as to give rise to a confused twittering.

In the days of Wilson these birds were known, in the more unsettled parts of the country, to repose in large hollow trees, which were open at the top. Swallow Trees, as these roosting-places were commonly designated by country people, were fancifully supposed to be the winter-quarters of the Swifts, where, in vast heaps, they slept away the winter in a condition of torpidity, and whence, on the return of spring, they came forth to enliven us with their animated expressions. But in the present enlightened age, the intelligent take no stock in these statements, but consign such rubbish to the domain of oblivion. With the ignorant and superstitious it is different. They are invested with peculiar charms, which make them matters of pleasant reflection. Attempts have recently been made to revive these beliefs, but with slim chances of success. An instance may occur where some hapless individual has been left behind by his companions, and been forced to seek protection from the inclemency of the season in the cavities of trees, as the result of a sad emergency, which the vivid imagination of some visionary person might magnify into a hundred birds, but of such a case, we have no authentic knowledge.

For the benefit of those of our readers who have never examined these birds closely, but only while in flight, we shall mention a few of the characters by which they are readily distinguished by the real student of Nature. The same description will apply to the female as to the male, as her resemblance in plumage is so strong as to baffle the critical eye of the systematist to point out any well-marked distinctions. Both birds have a sooty-brown dress, which, however, is not uniform. The throat, from the breast to the bill, is considerably lighter than the general color, the rump a trifle paler, while above there is a slight greenish cast. Their length is five and a quarter inches, wing five and one-tenth, and tail two and thirtieths.

The eggs of these birds are somewhat elliptical, rather less obtuse at one extremity than the other. Their ground is a pure, unspotted white, and in dimensions they vary but little. The average measurement from five localities is .77 by .52 inches.



KILLDEER.

PLATE XXXIX.

OXYECHUS VOCIFERUS, (LINN.) REICH.

Killdeer.

THE above species is one of the most abundant, the most widely distributed, as well as the best known of all our Plovers. It is a denizen of the whole of temperate North America, where suitable localities abound, and, unlike the most of its kin, breeds pretty generally in the United States. Throughout the Missouri region, and even as far west as Salt Lake, Utah, it has been observed by parties connected with the different exploring expeditions of the National Government. It is found in the West Indies, and in the fall extends its migrations into Central and South America, where it passes the winter. These journeys are chiefly performed at night, not quietly, however, but with considerable clamor. In the time of Wilson it never entirely deserted the United States during the season of snow and ice, but retired to the seashore, where it managed to eke out an existence. No sooner had the rivers been released from their icy fetters than their shrill cries would be heard as they wended their way high overhead, or nestled among the partially submerged meadows that lined their banks. This was mainly the case in the South Atlantic States, where, amid the rice-fields they were to be seen in February and March.

With the return of mild weather our Southern friends, having their ranks possibly swollen by fresh accessions from sunnier climes, diffuse themselves over the higher latitudes. While some remain in the vicinity of the sea, and establish their homes in dry, sandy fields, the majority, as though tired of its wearisome monotone, strike for the interior, and lay claim to a piece of newly ploughed ground, or to some low stretch of

land, devoid of vegetation, and covered with shallow pools. Their arrival in the old haunts generally dates from the twentieth of April to about the middle of May, and is quite true to time in any given locality. For a short time subsequent thereto the sexes are concerned with the procurement of food, and may be observed wading knee-deep in the water of gravelly brooks and sandy streams for aquatic insects which contribute largely to their maintenance. While fond of such pursuits, the inclination to bathe within the limpid element to which they resort, is one which they cannot very well resist, for these ablutions are of frequent daily occurrence, and are enjoyed with great satisfaction. When disengaged from such occupations, they squat upon the ground, or stand erect upon both legs. If disturbed they seek to escape by running, or by vigorous application of the wings. Their alarm, on these occasions, is best shown by the peculiar cries of *killdeer*, *killdeer* which they emit. These expressions are sometimes varied to *te te de dit*, or simply *te dit*.

When the sexes have grown weary of surfeiting, they seem to come together by common consent, and, without much pomp or show, enter into marital relations. The union thus formed is one of purest devotion, based upon mutual sympathy and affection. Jealous of his spouse, the male throws around her his ægis of protection, and stands ready to wreak vengeance upon any of his feathered brethren who should dare intrude upon her presence, or offer her the slightest insult. While thus regardful of her honor, he is none the less thoughtful of her comfort and wants, and seems ever ready to obey her slightest mandates, whether expressed by word or gesture. When she is ready to nestle, he accompanies her in her explorations, and assists in the selection of a site for a home. This business is seldom delayed later than the middle of May, and, although of immense moment, is protracted but for a brief period. The spot chosen for a nest is a barren field by the seaside, a piece of ploughed ground, or some pool-ridden, grass-lacking plain in the interior. The nest is usually a slight hollow, and is lined with bits of grass, straw, sea-weed, pebbles, or such other substances as may be convenient to the builders. In some

cases the birds evidently go to considerable trouble, and manifest a taste for the beautiful. A case in point is given by Wilson. In one of his travels he came across a nest that was literally paved with oyster and clam shells, and which, in addition, was neatly surrounded by a wall of the same, closely and curiously arranged. These birds were doubtless possessed of higher mental capacities than are common to their tribe, or they would not have gone to so much pains to beautify and improve their domicile. Again, nests are often found which do not show the least vestige of a lining. Scarcity of materials, or absolute lack thereof, might be offered as an explanation of the circumstance, but we have observed such apparently incomplete abodes in situations where there could have been no difficulty in procuring the necessary articles. Such a simple affair, as the nest ordinarily is, cannot certainly occupy the builders for any great length of time. Consequently, we find that the female is ready to commence laying on the day succeeding the establishment of her home. Her complement of eggs being but four, usually at the expiration of the fourth day, she is prepared to incubate. Like most birds that lay their eggs in similar situations, the heated sand or pebbles have much to do with the hatching process. This is presumably the case in fair weather. On cloudy days, during stormy weather, and at nights, it is necessary that they should be covered. Upon the female devolves this duty, and right cheerfully does she assume it. The time required to hatch the eggs depends upon various circumstances, such as seasonal warmth, condition of weather, and devotion of the sitting-bird. At any rate, in about sixteen days from the time of the deposit of the last egg, the young birds are ready to appear. Their deliverance is hailed with joy. Nothing can exceed the attachment of the parents to their charges. Let the nest be approached by a person, and the birds resort to various expedients to draw him away from the spot, or to infuse a feeling of fear into his bosom. They beat the air above his head with swiftly-plying pinions, or run along the ground with counterfeited lameness, uttering incessantly and loudly their shrill, but unmistakable call-notes. These movements are kept up for a long time, until

the enemy is led over considerable scope of country, and the young are safe in places of concealment. The latter are fed upon insects of various kinds which the birds obtain in places they visit. Besides those which inhabit water, grasshoppers, crickets, beetles, worms, etc., form a large percentage of their food. Being somewhat crepuscular in habit, not many of the insects which affect twilight escape their close scrutiny.

The young are soon able to take care of themselves, but instead of deserting the family-circle when arrived at the age of responsibility in bird-life, they continue to frequent the same haunts with their parents, and, at the close of summer, descend with them to the seashore (thus constituting the small flocks which we then observe), or retire with them beyond our borders, to try their fortunes in brighter and more prolific regions. Whether they attain the adult plumage in the autumn, or in the following spring, it is not in our power to say; but when the birds make their appearance during the latter season, it is difficult to distinguish the young from their older brethren. By referring to the picture a strong similarity will be found to exist between the sexes. The rump and upper tail-coverts are of an orange-brown color; the tail feathers are white at base and tip, with a suffusion of orange-brown for a portion of their length, and marked with from one to three black bars. The secondary wing-feathers are mostly white, while the primaries have simply a white space. There is a black band across the forehead, and two broader ones on the neck and breast. The bill is black, and the feet pale grayish-blue. The length is about ten inches, wing six, and tail three and one-half.

The eggs are pyriform in shape, somewhat elongated, creamy-buff in ground, and marked with numerous speckles, blotches and scratches of a dark-brown color, which are larger and more generally distributed around the greater end, although abundant over the entire surface. The actual measurements of a set before us are as follows: 1.53 by 1.05, 1.50 by 1.06, 1.45 by 1.04, and 1.43 by 1.09 inches, giving an average size of 1.48 by 1.06 to an egg. The species is single-brooded.



FURPLE GRACKLE.

PLATE XL.

QUISCALUS PURPUREUS, (BARTRAM) LICHT.

Purple Grackle.

NOT to be familiar with this species, which country folk usually dub the Crow Blackbird, would argue an amount of ignorance and stupidity, hardly excusable. We doubt whether there is a single boy, who is old enough to exercise his observing faculties, that has not had his attention called to these creatures—their strange manœuvres and shrill cries—as they cast their shadows across his path, or noisily perch high-up in the trees that shelter his father's roof in the sweet springtime. Of course there are localities where these birds do not abound. But throughout the extended range of the species, it seems to be well known, and by some is nearly as severely persecuted as its very near cousin—the Common Crow—which it strongly resembles. It is a denizen of the eastern parts of North America, from the Gulf coast on the south to Labrador, Hudson's Bay and the Saskatchewan. On the west, the Rockies intercept its progress, and form an insuperable barrier. Various writers have accredited it to California, but the evidence rests on an insufficient basis.

In the lower counties of Virginia, Georgia and the Carolinas, immense armies of the birds, running up into the thousands, pass the winter. From these quarters they take up the line of flight when the weather warrants, and spread themselves over the country, reaching the Middle States about the fifteenth of March, the New England a fortnight later, and the Northwest on or about the same time. So strongly are they attached to the old haunts that, when once arrived, they endure the greatest inconvenience of weather and hunger, rather than desert them. We have known them to

appear in the midst of a violent snow-storm, although somewhat disconcerted however, but apparently as jolly as when fair weather prevails. The snow has little dread for them, but if long-standing, often puts them to the direst extremity so far as food is concerned. But they manage to live through the ordeal, some at least, and carry out their nature-appointed projects.

Seldom do we observe in our Northern States very large flocks of these birds during the vernal migration, but loose, scattered parties of a hundred, or less. Upon arrival they keep aloof from wooded regions, and manifest a predilection for ploughed fields and meadows, where they destroy large quantities of worms and beetles. Few species are more hated by the farmer. This hatred is to be attributed to the injuries which it commits. When the corn has been planted, it visits the fields in great numbers, and makes terrible havoc with the hardly germinated grains. It does not stop here. The tender blades themselves, as soon as they have sought the light, are seized by the caitiffs, for the treasures which they hold concealed in the earth. The grains are detached, and the blades are scattered to the winds. So fond of this diet are these birds, that they defy the efforts of the husbandman to check their devastations. Ingenious devices in the guise of scare-crows, and even the shot-gun, have no fears for them. Driven from one section of the field, they instantly seek another remote from danger, and ply their nefarious occupation with remarkable industry. When in ear, invested with its close-fitting wrapper of husks, the corn is not then safe, for the birds strip off the cover with the bill, and extract it from the cob. At first these attacks are made with great caution, but love of appetite soon triumphs over fear and every other feeling, and a spirit of reckless boldness succeeds. In the Southern States, in the winter, they visit the corn-crib in swarms, and coolly peck the partially dried grains from the cobs through the air-openings along its sides. When denied such luxuries, they collect in the woods, and feed upon the mast of the beech and the fruit of the oak. While condemned as a nuisance and a pest to agricultural industry, on account of these

repeated devastations, they are possessed of many good qualities which should commend them to public favor. For a long time after their arrival their fare consists entirely of grub-worms, and other injurious insects, which they pick up from the loosened soil, or search for in their hidden retreats. So persistently do they glean, that they do not hesitate to scratch the soil aside with their feet. What would be the fate of the corn if the grub-worm were allowed to run riot, we do not presume to say. But when we come to consider the thousands of these creatures that are annually destroyed by the Grackles, we question whether the destruction and waste perpetrated by the birds would be one-half as great as the insidious worms would have wrought had they been permitted to carry on their work unchecked. Our experience has been that the benefits derived from these birds largely outweigh the mischief which they commit.

When disturbed in the midst of its pillaging, the Grackle is known to emit a harsh, unmusical sound, expressive of anger and vexation, which may be aptly likened to *thic-kē-yăh*, slowly repeated and at rather long intervals. Impatience may be denoted by the dissyllable *tē-oo* pronounced as a sharp whistle. The ordinary call-note, which may be heard by an individual that has lost sight of his companions, or when one bird wishes to call the attention of the flock to something that is then transpiring, is a simple *tchûck*. Among the variety of its natural notes, there is often heard a somewhat strange and affected sibillation, which Nuttall compares to that of the Starling. This sound, which resembles the word *wōttitshee*, twice repeated, is often accompanied by a peculiar whistle. Strictly speaking, these birds may be considered as songless.

In some instances, when we are favored with an early spring, the Grackles have been known to visit us during the first week of March, and to commence nesting about the fifteenth of the month, but then only in sheltered localities on the south slopes of hills. On the branches of coniferous trees they are then accustomed to place their nests. Usually but a single brood is annually raised, but when mating commences early, a second brood has been known to appear early in July. Nidification, however,

ordinarily commences from the twentieth to the twenty-eighth of April. This is always preceded by a brief period of courtship. When the sexes are prepared to enter upon the new relation, the event is always announced by the loud and almost deafening clamor which the birds emit while circling in endless confusion above the roosting-tree. This usually occurs in the early morning, when they have shaken off the toils of sleep, and in the evening twilight before seeking rest. In the middle of the day comparative silence prevails. But when the weather is cloudy the noise and turmoil are kept up for nearly the entire day. They all seem to be in a perfect furore of excitement, and, to the inexperienced person, a crowd of angry and infuriated birds. This scene is enacted every day for nearly a week, when the tumultuous rabble, so to speak, dissolves into pairs, and silence reigns once more.

Where suitable trees exist, a preference being manifested for those of the pine family, as many as fifty nests are often to be seen in the same clump. My son, Alan F. Gentry, actually took three nests from one tree, all within a few feet of each other, besides one nest of the Robin, and another of the Dove. This shows the social character of the species, as well as the friendship which it evinces towards others. Individual cases have been met with where birds have manifested selfish dispositions, as shown by their preference for solitary situations, and their desire to dwell alone. Where the birds live together in communities the utmost good-will everywhere abounds. The very wicked character which is attributed to the Grackles, has been imputed to the whole species, on account of the mean behavior of some of its members. Like the Common Crow, some of these fellows show great fondness for birds' eggs and tender fledglings, many of which, especially those of the Robin, are heartlessly destroyed. Coward-like, these villainous wretches lurk in the vicinity of the home they wish to pillage, until its occupants are safe out of sight, when they pounce upon it with great speed, seize an egg or a young bird, and beat a precipitate retreat. But wary and vigilant as they generally are, they are sometimes caught in the act, and forced to seek safety in flight from

the impetuous attacks of the enraged owners. We have been aware of this fondness for eggs for many years, but the carnivorous propensity, which is doubtless the outgrowth of the other, has been observed by us frequently since 1876. Where the birds dwell together in well-regulated societies, there is no desire to interfere with their neighbors of different family-connections who choose to take up their abodes within their territory. These assaults are always made by their less social brethren whose selfish propensities lead them to pass comparatively isolated lives.

In the selection of a nesting-tree very little time is wasted, the birds mostly visiting the same neighborhood year after year where not interfered with. The building of a home is a labor of more moment, and generally requires the united efforts of both sexes for a period of six days. The birds are diligent mechanics, and confine their operations to certain hours of the day, chiefly in the cool of the morning and late in the afternoon. The process of building being remarkably slow, the materials have time to dry out in a great measure when the female is ready to lay. Where the materials are somewhat free from mud, which sometimes happens, oviposition commences on the day following the completion of the structure. Otherwise three or four days necessarily elapse before this business is assumed. The eggs are laid one at a time on each consecutive day. Incubation immediately follows, and is the sole work of the female for sixteen days. The male contributes his part to the success of the wearisome undertaking by providing her with nourishment. At other times, he is in the immediate neighborhood, and warns her of danger. Should the nest be approached, the female glides out of it, and seeks, with the assistance of her partner, by loud clamors and angry gestures, to drive the intruder away. So venturesome do they become, that they have been seen to fly close to the head of an assailant, as though with fury-darting eyes and wide-open jaws they intended to resent the insult. Where the offender has been one in feathered dress, we have known several pairs to come to the assistance of their besieged friends, when the utmost confusion and excitement would prevail. Such is the bravery often displayed, in en-

counters with human foes, that victory has often crowned the efforts of the birds.

In some sections of the country these birds are said to nest in low bushes, but we have invariably found them in tall trees, at heights varying from fifty to sixty feet. In the second volume of the "American Naturalist," a nest is described by a writer residing in Newark, N. J., which was built inside the spire of a church, and also another which was placed in a martin-house from which the lawful owners had been expelled. Wilson tells us that in his day it was quite a common occurrence for these birds to nidificate in the interstices of the nests of the Fish Hawk, when the latter builds in localities which they frequent. Several pairs are said to occupy at the same time one of these structures, and the most perfect harmony to exist between them and their royal cousin. Audubon claims to have found nests of the Grackle in hollow trees, which has also been the experience of William Brewster, Esq., in Northern Maine, but it is highly probable that these accounts refer to the Bronzed Grackle.

The nest is usually placed in a crotch close to the main axis of the tree in which it is built, sometimes on a branch at some distance therefrom, and is held *in situ* by others. It is a bulky affair, irregular in shape, and has no claims to architectural beauty. It is coarsely but firmly built of twigs, dry plants and other substances, interwoven with strong stems of grasses which have been picked up from pools of mud, considerable quantities of which being still adherent. This mud renders them exceedingly weighty, and besides serving to keep them in position, also tends to agglutinate the elements of composition more compactly together. Internally, a few fine grasses are found, which make a rather cosy chamber. The external diameter measures seven inches, and the height about six, while the cavity, which is very shallow considering the size of the birds, is four inches in width, and but two in depth.

When the eggs are hatched the event is hailed with demonstrations of joy, and the parents watch over their helpless charges with more than

ordinary solicitude. Such vigorous feeders are they, that both the male and the female are frequently compelled to be absent from the nest simultaneously in the procurement of food. Grubs, earthworms, caterpillars, and berries of various kinds, form a considerable part of their diet. It is only when the birds dwell in communities that both sexes are absent together. Where the pairs dwell singly, the one sex alternates with the other. When sixteen days old the young quit the nest, but are still cared for by the parents for an additional period of ten days, when they are forced to seek their own livelihood. Both young and old continue together in the old haunts until the close of September, or the advent of October, when the changes which are everywhere visible throughout the domain of Nature, warn them that it is time to take their departure for milder regions. Accordingly, the small flocks which are everywhere to be seen, gather into larger ones, and, as by a given signal, with many an expression of sorrow and regret, wend their way leisurely southward. Arriving in their winter-homes, these bodies do not immediately break up into smaller parties, but maintain themselves intact. How long they thus continue, we are unable to say. Wilson met with one of these vast armies on the banks of the Roanoke River, on the twentieth of January. When surprised it rose from the surrounding fields with a noise like thunder, and when settled down upon the road and fences, which they literally covered, gave everything the appearance of being invested with a mantle of black; and when they again rose and descended upon the skirts of high-timbered thickets, whole trees from their summits to the lowermost branches seemed draped as with mourning, while their notes and screaming resounded like the far-off murmurings of a huge cataract, but with a more musical cadence. In the autumn, according to some authorities, and also at the approach of winter, numerous flocks, which have been foraging in the distance during the day, may be seen returning to their homes in the reeds to roost. As each detachment nears its station, in straggling, scattering groups, it is observed to sweep round the marsh in circling flight, until the note of the leader, who has been sent to reconnoitre the ground, is heard, when they all descend and take their stations.

In the drawing beautiful and accurate representations of these Grackles appear. The male is readily identified, and may be known by the intense warmth of his bronzy, purplish or violet dress. This iridescence is variable, and seems dependent upon age, season and other circumstances. The female is blackish-brown, and sometimes quite lustrous. The bill, tarsi and toes are pure black, and the iris sulphur-yellow. The male differs from his partner in size, being from twelve to thirteen inches in length, while the latter ranges from eleven to twelve. In dimensions of wing and tail there are also perceptible differences, the former averaging five and two-thirds inches, and the latter five and one-third in the male. The young is entirely of a uniform slaty-brown color, with absence of gloss.

The eggs of this species are variable in number. Nests with four, five and six eggs have been found, but most generally the two former. The ground is also subject to changes, specimens being seen with a deep rusty-brown color, and others with one of light greenish-white. It is a rare occurrence to meet with the two forms in the same nest-full; the latter being the predominant hue. Eggs with the brown background have in addition to the black and dark-brown streaks and dashes which cover the other type, chiefly about the larger extremity, a number of confluent, cloudy blotches of deeper shades of the same color. These markings are singularly grotesque in their pattern, and often bear strong resemblances to letters, figures and other characters. In measurement, eggs from the same locality, and even from the same clutch, show considerable differences. In New England specimens are sometimes obtained which measure 1.30 by .88, and others 1.18 by .84 of an inch. Brewer gives the average size as 1.25 by .90. Specimens from Eastern Pennsylvania offer as much variability. A clutch before us shows the following dimensions: 1.18 by .86, 1.15 by .87, 1.15 by .87, 1.13 by .88 and 1.12 by .84. Other specimens from the same locality average 1.24 by .90. The Purple Grackle is quite easily tamed, and when confined to the cage utters its brief stock of notes with great freedom. It has also been taught to articulate certain words with considerable distinctness.



AMERICAN GOLDFINCH

PLATE XLI.

ASTRAGALINUS TRISTIS, (LINN.) CAB.

American Goldfinch

THE RANGE of the American Goldfinch is nearly co-extensive with the vast continent of North America. Its range seems to be, in a great measure, determined by the presence of the cottonwood, willow and the various compositaceous plants upon the seeds of which it largely depends for a living. From the Atlantic to the Pacific it is found, and northward from the Mexic borders to the fur countries of the British possessions. It is abundant both in Texas and the Indian Territory, but in the vicinity of Vera Cruz it seems to be a stranger, as no mention is made of it by Sumichrast. Dr. Newberry encountered it while passing through the inland portions of Oregon and California, remote from civilized life, and Dr. Cooper on the Columbia, and in maritime situations in close proximity to its mouth. Dr. Suckley was unable to find it about Puget Sound, although at infinite pains to discover its presence. Dr. Coues failed to meet with it in Arizona, and Mr. Ridgway was surprised at the notable scarcity of it in Central California. For the hot interior valleys of this State, as well as the cooler mountain ranges, it seems to affect great dislike, although it was observed by Ridgway to be nesting in the Uintah Mountains.

Generally, where it is found at all, it exists in great abundance. In some portions of its habitat it is not a permanent resident, but migrates southward with the approach of cold weather, only to resume its northern journey again with the recurrence of another spring. In British America it is a late summer visitor, and departs early in September. It is a

migrant in the northern parts of New England, and the same may be true of places situated in corresponding latitudes, while in the southern districts it remains through the entire year. In Eastern Pennsylvania, if the weather be not extremely severe, paired individuals, and even flocks of a half-dozen or more, may be met with in sheltered localities. In early autumn larger bodies of birds are met with, and the same is true in April, when there is an increased supply of food. When the ground is covered with snow, and the trees laden with ice and sleet, they lead very nomadic lives, and are often compelled to seek the habitations of man where they freely mingle with the Snowbirds and Sparrows, to receive their share of refuse from the kitchen. They now become exceedingly tame, and can be approached without difficulty. While partaking of our hospitalities, this Finch disdains not its natural food. It will lay siege to a honeysuckle, if in fruit, and gorge itself to satiety—a berry for which it manifests great fondness. The seeds of the radish, and of the various species of amaranths and pigweeds that grow in our midst, are also sought after, and devoured in vast numbers. In woods various species of coniferous seeds, the mast of the black beech, and the seeds of grasses form an important part of its diet. When the red maples are in blossom, dozens of these birds will settle down in the trees, and feast for hours upon the tender stamens and pistils, and the small insects which are attracted thither. As the season advances, and the apple and cherry come into bloom, the same fate awaits them. To the gardener they are sources of annoyance. They visit the garden when the soil has been broken, apparently for the writhing, scampering beings unearthed, but avowedly for the freshly-sown, delicious salad-seeds, every grain of which they pilfer, unless driven away by force. Later on they revel in high life, for the dandelion, thistles and sunflowers have perfected their fruits. Although chiefly a granivorous species, the Goldfinch does not subsist entirely upon seeds, but destroys vast numbers of insects in all their different stages. Various measuring-worms, diptera, ants and plant-lice are destroyed, which, doubtless, largely outweigh the mischief which they commit.

Late in April the large flocks dissolve into smaller ones. It is a common thing to see two males and one female in company, the former lavishing the most endearing attentions upon the latter, and both, simultaneously, regaling her with the sweetest music. Thus affairs go on for some time, when, out of pure mischief, she selects one of the suitors, and just as he begins to feel his bosom glow with self-satisfied pride, she turns her back upon him, and flies to the other, who all the while has been pouring his soul away in the ecstasies of song. These cruel flirtations are kept up for a couple of days before a final choice is effected. It seems to require great effort and condescension upon the part of the successful suitor to retain his hold upon her affections; for she is likely to waver in the interval of time between mating and nidification, and give her heart to another. The labors of nest-building so completely engross her thoughts, that the tendency to flirtation has not time to manifest itself, and soon disappears altogether.

The wedded couple, however, do not seem to be in much haste about nesting, but ramble over the country in search of food, ever and anon, as though seeking rest from labor, perching upon a tree-branch, where the male pours into the ear of his less-favored partner, with all the impassioned eloquence of his being, the story of his love. While thus engaged, he is wont to turn towards the object of his affection, as if to ascertain the effects of his well-chosen roundelay. A low, soft note, expressed by the dissyllabic word *twē-yah*, is her only response of recognition and approval. The song of the male is very difficult to convey in human language. It is loud and clear in intonation, and rivals the variously modulated strains of the Canary. Like the latter he has the faculty of lowering and raising the voice, so that one moment the notes seem borne from a great distance on the wings of gently-murmuring zephyrs, while the very next they ring out upon the air with tenfold greater volume of tone and intensity. In confinement he becomes exceedingly familiar and tractable, and with proper care soon becomes a valuable singer. A friend of ours once possessed a male which he reared from the nest.

This bird was taught to keep time with the lateral movements of the index finger, and to increase and decrease the volume of sound with the elevation and depression of the same. In a state of repose a simple *twē*, uttered softly and slowly at measured intervals, is its only note. While pillaging the garden these birds give expression to sounds which Nuttall has likened to 'mäy-bé, 'mäy-bé. In their quarrels, which commonly occur when small parties are on the wing, there is heard one loud, confused medley of discordant chirpings, which seems, as a recent writer once remarked, as though some were pleading for peace, while the others were clamorous for the fray.

About the fifteenth of June, sometimes as early as the middle of the preceding month, the birds settle down to the business which has brought them together. Some time is spent in the selection of a suitable tree, and in fixing upon a position. One tree after another is visited, before one is found which combines the requisites of shelter, security and convenience. When the birds make up their minds to build in an orchard, a pear-tree is usually their choice. In other situations a seeming preference is manifested for the maple and willow. Perhaps, any tree where numerous small branches radiate, nearly in the same circle, from a common stem, will be found to be available. The height of the nest above the ground is usually about fifteen feet. Occasionally, greater elevations are taken. Sometimes a horizontal branch with divergent twigs is chosen, instead of one that is nearly vertical.

Than the nest of the Thistle Bird, as this species is sometimes called, no more beautiful structure of the basket in form and the felted in texture is known to exist. In shape it is symmetrical, delicately and neatly woven, and skilfully and securely fastened to the forked twigs between which it is placed. In beauty of design, and elegance of finish, it is a perfect model of architectural skill. A structure before us from Philadelphia may be considered as typical. It is placed in a crotch, and held *in situ* by four small nearly upright branches, which are partially wrought into the fabric. The outside is composed of the tassels of the common

chestnut, stems of knotweed, leaves, fragments of fungus, interwoven with an excess of flax-like fabrics and vegetable wool. The inside is lined with divers shreds of dandelion and thistle, neatly and compactly felted. The external diameter and height are each two and a half inches, and the cavity two at the rim and the same in depth.

A nest from Union County, Pa., nearly two hundred miles distant from the former locality, varies materially in size and in the character of composing materials. When found it was placed between two horizontal twigs joined at right angles to another, to which it was firmly attached by hempen fibres. On the right of the nest further security was afforded by a vertical twig, to which it was bound by similar cords. Fine roots of grasses, spiders' webs, cotton string, twisted and untwisted yellowish hempen cords, nicely and evenly felted, constituted the exterior. Within there was a lining of yellow rootlets and white horse-hairs, the latter in excess. The nest is hemispherical, and measures three inches in width, and the same in height. The cavity is two inches in diameter and of equal depth. This nest was discovered about the fifteenth of August, and contained a brood of tender fledglings.

Another fabric is somewhat exceptional in position. It rests upon a horizontal limb, and is still further supported by three inclined twigs on the one side, to which it is fastened by strings and the ravellings of colored cottony fabrics. The exterior is made of raw cotton, animal wool, hempen strings, vegetable fibres, rootlets of grasses, rather ingeniously interwoven. Interiorly there is a strange commingling of wool and horse-hairs. The bottom of the cavity is hardly covered, the twig which forms the basis of the structure being clearly discernible. In external diameter it measures two and a half inches, and in depth but two; the width and depth of the cavity are identical, being about one and three-fourths inches.

In New England, according to Samuels, the nest of this species is built of soft strips of the cedar and grape-vine bark, which are elaborately woven into a compact structure around a deep hollow, which is softly lined with the down of thistles, and, occasionally, with a few feathers.

After the completion of the nest, which ordinarily requires the united efforts of both birds for six days to accomplish, the female, on the following day, begins to deposit her eggs. These to the number of five are laid at the rate of one a day. Incubation commences on the day subsequent to the last deposit, and lasts for ten days. This duty devolves exclusively upon the female. The only part which the male performs is the indirect one of providing his companion with suitable nourishment. When not thus engaged he cheers the tedium of her task by an agreeable ditty. By some writers he is considered more of a dandy than a family man, as he spends the greater portion of his time with his fellows in the pursuit of food, in the arrangement of his toilet, or in the pleasures of the bath. Our experience is different. While he takes no direct part in the incubating process, his affection for his mate, and his constant desire to please her, prove him to be, in every sense, a model companion. When their home is assailed, he does not sneak away, and allow his partner to bear the brunt of the battle to be waged in its defence, but comes boldly to the front, and with loud clamors, angry gesticulations, and wide open jaws, unites with her to expel the intruder. Where frequent interferences occur, the birds are often forced to forsake their nest, and seek other quarters. This perhaps will account for the fact that nests with eggs are sometimes found as late as the fifteenth of July, and others with young birds during the last week of August. Such delays are doubtless of common occurrence.

The destruction of a nest while incubation is progressing, most generally leads to the renewal of the attempt in some other place. The desire for offspring will often be found to triumph over the most insuperable difficulties. We have known instances where the same pair had been thwarted four times in succession, and as often renewed the attempt. An unfortunate male or female may sometimes be doomed to lead the life of a celibate, by reason of the scarcity of individuals of the opposite sex. Perhaps an event has occurred which has altered the status of affairs. A male has died, and his partner is compelled to break up house-keeping, or seek another. If she does the latter, her companion may be a widower,

or one that has been unable to enter into matrimonial relations for the reasons already assigned. Not willing to father the responsibilities of another, the old home, and its once precious charges if there be any, must be abandoned, and another domicile constructed and peopled. The mating being effected, a suitable spot chosen, a home prepared, and the subsequent duties of oviposition and incubation successfully passed through, all of which requiring time, it is not remarkable that nests should be found so late in the season.

Coming back from this necessary digression, the young are from eleven to twelve days old when they leave the nest. The addition of a week or ten days to this period finds them sufficiently matured to attend to their own wants. At first they are fed by the parents upon various soft-bodied insects, which they glean from the branches and foliage of trees, but later on, butterflies and various species of *andrena* and *halictus* are brought to them. When able to provide for themselves, they consort with their parents, and subsist with them on various kinds of seeds and berries.

The young do not acquire their full plumage until the following spring. Their characteristic dress in the fall nearly resembles that of the adult female. It is reddish-olive above, and fulvous-yellow below. Across the coverts there are to be seen two broad bands, and broad edges of pale rufus to the last half of the secondaries. The female is yellowish-gray above, greenish-yellow below, and is devoid of the black on the forehead. The adult male has a bright gamboge-yellow dress, which is in a great measure relieved of its sameness by the black crown, wings and tail. A still further variegation is noticeable in the lesser wing-coverts, lower edges of the greater ones, ends of secondaries and tertiaries, inner margins of tail-feathers, upper and lower tail-coverts, and tibia, which are white. In the winter a yellowish-brown color replaces the yellow, the wings and tail become browner, and the black of the crown is lacking. The under parts take on an ashy-brown hue, which passes into white behind, and yellowish along the throat. The entire length of the mature birds is five and a quarter inches, while that of the wing is three.

The eggs of this species, when fresh, are white, with a slight roseate tinge. In blown specimens they show a faint bluish hue. Their nearest counterparts are Lawrence's Goldfinch, from which they are scarcely distinguishable. They are usually four in number, although five sometimes occur, and in shape are oval. Their dimensions vary even in the same nest-full. Specimens from New England vary from .68 by .53 to .63 by .50 inches. Others from California measure .60 by .50. Pennsylvania eggs have an average measurement of .66 by .53. Considerable diversity of opinion exists as to the number of broods annually raised. Nuttall alleges that they raise two, but seems to base his assertion upon the fact that nests are found from the first of July to the middle of September, which in our estimation is wholly accounted for by explanations given above. The mass of writers, however, differ from him, and believe the species to raise but a single brood annually. In Pennsylvania and New Jersey, we can safely say that not a single case has occurred to us of double-broodness. It may be thought strange that these birds should, as a rule, be so dilatory in their movements, so far as the assumption of matrimonial relations is concerned, being even behind the generality of our Warblers, which are not so well-adapted to the climate as they. An explanation of the matter has been attempted by Dr. Brewer. He seems to think that the cause is attributable to the scarcity of proper aliment for the young in early summer. The greater abundance of insects found in July, especially in their larval stages, which must necessarily constitute a fair percentage of their diet at first, would seem to contradict such a statement. Our experience goes to show that more nests with young birds are found from the middle of June to about the tenth of July than at any subsequent period, just at the time when insect life riots in luxuriance.





GREEN HERON



PLATE XLII.

BUTORIDES VIRESCENS, (LINN.) BAIRD.

Green Heron.

CONTEMNED by man, and characterized by the most inappropriate and disgusting nickname, with which almost every one who is conversant with the species must be familiar, our subject asks nothing at the hands of humankind, but rather avoids cultivated scenes, and seems to thrive best where civilization has neither sown nor reaped. Within the precincts of grassy pools and almost impenetrable morasses, where dangerous odors exhale, and myriads of slimy creatures drag their slow lengths along, or startle the shades of night with their bass murmurings, the Green Heron delights to dwell. Here he pursues his craft in the society of his friends and near relatives.

Early in April the birds reach the Middle Atlantic States, from their Southern marshy homes, and soon afterwards are found in New England, and other portions to the westward. Their limit in this direction is somewhat circumscribed. The silence of writers upon the subject conduces to the inference that they are not found west of the Rocky Mountains, and the absence of mention by the parties connected with the different government expeditions, shows that they are not to be met with in regions which they visited. In the extreme southern and eastern parts of the region of the Missouri, however, they are to be met with. McIlwraith observed them in Canada West; and in the West Indies, Mexico, and from Central America to Venezuela, they are known to abound. They are mentioned by Gosse in his explorations, and Cory saw them in abundance, during the breeding-season, in the Bahamas. It is possible that many of these

denizens of tropical countries migrate to the United States, and associate with their northern brethren that winter in our Southern States, and even pursue their journey to colder latitudes.

For nearly a month after its arrival the Heron is a solitary feeder, and seems to care for naught but the gratification of appetite. Knee-deep in some small stagnant stream or pool, or in the midst of sylvan glade or reedy marsh, he may be seen awaiting his prey. His movements are characterized by remarkable artfulness and skill. The extreme caution evinced by the game he seeks, and its facility to elude pursuit, presuppose the possession of a nicety of address, and of celerity of action. When on the lookout for minnows, and other small fish, he takes up his position by the side of the ditch, and with his long-reaching neck contracted over his breast, prepared for duty, he waits, in statue-like repose, the appearance thereof. The keen, flashing eye bespeaks the anxiety reigning within. He has not long to watch. Soon a luckless little fellow approaches the bank cautiously, when, with one stroke of the bill, as unerring and sudden as that of the blow of a rattlesnake, he is transfixed, and ere he has time to contemplate the condition of affairs, is swallowed entire. Worms, aquatic larvæ and small crabs are eagerly hunted, and captured with wonderful adroitness. It is, however, when in quest of frogs, that he displays the exceeding cunning of which he is capable. These subtle, wary creatures are difficult to surprise, and plunge into the water and mire on the slightest noise or alarm. A few moments elapse before they are sufficiently assured to venture to the surface again, but when they are, the movement is always performed with great caution and circumspection. While the frog is recovering from its fright, the Heron is laying his plans on the oozy flat above. Fixing his penetrating gaze upon the spot where his game disappeared, he steals slowly forward, and patiently awaits the first appearance of the bronzy head, at the sight of which, with almost lightning-like movement, he deals the unfortunate blow; the squirming, wriggling mass of matter is jerked from its watery bath, only to be dashed to death upon stones, and eaten at leisure.

The life of the Heron is not the dull, prosy, slavish one which many writers have pictured, as it is always attended with a certain amount of excitement which gives spice and zest thereto. The abundance of reptilian and other life to be found in places which these birds visit, and the comparative ease with which it is seemingly obtained, render existence a pleasure rather than a burden. They are not the over-anxious, indigent race of beings which their general appearance would lead us to suspect. Living in the midst of plenty, although unsurrounded by green bowers and luscious viands, such as lure their apparently better favored brethren—the rich, gifted oscines—they are pleased with their lot, and doubtless would scorn to exchange it for others. Their lean, lank natures, as commonly supposed, have nothing whatever to do with the character of their surroundings, but are a wise and fitting illustration of the law of design which is everywhere to be seen in Nature.

Of all our Herons, this species displays the least shyness. When disturbed, it mounts upward with a hollow, guttural cry, but soon alights, cranes its neck, and if danger is not threatening, settles back into its usual quiescent state. Either while walking or standing, on such occasions, it is noticed to jet the tail, a habit which it indulges in at somewhat regular periods. In addition to the ordinary scream, other notes are emitted, which resemble the syllables 'k'w, 'k'w, 'k'w. These succeed the others so closely that they may be considered a part of the same call-note of alarm.

Many birds usher in the dawn of the matrimonial period with music. But such is not the case with the present species. To be sure there may be heard the same cries with which it is wont to greet intruding footsteps. The principal indications of its return may be noticed in the preference which the sexes have for each other, and in their endearing behavior. They no longer seek to dwell apart. A week at most is thus spent, when the friendship formed invariably ripens into the stronger feeling of love. This ordinarily happens from the twentieth of April to about the tenth of May. Having mated, the party start off in search of a swampy woods, where, among the branches of some tree, they place their rude domicile.

Some live apart, but the rule is to dwell in companies. It is common to find them and the Night Heron living together on friendly terms.

The nest is entirely built of sticks, with finer ones on the inside, is the work of both birds, and occupies but a short time in building, usually not more than two days. The eggs are deposited at the rate of one a day, chiefly on consecutive days. Incubation commences shortly after the eggs are laid, and is mainly the result of the female, who, for nearly eighteen days, is a very assiduous sitter. While she is thus occupied the male is a faithful guardian and protector. He administers to her his choicest captures, and warns her of coming danger. When the nest is molested both birds hover near the tree, but beyond the reach of danger, and by the most deafening screams, seek to drive away the assailant, but they never venture upon an attack. If the nest has been despoiled, they immediately set to work to repair it; or, if rifled of its treasures, do not long bewail the loss, but proceed to replenish it. Like most of its family, this species places the nest high up in tall trees, although instances have occurred where they were not more than twenty feet from the ground. The young birds are carefully attended and fed by the parents, and do not leave the nest until they are able to fly, which is the case when they are from four to five weeks old. Their food consists at first of worms, larvæ of dragon-flies and aquatic beetles. But as they increase in age, fresh-water crabs, lizards, frogs, grasshoppers, etc., are brought to them in large numbers. They do not mature until the next season. At first they have the head less crested than the adult. The back is devoid of the characteristic long plumes, but has the same glossy greenish color. The neck is simply reddish-brown, while the entire under parts have the white somewhat variegated with dark brown.

The eggs of these birds are from three to four in number, oblong-oval in form, and of a pale light-blue color. The largest egg in a set of four before us measures 1.55 inches in length, and 1.19 in width; the smallest 1.50 in length, and 1.13 in width. Throughout its entire range the species is single-brooded.



BLUE JAY.

PLATE XLIII.

CYANOCITTA CRISTATA, (LINN.) STRICKL.

Blue Jay.

THIS abundant, beautiful and familiar bird is a resident of the eastern half of North America, from the Atlantic west to Kansas, Eastern Nebraska and Dakota, and from Florida and Texas on the south to the 56th parallel of north latitude. Wherever met with it breeds in greater or less numbers, according as its presence is welcomed or rejected by the imperious lords of creation, and food is readily or with difficulty obtained.

Few species show more striking peculiarities of conduct, and none scarcely exhibit as much sagacity and intelligence. Within its natural haunts it is exceedingly shy and suspicious, and is hardly approachable. Frequent intercourse with man, however, has, in some sections, modified its disposition, and, as a necessary consequence, confidence has taken the place of distrust. This is substantiated by its tendency to nest in places contiguous to the dwellings of man. In Eastern Pennsylvania, a decade ago, it was quite a common occurrence to find a score of birds nesting in a square mile of territory, but, at the present time, the collector considers himself very fortunate if he encounters one-fifth of this number within the same area, and these only in localities whose solitude is seldom unbroken by the tread of human footsteps. In the wooded regions of Iowa, Mr. Allen found this species quite as trustful as the Black-capped Titmouse, and in Illinois, reduced to a semi-domesticated condition. Within the former State a pair of birds were found nidificating under the window of a house, in a lilac-bush, and this, too, in one of the most prominent and frequented streets of the town of Richmond.

A curious behavior marks the species' first acquaintance with human society. The movements of man are followed with noteworthy pertinacity, the slightest action being carefully scanned, but our feathered friend never ventures too near at first. After frequent interviews at a wary distance, if undisturbed, he gradually approaches nearer and nearer, and in time comes to regard him with kindly favor. Sometimes these advances are received with coldness, and the most bitter persecutions occur. When such is the case, the Jay takes a dislike to man, and shuns his society. In his rural retreats this bird is the enemy of the hunter, and often provokes his ire and vengeance by its tantalizing behavior. When he is in pursuit of game, it takes great delight in following him, and, by its seemingly distressing cries, seeks to warn its feathered neighbors of approaching danger.

Though occasionally found within cultivated regions, yet these birds affect the shelter of dense forests, where they can pursue their craft with undismayed tranquillity. It is in such quarters that they are mostly to be seen in winter, searching for the eggs of insects. When there is a scarcity of such diet, the fruits of the oak, beech, birch and pine are hunted and devoured. Large numbers of beetles, some terrestrial in habits, also contribute largely to their sustenance. With the return of spring, insect life is more rife, and we find them feeding upon grasshoppers and caterpillars of every description. Like the Crow, the Jay is pre-eminently omnivorous, although preferring animal to vegetable matters. In the gratification of its appetite for the former, it is led to destroy the eggs and young of smaller birds, and even to kill those that are full-grown. Such merciless conduct detracts from its general good character, and often conduces to its destruction. But the good which it accomplishes, as evidenced above, outweighs in tenfold proportion the mischief committed, and should encourage us to desist from our persecutions, and accord to it a generous welcome. Its depredations upon the garden and farm are so trivial, that they do not warrant the abuse which thoughtless farmers are wont to lavish upon these feathered benefactors. To favor our readers with some idea of the good which has been accomplished in some portions of the country, we cannot

do better than give the substance of Dr. Kirtland's estimate of its character, as given by Dr. Brewer. When the former gentleman first settled upon his farm, he observed that every wild-cherry and apple-tree was well-nigh denuded of its leaves by the tent-caterpillar. The evil was so widespread that all efforts to counteract it seemed hopeless. At this crisis the Jays made their appearance and established colonies. The caterpillar constituted a ready diet for their young, and was preyed upon so extensively, that in a short time, not one was seen in the neighborhood.

Whilst feeding, the Jay is both silent and vigilant, save when disturbed, when he signifies his discontent by a harsh, petulant cry, which sounds like *djáy, jáy, jáy*. In his more complaisant humor, he is by no means an unmusical fellow, but gives expression to a series of vocal sounds which, for variety, beauty and harmony, are truly creditable, and, as Nuttall happily denotes it, "are by no means unpleasant, and fall in harmoniously with the cadence of the feathered choristers around him, so as to form a finishing part to the general music of the grove." Wilson likens him, among singing-birds, to the trumpeter of the band. His notes are anything but monotonous. At one time he screams with all his power, as if actuated by some terrible impulse, and, almost the next instant, greets you with notes as soft and pensive as those of the Bluebird, but to be only followed by others that fairly shock the ear with their unutterable harshness. The latter have been observed to resemble the syllables *whēōo-whēōo-whēōo*, but the sweet bell-like note almost baffles the powers of description. His powers of mimicry, though different from those of the Mocking-bird, can be hardly excelled by that species. The cries of the Sparrow Hawk are imitated with great pleasure, and so accurately does he mimic the harsh screams of the Red-shouldered and Red-tailed Hawks, that the smaller birds seek their coverts in dismay, and the poultry are thrown into the greatest consternation. When reared from the nest these birds make interesting pets, and in due time learn to simulate every sound they hear, not even excepting those of the human voice. A case is cited by Wilson of an individual that had been raised by a South Carolinian, which

evinced remarkable intelligence, and which possessed nearly the loquacity of some of the Parrots. It could pronounce several words with remarkable distinctness, and when called, would respond to its name in quite a sociable manner. By fanciers the Jay is esteemed the most ingenious, artful and teachable bird with which they have met.

A peculiarity of the species, deserving mention, is the habit of the sexes to go together during the winter, showing that some kind of attachment exists, even at the period when many birds, not gregarious, find it most to their interest to lead solitary lives. This disposition to go in pairs may be the beginning of a tendency to gregariousness, such as prevails among some of its near cousins, or it may be considered as the last vestige of a habit that was once predominant. Cases have been observed where the sexes dwelt apart, which leads to the suspicion that the species is surely and inevitably gravitating towards such a state. In the season of cold and scarcity, when most of our resident birds are too much concerned with the procurement of food to permit the social relations to have a moment's sway, the life of a celibate seems to be more fitting, and in very many cases is one of preference. While these birds thus continue to keep together, possibly through force of long-established habit, yet they do not manifest the slightest tendency to matrimony, until Nature has sufficiently recovered from torpor to insure a living for their offspring. Not very fastidious in appetite, and easy to please, almost any kind of insect diet answers. Consequently, with the early dawning of April, but never later than the fifteenth of the month, a change comes over them. Less anxiety is manifested for food-matters, and more friendly relations established. The sexes consort together much, and after a few days of courtship, which business is seemingly unmarked by any great display of form, settle down to the prosy realities of life. Nidification is now entered into with commendable zeal. For this purpose a forest or orchard tree is generally chosen, although a low bush is sometimes made subservient. In retired localities a preference is shown for the pine. The selection of a site never consumes much time. With old birds it requires careful and

diligent searching for a day or two, but in the case of inexperienced individuals, the time may be protracted for nearly a week. Where permitted to rear their progeny unmolested, a strong attachment is shown for the same neighborhood, and instances occur where the same pair dwell and breed in some cherished haunt for several years in succession.

In the construction of a home both birds labor with the utmost diligence. They are usually about three days thus occupied, each bird taking an equal share in the task. The nest is anything but elaborate in its mechanism, and has little to recommend it in artistic design and beauty. It is a strong, coarse structure, placed upon a branch over a crotch, sometimes held in position by adjoining twigs, and is composed of sticks rudely and firmly interwoven. Inside there is usually a lining of dark fibrous roots. In proportions it is almost equal to the nest of the Purple Grackle.

The domicile being completed, on the following day, sometimes not so soon, the female begins to lay, at the rate of one egg a day, her complement of eggs. This is usually five, although nests have been found with six, and others more rarely with four. Incubation is closely attendant upon oviposition, and generally dates from the day following the last deposit. This business is the sole labor of the female for about seventeen days. While she is thus occupied the male encourages her by his presence, or when not foraging, guards the spot from intrusion. He is a very jealous husband, and will not permit any of the feathered denizens of the woods to approach, without resenting it in the most determined manner, and inflicting severe punishment. Human interference is greeted with loud and angry cries, and the infuriated bird is with difficulty beaten off.

In Texas, according to Dr. Lincecum, the nest is built of mud, a substance which is rarely utilized in more northern localities. In situations contiguous to houses, rags of calico, cotton thread, and other similar materials, form a very cosy and suitable lining. Such places are chosen on account of the protection against Hawks which they secure. A single brood is annually raised, and but four eggs constitute a setting. In the abdomen of a female which he dissected there were found one hundred

and fifty ova, and from this and the preceding datum, he was led to the inference that the natural life of the Jay was thirty years.

When the young birds make their appearance they are welcomed with demonstrations of great joy by the parents. The latter manifest much solicitude for their safety, and attend to their demands with the most sedulous devotion. They watch over them with unwearying vigilance, and actually imperil their own lives when their helpless charges are in danger. Earthworms, caterpillars, moths of various kinds, beetles, grasshoppers, acorns, berries, etc., make a voluminous bill of fare, but they are always carefully chosen to suit the age and condition of life. Both birds are seldom absent together in search of food. When three weeks old, the young quit the nest, and a fortnight later, are able to gain their own living.

In the drawing we have delineated the appearances which the sexes present when they have attained their full dress. The female, which is shown considerably in the background, is duller than her lord and, in the natural state, is somewhat smaller. The mature male is purplish-gray below, with a tendency to whitening on the throat, belly and crissum. This is diversified by a black band across the lower throat, which is continued up the sides of the neck and head to a space behind the crest, and, also, by a black frontlet with a whitish border. The wings and tail are a rich blue, with bars of black. The greater wing-coverts, secondaries and tail feathers, the central excepted, are broadly tipped with unsullied white, and the tail is much rounded. The bill and feet are black, and the iris of the eye of a hazel color. The length is about twelve and a quarter inches, wing five and thirteen-twentieths, and tail five and three-quarters.

The eggs are rounded-oval in contour, obtuse, and pretty nearly equal at both extremities. They are brownish-olive on the ground, in most cases, although some specimens show a decided olive-drab color. A few darker olive-brown spots, however, relieve the monotony of the background. The average size is about 1.16 inches in length, and .85 in width. We have seen some that varied from 1.04 to 1.21 in length, and in breadth from .81 to .89 of an inch.



LONG-BILLED MARSH WREN.

PLATE XLIV.

TELMATODYTES PALUSTRIS, (WILS.) BAIRD.

Long-billed Marsh Wren.

THE above species is restricted to Eastern North America. It ranges from the Atlantic westward to the Missouri, and from Massachusetts to Florida. On our western shores, and in the Middle Provinces of the United States, a closely-allied form takes its place. In Maine and New Hampshire it is notably absent, but in Massachusetts and Vermont and thence southward through New England, where suitable localities exist, it is more or less common. Austin F. Park, of Troy, N. Y., gives it a common breeder in that locality, and the same may be affirmed, on the authority of Rathbun, to be the case in the central portions of the State. In Pennsylvania, New Jersey and Delaware we have found it most abundant during the nesting season. Throughout the Southern States some remain to breed, but the greater number go northward for this purpose. Ridgway states it to be an occasional resident, at least, in the southern counties of Illinois, but farther north a summer sojourner. In the vicinity of Cincinnati, according to Langdon, it seems to be merely a vernal migrant, but possibly spends its summer in the northern counties of Ohio, or in Michigan and Wisconsin. It cannot be denied admission to Minnesota, as is clearly proved by ornithologists from that section. Its occurrences have been noted in Kansas and Colorado by various parties, but it is likely that such references may be set down to the Tule Wren.

The Long-bill spends the winter on our southern border and southward, and only takes up its migratory course when the weather has settled into the blandishments of spring. The grand movement commences about

the first week of April, and it is not long before the birds have spread themselves over the country. They reach the Potomac about the middle of the month, Pennsylvania towards the close, and New England about the first of May. When the season is forward, individuals are often met with in the latitude of Philadelphia and Central New York early in April.

Upon its arrival it seeks inland swamps, or the brackish marshes of the seashore, where, amid the splatterdocks of the former, and reeds of the latter, it finds suitable shelter. Here day in and day out, during their entire stay, these birds pursue the even tenor of their lives, happy and contented, never caring, like many of their remoter kin, for the charmed circle of man. Active, energetic and buoyant with life and hope, they skip about the tall, rank vegetation, in every conceivable direction, in quest of insects. Their food consists of grasshoppers, small aquatic grubs, and such like, which they capture with considerable dexterity. If you should be unconsciously led to the favorite haunts of the species, you at once become aware of its presence by the lively, chattering song which emanates from within, and, ere long, you are repaid, if you take any special pains to insinuate yourself within the reeds, by a sight of the quaint, little creature, as he dodges, like some grotesque apparition, in and out among the interlacing grasses. This song, which has been compared by Wilson to a low crackling sound, somewhat analogous to air bubbles forcing their way through boggy ground, and by Audubon, to the grating noise of a rusty hinge, is most difficult of expression. It resembles more nearly the sounds of an insect than those of a bird, and is a low, harsh cry, lacking both harmony and force of expression.

As these birds reach their breeding-grounds early in May, and instantly repair to nest-building, it is safe to assume that mating had been celebrated in their far-off southern homes, or is a matter that is entered into with but little show or affectation. Frequent visits to their haunts, at such times when one would expect to gain information on this point, have always been rewarded by seeing the busy creatures at work upon their nest. Their early movements are so secret and mysterious, that we

hardly know anything of their presence except when they are colonized for the summer.

The labor of building is entered into with considerable alacrity, and is mainly the result of the combined action of both birds, for a period of five or six days. The exact time is hard to estimate, and is dependent upon the character of the structure, position, and the industry and patience of the architects. When the nest is placed horizontally upon the ground in the midst of a clump of sedges, it is loosely constructed, and costs but three days of steady workmanship. But when elevated to the tops of tussocks, or to the branches of shrubs and trees, where more compactness and finish are necessary, the time is essentially protracted. The disposition to nest in trees and bushes, which is now a prominent feature of the species, looks, at first sight, as if there would be, at an early day, an abandonment of old sites, and the taking on of new relations. While the species has thus gained a great advantage in lifting up its nest beyond the power of the waters to do it harm, it has, by selecting such growths in close contiguity to marshes, shown its predilection for such places, by reason of the facilities which they afford for food-detection.

Brewer describes the nest as being placed in low bushes, at a height of but a few feet from the ground. This is true in certain localities, but where there is a scarcity of such growths, as is the case where salt-water marshes abound, then the birds are compelled to resort to the sedges. In Atlantic County, N. J., in the summer of 1874, as many as fifty nests were seen and examined thus built, in less than an acre of ground. The same distinguished writer, in speaking of their composition, says "they are made externally of coarse sedges firmly interwoven, the interstices being cemented with clay or mud." And further, that the upper side of the entrance is "protected from the rain by a projecting edge." This may be true in certain places, but careful examinations of a score of nests from as many localities, remotely situated from each other, fail to show the existence of argillaceous or other elements, much less the trace of anything that might be exaggerated into a roof. Audubon describes it as being

built among sedges, and as usually constructed in part of the sedges among which it is placed, a fact which we have repeatedly confirmed. Usually, when built along the margins of streams, or by the seashore, the nests are placed from two to two and a half feet high, so as to be beyond the reach of ordinary tides. Again, nidification commences at a time when there is little danger to be apprehended. But should there be an extraordinary rise of waters, and their home be destroyed, then like true Trojans, when the tide has subsided, they set zealously to work, and repair the damage. If irreparable, they succumb to fate, or rear their domicile anew. In selecting such a site for purposes of nesting, they must run the risk of having it submerged or demolished, but the chances against such a catastrophe's occurring, are numerous. These nests of ours, we are convinced, can withstand the beatings of a summer shower, as well as any whose walls are mud-cemented.

While some birds excel in singing, others are differently gifted, and show talents as peculiar and remarkable. Such is the case with the subject of our sketch. Denied the power of song, he has developed his faculties in the direction of architecture, not the least interesting part of his history being his curious habit of nidification. For convenience, comfort and durability his nest has few equals. It is a large bulky affair, in shape resembling a cocoon, and is composed of the tops of coarse reeds and grasses woven together. This globe-like, hollow body is secured to the upright stems of the growing reeds, several of which usually pass through its substance, and supports a little hole on the side, which looks forward and down into a cosy chamber, that is well lined with finer leaves of grasses, the dermis of weeds, and a mixture of soft feathers and wool. In many specimens which we have met with from time to time, the opening is nearly concealed by the enveloping grasses, which seem to be purposely arranged with this object in view. Preparatory to entering the nest, the stalks are thrust aside, and are as carefully readjusted when the bird is once there. On retiring, the same movements are necessary. The flexibility of the grass aids the birds very materially in these operations.

While most of the nests we have examined correspond in the main with the above description, we have occasionally met with some which constituted a noteworthy exception. These structures bear a close resemblance to those of the Maryland Yellow-throat in configuration, being nearly oven-shaped. In these cases the openings were large, about two inches in diameter, and occupied the anterior aspect. The materials of composition differed but little, on the outside, from those which are generally found in the typical nest, but, within, they consisted of fine grasses and silk-like threads of vegetable origin. This nest was placed on the ground.

The most beautiful nest which we have ever seen was obtained in the summer of 1878, in the vicinity of Philadelphia, by Isaac Reiff, Esq. It was placed upon a willow branch, at the height of about fifteen feet from the ground, and was newly built. In shape it was nearly globular, four and a half by five inches in the two diameters, and was woven of the broad leaves of a species of scirpus, closely and evenly, and had the interstices seamed with brownish down. The opening was hung with a thin, delicate curtain of gauze, of the same material, which was continued within, forming a thick bedding of the softest texture, of which the most voluptuous sybarite might envy its fortunate possessor. In shape and composition the nests which are found on bushes, bear a striking resemblance to the one just described, but usually lack its neat and elegant finish.

The number of structures that may sometimes be seen in a small stretch of marshy ground, within a few paces of each other, is so astounding, and apparently so disproportionate to the size of the community inhabiting it, as to lead to the suspicion that more nests are constructed than are really needed, the idea being that the nervous, energetic males keep up building operations while the females are incubating, as a sort of pastime, or because they have nothing else to do, and must have some employment for their excessive animal spirits. However this may be, the old nests remain intact a year or so before they crumble to pieces, which doubtless will, in a measure, account for the large numbers that are often to be seen.

The nest having been completed, a few days are allowed for drying before the female essays to deposit her chocolate-colored treasures, some six to nine in number. A day is allowed for each egg, usually, but we have found nests which showed that more than one had been laid on some days, but these were exceptional cases. The female is the first to incubate. When tired of the duty, she summons her companion, who is never far away, and resigns the care to him, while she strays off to a short distance for food and recreation. At such times, the males are exceedingly pugnacious, and will not allow any trespassers. The females, on the contrary, are less demonstrative. After fourteen days of close sitting and vigilance, the young appear, and need the most assiduous attentions. And such they receive. Few parents are more devoted. From early morning until night, the one or the other is on the go, in quest of some juicy morsel of insect-food for their keen appetites. And what is their reward? In a fortnight, a whole nest-full of bright, rollicking and chirping children. Proud of their charges, they still continue to care for them a week longer, when they lead them one by one out of the nursery, and introduce them to the world. The young are now old enough to encounter the dangers and trials of life, while the parents not contented with having successfully raised one family, after a brief season of repose, depart to a spot close-by, where they immediately rear another domicile, which they people as before. This occurs late in June, or early in July.

The eggs of this Wren are oval in shape; occasionally, spheroidal. They are generally marked, quite profusely, with blotches of deep chocolate-brown, so as to present an almost uniform appearance. Sometimes, a darker area is seen at the larger extremity, or around it. Again, specimens are met with which display a whitish ground, thickly dotted with chocolate, or a nearly uniform brownish-white surface, with a few of the characteristic blotches remaining, as if the color had been washed out. The average length of a set of nine before us is .65 inches, and average breadth .50. It is quite common to find a very large number of eggs, diminutive specimens, called "runt" eggs, which measure only .53 by .46.



YELLOW-BILLED CUCKOO.

PLATE XLV.

COCCYZUS AMERICANUS, (LINN.) BP.

Yellow-billed Cuckoo.

THE subject, whose habits we are about to introduce to our readers, has a wide range, and is variously distributed. It is found from Florida to Canada, and westward from the Atlantic to California. Audubon met with it along the Mississippi River, the upper branches of the Arkansas, and also in Upper Canada. Dr. Woodhouse found it quite common in New Mexico, Texas and the Indian Territory. In Nebraska it appears to be exceedingly rare, as it was only seen on two occasions by Ridgway in the summer of 1867. Wilson traced it north to Lake Ontario, from the Choctaw and Chickasaw nations. Outside of the United States, on the south, it has been observed by various parties: Newton, upon St. Croix Island; Gosse, in Jamaica; Salvin, in Central America; Lembeye, in Cuba; and even as far south as Buenos Ayres.

Respecting its eastern record of distribution, writers on ornithology are pretty generally agreed. West of the Rocky Mountains, its range is not so well made out. Early observers accredited it to Oregon, but, in recent times, there has not appeared any confirmation of their statements. Its presence, even in California, was for a long time doubted, and it was thought that, as the notes of the Burrowing Owl resembled those of the Cuckoo, many may have been deceived thereby. So close is the likeness, that Dr. Coues acknowledges that he would have been deluded himself, had he not been forewarned. According to Cooper the noise produced by the Spade-footed Toad exhibits marked similarity. But there is now no longer any hesitancy in including it in the avi-fauna of that State.

We are first apprised of the coming of this species into our midst by the peculiar notes which it emits. These sound like the syllables *koo-koo-koo*. As they are probably more frequently uttered on the approach of falling weather than at any other time, both it and its nearest relation—the Black-billed Cuckoo—have received the vulgar appellation of “Rain Crow;” for the same uncouth guttural notes are uttered, in the same plaintive manner, and on similar occasions, by both birds, with this exception, however, that the Yellow-billed is noisier, and more forcible in its expressions.

From its first advent late in April, or early in May, until it takes up the line of flight southward in September, this bird startles us by its eccentric behavior. Though remarkably shy and unsociable, it is less so than its congener. In Eastern Pennsylvania, it seldom inhabits high, open woods, for which the latter has a fondness, but manifests a strong preference for low hedges along the borders of fields and public roads, or an isolated pine or apple tree in orchard or garden. In the latter place it is as often seen in the lower, as in the upper, branches. Places remote therefrom, in other States, show a marked change in this respect. Not only does it betray an instinctive dread of man, by seeking the summits of the tallest trees in loose woods, or those of large shade-trees in our city parks, but it also studies how best to conceal itself from his gaze. Though ordinarily hidden birds, but when in search of the various winged insects which contribute to their sustenance, they show rather conspicuously. But they are oftener heard than seen. When ready to change their position, they maintain a long silence, and being assured that the coast is clear, stealthily glide from their perches, and on rapid, noiseless pinions, wend their flight to the coveted spot. On attaining which, they stand like statues for a long time, utter their famous cry, and when surfeited with the sights about them, renew their flight. Thus they keep it up until called to desist therefrom by household duties.

Few species manifest more strongly the faculty of curiosity. When nestled in umbrageous security, so artfully concealed as to elude the keen

gaze of detection, this bird is wont to eye everything with inquisitiveness and distrust. Peering down upon you through the dense foliage, there is nothing in its looks to command your pity; but you are reminded of one who has been guilty of wrong, and who fears the consequences. Where accustomed to man, a radical change seems to come over its demeanor. The eye looks out with a milder expression. When we remember that, like the Jays, these birds are abandoned thieves who pilfer the eggs of other and weaker birds, and even devour their helpless offspring, we are not surprised that they should be so sneaking in their actions, and coward-like. But when the mating period arrives, one would think that the arousing of the hitherto dormant amatory forces into normal activity, would tend to soften their natures, and call into play a better state of feelings. So it does, but only so far as to reconcile the sexes to each other, and force them to forsake their selfish lives. Towards other species they still preserve the same unfriendly relations.

The male, who arrives ten days before the female, is the first to experience a desire for a change of life. Tired of aimless wanderings, he goes off in search of a companion. He is not long in finding one. A recital of his love, in his own peculiar fashion, soon gains a willing listener, and business is settled in an instant. There is none of that amusing frivolity which is known to mark the actions of many of our feathered creatures. He proposes, she accepts, and the matrimonial knot is tied, at least, for another season. While the sexes do not manifest any apparent regard for each other for two or three weeks after their first arrival, being chiefly absorbed in the procurement of food, yet they do not wholly desert each other, but feed within calling distance. From long observations, continued through nearly two decades, we are led to believe that the same birds mate annually, unless prevented by the death of one or the other.

In the choice of a tree these birds are somewhat fastidious in some localities. A preference is often manifested for some species of evergreen, but not unfrequently are they tempted to nest in an osage orange, a barberry bush, a thorn, or an apple. The kind of a bush or tree will doubt-

less be found to vary with locality. While engaged in looking for a suitable nesting place, the male is very attentive to his partner, and cannot brook her absence. He watches with jealous eye her every movement, and follows her in all her journeyings. Though usually quite cowardly, he is at these times very brave, and will venture to attack any bird that happens near. But as his cowardice is proverbial, he rarely succeeds with birds of his own size, and is often compelled to retire from the battle discomfited.

When a tree is chosen, the happy pair proceed to build their loose, rickety dwelling upon a forked or horizontal branch, at elevations varying from five to seldom more than twenty feet, according to our experience. The nest may be compared to a miniature Crow's. It is mainly composed of small sticks and some grasses, artlessly and loosely interlaced, and so unsubstantial, that it scarcely survives the season. The cavity is quite shallow. The dimensions vary somewhat with the locality, but a specimen before us measures seven inches in diameter, and about three in height. The cavity is nearly four inches wide, and less than one in depth. The construction of such a loose affair ordinarily requires but two days, and is the result of the united efforts of both birds, working with commendable patience and zeal, but not continuously.

As soon as the domicile is finished, the female, after a day spent in congratulating her lord upon their combined success, proceeds to furnish it. This business continues for many days, varying according to the number of eggs laid, and the irregularity in time of laying, eggs being frequently deposited about the time that others are hatching. Nests are often found with a single fresh egg in each, another partly incubated, a newly-hatched bird, and one or more young still further advanced. But, as a rule, only a single egg is daily deposited. Incubation, in the latitude of Philadelphia, often commences when only two eggs are deposited, but instances are recorded where such was the case after the first extrusion, the female depositing others as the process goes on. This seems like a strange fancy of hers, but evidently shows great forethought and prevision.

The rude house which is built for the accommodation of the eggs, being open and much exposed, and made of seemingly unsuitable materials, fails to provide the necessary protection, and thus is necessitated close and arduous sitting by both birds. The hatching of a few young birds at the time when eggs are being laid, secures the continued warmth necessary for development, and thus materially aids parental exertions. In many instances the eggs are deposited before the incubating process has commenced. The time required for hatching is about fourteen days.

While this business is progressing, the male, when not upon the nest, seldom forsakes his partner, save to provide himself and her with food. Perched upon a small limb close-by, he seems all vigilance, and is in constant readiness to reply to her calls. Feelings of the most devoted affection are mutually exchanged. If the eggs are handled, prior to the assumption of incubation, the birds are apt to desert the nest; but when this has commenced, the female is so attached to her young that she will almost permit herself to be captured rather than leave them. If forced to vacate, we have never known her to precipitate herself upon the ground, and seek, by her fluttering and personation of lameness, to draw the intruder away, as Nuttall affirms, but have always observed her to take a position upon a tree in the immediate vicinity, where she would sit silently and demurely contemplating the purposed desecration. Mr. Newton, in his paper on the habits of the birds of St. Croix Island, testifies to the conjugal affection which is evinced by these birds. On one occasion a male had been killed. The female, attracted by his shriek as he fell to the ground, appeared upon the scene, and showed the most intense anxiety.

In the summer of 1872, a nest of this species was placed upon a tree within full view of our window, from which the minutest details of the every-day life of these birds could be closely studied. Children in their plays would frequently pass under the tree while the birds were engaged in breeding, but the latter were so intent upon the work that their presence was unheeded. The nest was completed, eggs were deposited and hatched, and the young matured, the parent birds evidently feeling as secure as in

more retired situations. On this occasion it was discovered that when the young were all hatched together, the duty of feeding devolved upon one or the other parent, both never being absent from the nest at the same time. But, on the other hand, where the young are hatched at irregular intervals, the non-incubating bird assumes the duty of providing nourishment both for his mate and early-hatched young, while the other is occupied with the cares of incubation. When the young are able to quit the nest, which they do in little more than a fortnight after hatching, the parents hail the event with great joy. Their efforts to induce them from the nest at first are rather amusing, and evince extreme patience and thorough good-will. But when the step is once taken, their odd, curious gestures betoken the highest pleasure and satisfaction. The young are now almost old enough to care for themselves.

Never more than a single brood is annually raised in Pennsylvania, although Mr. Nuttall affirms that several are brought out, according to his observations. His opinion appears to have been based upon the discovery of eggs as late as August 28. In some localities this may be so, but we cannot find any record thereof. The same distinguished writer has recorded the finding of a Cuckoo's egg in the nest of a Catbird, and another as late as the fifteenth of July, in a Robin's nest. These were considered at first as rare, if not incredible instances, but latterly, we have some well-authenticated cases of such parasitism. These observations, coupled with others equally as important which have been recorded, tend to show a close relationship between our American Cuckoo and their not very distant European brother.

The eggs of this bird are oblong-oval, less spherical than those of the Black-bill, and have an equal obtuseness at each end. They are of light bluish-green color, and, like those of the other, are quite apt to fade on exposure to light, thus rendering them difficult of distinction. The average measurement is 1.22 inches in length, and .94 in width, although specimens are occasionally found which show marked variations in size, some being smaller, but few exceeding these dimensions.



YELLOW-BREASTED CHAT

PLATE XLVI.

ICTERIA VIRENS, (LINN.) BAIRD.

Yellow-breasted Chat.

PROBABLY no species possesses greater peculiarities of voice, manners and habits than the one we are about to notice. Somewhat terrestrial in life, frequenting tangled vines and brambles, it seemingly abhors publicity, and is best pleased when under concealment. When hid away in its almost inaccessible retreats it is hard to locate, and this difficulty is enhanced by its wonderful powers of ventriloquism. It is a restless being, however, delighting in new sights and scenes, and though its movements are well-timed and silent, yet it does not always escape detection.

Its distribution throughout the United States is somewhat restricted, and its abundance in any given locality is uncertain. It ranges from Florida to Massachusetts, and as far to the west as Fort Riley and Eastern Kansas. Among the Rocky Mountains to the northward, it has been observed to reach the sources of the Arkansas. In Massachusetts, it is not uncommon, and a few are known to breed at Lynn. Farther northward, on the Atlantic seaboard, we have no mention of it. In Central New York it is a very rare summer visitor, and in Southern Illinois we learn that it breeds in common with the Maryland Yellow-throat, but diminishes in numbers to the north. Mexico and Guatemala claim it in their avi-fauna, but there are no records of its inhabiting any of the West India Islands.

From their winter resorts, long after the Thrushes and Sparrows have reached their summer homes, these Chats, in the company of the vast army of Warblers of which they are a part, take up their flight late in April, but it is not until the first week of May that they reach Pennsyl-

vania. Other portions of their limited habitat are attained at nearly the same time. But it is the males who first appear. For reasons, which we do not understand, the females are slow in making their appearance, and do not arrive until three days later.

Once arrived, they keep aloof from cultivated domains, and spend their time in the dense underbrush of high woods, or in the clumps of briars of unimproved fields. Few birds manifest greater shyness. Whether this character can be attributed to timidity, we cannot say, but we are rather prone to believe it is only assumed in order to conceal their purposes and doings the better. When nurseries of young trees are visited, even though they should be situated close-by occupied dwellings, which is sometimes the case, we cannot perceive any difference in their conduct.

Though coming in early May, when Nature is fresh with verdure and buoyant with life, yet there is no desire shown for mating. The sole thought seems to be the acquirement of food. Its foraging is not wholly restricted to trees and shrubs, but the ground as well. While thus engaged, the bird is seen to the best advantage. There is noticeable a most remarkable agility combined with a certain degree of eccentricity. Squatting upon the ground, it keeps up a continual jerking movement of the tail, for a long time, but tired of this, it springs to the feet, and the most ridiculous and uncouth antics follow. Should it be surprised while thus employed, it seeks to conceal itself in the adjoining bushes, or finds security in flight. Beetles, ants, small spiders and moths constitute for awhile its fare, but these give place to caterpillars and fruits when abundant.

Whilst feeding, the male keeps remarkably silent, and it is only towards the close of the month that he essays a song. A change now comes over his behavior. He is more active than ever, is less tempted by the sight of food, and acts like one who is in search of something lost. He enters a copse, a cluster of brambles, in short, any place of concealment, and gives himself up to the strangest diversions. The most peculiar sounds emanate therefrom. At one time, in loudest key, but gradually

Through accident, a blunder occurred in Part 23. The top line on page 274 belongs at the top of page 273. You will please take pages 273, 274, 275 and 276 out of the Part sent you, and destroy them, inserting these corrected pages in their place.

falling, and with forced rapidity, he treats you with music, if such we may be pleased to style it, that favorably compares with the whistling of the wings of a duck. Again, he produces, with wonderful exactness, the bark of puppies; and, as if to show his skill further, closes with the mew of a cat, only hoarser. These notes are produced with wonderful vehemence in several keys, and with peculiar modifications. As the voice apparently shifts from place to place, the possessor being unseen, it seems to be more like that of a spirit than of a bird. Near you one moment, the next it comes from a distance, so that by these tricks, it is not always possible to locate with any degree of certainty the astute ventriloquist. To convey in human characters this song exactly, is beyond the power of mortals. The following syllables express it with tolerable correctness: *twi-wi-wi-wi-wi-wi*, *hwāwāwāwāwā*, *kūh*, *chī-chī-chī-chī-chī*, *twēīīīīīīīī*, *chwēāh*.

Such herculean efforts as the foregoing are certainly deserving of success. Events justify the thought. A few hours at most, and his song receives a response. Aroused from her absorption, his true love appears. The scenes now enacted are ludicrous in the extreme. He flies about her, utters a few syllables of affection, and at length settles down by her side. His whole expression is one of intense delight. While her lord is thus fairly beside himself with joy, she is of a passive disposition. To one who is not experienced in matters pertaining to bird-life, her conduct would seem to betoken lukewarmness. But it is only the coyness of a modest female. Having won his prize, the happy husband leads the way into some secluded spot, where he lays before her his plans for the future. She immediately assents to them, and soon the pair are found beating in and out of the bushes for a home-spot. As many as two days are often spent in these delightful pilgrimages. At length, one is discovered which combines the essentialities, and a house is erected. In woods that are seldom desecrated by the polluting touch of wicked man, there is manifest but little tendency to concealment. Not so in fields which adjoin his retreats. Here the greatest caution is observed, the nest being built in some almost impenetrable bramble-patch, and so placed as to be out of

reach of the keenest vigilance. If discovered in such a place, it is more the result of chance than good management, and not through any fault of the birds. We have found it often within a forked twig of the common laurel, more frequently in brier-bushes, and not uncommonly in a young oak, where scores of them are growing thickly together.

The nest is from three to four days in building, through the steady, persevering efforts of the architects. In texture it is rather loose, and is made almost exclusively of strips of bark, dry leaves and stems of grasses. In some instances the ribbons of bark are from one-half to three-fourths of an inch in width, and nearly nine inches in length. Such being the exterior fabric, the inner is composed of a thick lining of roots, rather compactly interwoven, and gradually diminishing in size towards the centre. There is a difference in the composing substances observable in nests from the most diverse localities. Some are built of leaves on the outside, loosely aggregated and held together by the small and nearly vertical branches between which they are placed. Within, there is a profusion of grape-vine bark, small sticks, stems of grasses, and a lining of beech-leaves. In external diameter the nest varies from four and a half to five inches, and has a height of about two and a half inches. The cavity is about three inches wide, and the depth one and three-fourths.

Oviposition rapidly succeeds nest-building, and proceeds at the rate of one egg per day. This is followed by incubation, which continues for a period of eleven days, the female performing the whole of the labor. The male seldom forsakes her, save to procure food. He is the most faithful and jealous of husbands, carefully providing her with nourishment, and guarding her from harm. The approach of an enemy is heralded by loud and noisy chatterings between fear and anger, and even frequent attempts are made at repulsion. He is, however, in the height of his glory when by her side, and seeks by many pleasing little ways to relieve the fatigue and monotony of her task. His song at this time is more loud and incessant than ever. Braving concealment, he mounts into the air almost perpendicularly to the height of thirty or forty feet, with his

may be pleased to style it, that favorably compares with the whistling of the wings of a duck. Again, he produces, with wonderful exactness, the bark of puppies; and, as if to show his skill further, closes with the mew of a cat, only hoarser. These notes are produced with wonderful vehemence in several keys, and with peculiar modifications. As the voice apparently shifts from place to place, the possessor being unseen, it seems to be more like that of a spirit than of a bird. Near you one moment, the next it comes from a distance, so that by these tricks, it is not always possible to locate with any degree of certainty the astute ventriloquist. To convey in human characters this song exactly, is beyond the power of mortals. The following syllables express it with tolerable correctness: *twi-wi-wi-wi-wi*, *hwāwāwāwāwā*, *kūh*, *chī-chī-chī-chī-chī*, *twēīīīīī*, *chwēah*.

Such herculean efforts as the foregoing are certainly deserving of success. Events justify the thought. A few hours at most, and his song receives a response. Aroused from her absorption, his true love appears. The scenes now enacted are ludicrous in the extreme. He flies about her, utters a few syllables of affection, and at length settles down by her side. His whole expression is one of intense delight. While her lord is thus fairly beside himself with joy, she is of a passive disposition. To one who is not experienced in matters pertaining to bird-life, her conduct would seem to betoken lukewarmness. But it is only the coyness of a modest female. Having won his prize, the happy husband leads the way into some secluded spot, where he lays before her his plans for the future. She immediately assents to them, and soon the pair are found beating in and out of the bushes for a home-spot. As many as two days are often spent in these delightful pilgrimages. At length, one is discovered which combines the essentialities, and a house is erected. In woods that are seldom desecrated by the polluting touch of wicked man, there is manifest but little tendency to concealment. Not so in fields which adjoin his retreats. Here the greatest caution is observed, the nest being built in some almost impenetrable bramble-patch, and so placed as to be out of reach of the keenest vigilance. If discovered in such a place, it is

ble that man's endeavors could succeed any better; perhaps, not so well. A full-fledged bird might accustom itself to the aviary, and become quite an agreeable pet, but the species has not excited sufficient interest in fanciers to induce them to make the attempt.

As shown in the Plate, the Chat is bright olive-green above. Below, excepting the abdominal region which ends abruptly with white, the color is a bright golden-yellow. The lore is black, and separates the white under eyelid from a superciliary line of the same color above, and also a short maxillary one below. The wings and tail are unmarked, and glossed with olive, while the bill and feet are blue-black. The length varies from seven to seven and a half inches; the wing is about three, and the tail three and a quarter. From the male, the female differs in being smaller, and in the indistinctness of her markings.

The eggs are usually four in number. Nests, however, are sometimes found with three as a complement, and others with as many as five, though rarely. In configuration they are slightly rounded-oval. The ground-color varies from a clear, snowy-white to one in which a slight tinge of yellow is perceptible, and the markings are chiefly reddish-brown, interspersed with a few of a faint lilac color. In some specimens which we have examined, the spots are pretty uniformly distributed over the egg-surfaces, and this seems to be the rule in the same nest-full. Others have them arranged more especially about the larger half, leaving the smaller almost barren of them. It is in the latter that the white ground usually prevails. Variations also exist in size, even in the same locality, for we have often met with eggs that measured as much as .94 of an inch in length, and others but .86, and in breadth from .64 to .70. Throughout its entire range the species appears to be single-brooded. In the Middle Atlantic States this is assured beyond a doubt.

legs hanging down, all the while uttering the most unmeaning rhapsodies, but soon descends as he rose, by repeated jerks.

But when the young are hatched, he ceases these vocal performances and odd gestures, and unites with his mate to render homage and obeisance to the new comers. From early morning until sunset they are busy scouring the fields and woods for insects, both parents never being absent at the same time on this business. Larvæ of various kinds, smaller lepidoptera, and straw- and blackberries are in much demand, and hunted with great perseverance and industry. With age comes an increase in the quantity and quality of their food. In thirteen days from the time of hatching we find them ready to leave the nest, and a week later, they are old enough to care for themselves.

The breeding season being over, both young and old spend the time until their departure in September, in thick brier-bushes, and within close hedges, occasionally, however, forsaking such places for cultivated grounds. Now the song of the male can be heard at midnight, and so fond does he seem of this sort of diversion, that he frequently continues singing until daybreak. The early departure of the Chat is not due to the paucity of appropriate food-stuffs, but chiefly to its susceptibility to cold.

No attempts, as far as we have been able to ascertain, have ever been made to rear these birds from the nest. Their beauty of plumage, if they had nothing else to commend them, would doubtless compensate for the lack of sweetness in their voices. While they might signally fail in their efforts to charm us with rich, mellifluous notes, they could, at any rate, amuse us by the variety, volubility and strangeness of their utterances. A friend of Wilson's, an amateur in Canary birds, once placed an egg of this species under a Canary. In course of time the bird made its appearance, but died on the second day, notwithstanding the best of care and attention which it received, for the hen Canary was so solicitous to nourish the stranger, that her own eggs, which required a somewhat longer period of incubation, were lost in consequence. This being the case, it is not possi-

ble that man's endeavors could succeed any better; perhaps, not so well. A full-fledged bird might accustom itself to the aviary, and become quite an agreeable pet, but the species has not excited sufficient interest in fanciers to induce them to make the attempt.

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AMERICAN OYSTERCATCHER.

PLATE XLVII.

HÆMATOPUS PALLIATUS, TEMM.

American Oystercatcher.

ESSENTIALLY a marine species, the Oystercatcher is never found inland, but abounds along the Atlantic coast of the United States from Maine to Florida, where, in summer, small parties of two or three pairs may be seen together in any given locality, but more especially from New Jersey southward. On the shores of New England, according to Samuels, it is of rare occurrence during the breeding-season. It is, however, in the Bahamas, a group of islands situated but a short distance from our Floridan peninsula, and in the Greater Antilles, that we meet with them in great abundance, frequenting the beaches or small sand-bars, when exposed at low tide. Cory found them common enough on Andros Island in January, and quite unsuspecting; but in June, at Inagua, only a few were observed, and no eggs taken. But for all this the birds are known to breed in the Bahama Islands, as evidenced by the published observations of Dr. Bryant.

Appearing along our coast from the twentieth to the last of April, they manifest considerable timidity, and instantly take to flight when approached by man. Their vigilance is remarkable, and is seldom relaxed, not even while engaged in earnest pursuit of food. While walking along the shore in a dignified manner, with heads turned away, first this side and then that, they do not seem at all impressed with the business before them. But we must not delude ourselves with this idea. Like most of their brethren, when oppressed and persecuted by man, they have cultivated the habit of dividing their attention, and most admirably do they

accomplish the difficult task. Do but watch their movements, in imagination, as the author unfolds to you what he has repeatedly observed. You station yourself upon the beach, out of gunshot reach, and await your opportunity. If you have been so fortunate as to select a well-known resort, and are in season, you may not have long to watch. But patience is sometimes necessary. If you have not this virtue, you must cultivate it. But we will suppose that you have hit upon an opportune moment,—the hour when the birds have returned from the bath, or from a long aerial excursion of pleasure, tired and hungry. Their voices are heard in the distance. Your attention is awakened. You look up, and dimly perceive the moving objects. A few seconds expire, and if you are acquainted with the species, the glittering white of their wings, which show conspicuously, and orange-red bills and feet, tell you at once they are the Oystercatchers. But keep perfectly still, or you might affright them. They see you—an apparently motionless mass of flesh and spirit—and little daunted, pass over your head, and settle some thirty paces away, which is just what you hoped for. Had you perceptibly stirred, you might have been denied the privilege which you now are supposed to enjoy. Do you perceive the stately, deliberate gait, the sideward glance, the statue-like repose? We know you do, and might have saved ourselves the question. But you must not grow impatient, but watch and wait with philosophic coolness for newer revelations. Convinced that nothing is to be feared from you, all heads are at once lowered, and the long, wedge-shaped bills thrust deep down into the moist, yielding sand in search of shell-fish. You repair to the spot, for your curiosity is on tip-toe, and find the ground thickly perforated with oblong holes, some two or three inches in depth. Further investigations will assure you that these holes are not made for any particular species of molluscs, but for other forms of life as well. Tired of the beach, these birds love to burrow in mud-bottomed inlets for the small crabs called fiddlers, which frequent such places. The immense numbers of these, together with mussels, solens, limpets, nereids and marine insects which they daily devour, afford them a dainty, splendid and luxurious living. Some writers assert that they visit the oyster beds for

purposes of feeding, but this is probably a mistake, as they are strongly attached to scenes more contiguous to the ocean.

On the high, dry, and level sands, just beyond the limits of the summer tides, usually where hundreds of drifted shells lie scattered about, they lay their eggs towards the close of May. Their nest is merely a slight depression in the sand, sometimes made by the female, oftener the result of some casualty of Nature. Though humble the spot, and poorly provided with the comforts which render most homes endearing to their feathered occupants, it is, nevertheless, one about which cluster many tender feelings. As the female depends largely upon the heat of the sun and of the sand to hatch her eggs, she only sitting upon them during the night, and when the weather is exceedingly cold and rainy, it might be inferred that she was lacking in care and affection. But no. Let the nest be approached by an enemy, and the solicitude of the parents is at once apparent. The male flies off with a loud scream, while his partner, less demonstrative, runs for a short distance before taking to flight, her object being to throw the intruder off his guard, and thus save the nest from discovery. Such attachment as is shown by these birds for their home and its treasures is really surprising, and is scarcely exceeded by any of our smaller land birds that are accustomed to dwell in the cosiest and most elaborate of dwellings.

When the time arrives for the young to burst the checkered walls of their tiny prison houses, where, pent up for eighteen long, oppressive and weary days, they have been preparing themselves for an earthly career, the parents seem more restless, vigilant and solicitous. One or the other is constantly about. Their appearance is hailed with unfeigned delight. The mother is chiefly entrusted with their care, and, under her guidance, they are brought to maturity. If threatened with danger, at the sound of her voice they squat upon the sand, from which they are not easily distinguished; while the parents hover over and around the intruder, alighting betimes first on this side of him, and then on that, and, by the most distressing cries, endeavoring to arouse his sympathies. Sometimes they seek

to lure him away by counterfeiting lameness. Their notes of remonstrance are a quick, loud and shrill whistle, and sound like the syllables 'wheep, 'wheep, 'wheo. Somewhat similar expressions are made use of while at rest, as well as upon the wing.

In about five weeks from the time of quitting the nest, the young cut themselves loose from the mother's guiding-strings, and fight their own battles with life. They do not wholly withdraw from their parents, but help to form the flocks we see migrating in the fall. A striking feature of this movement is the regularity with which it is performed. Like marshalled troops they hold together in lines, rise, descend and wheel about with wonderful precision, and effect other feats equally remarkable. However disturbed by the sportsman, they fill up the gaps which are wrought in their ranks, and pursue their course in the most perfect order. On the wing they move with considerable vigor and velocity. In running, swimming and diving they are equally expert, and by the last two methods, when wounded, are able to circumvent their enemies.

In their earliest stage the young are covered with down, of the color of sand, and have a brownish-black bar on the neck, back and rump. In their mature state, the head and neck are blackish, with tinge of brown or ashy, and the back ashy-brown. The eyelid, rump, lower parts from the breast, tips of greater wing-coverts, most of secondaries and basal part of tail feathers are white, while the rest of the tail, and the quills, are blackish. The legs are flesh-colored, and the bill and edges of eyelids red or orange. Their length runs from seventeen to eighteen inches, the wing being ten, tail four and a half, and bill three.

The eggs of this bird are three in number, ovoidal in shape, and are marked with numerous blackish-brown spots and blotches upon a creamy-drab background. Their dimensions vary from 2.31 to 2.13 inches in the long direction and from 1.63 to 1.49 in the short. But one setting is yearly laid. In the drawing they appear of natural size, but the birds are considerably reduced.



TURKEY BUZZARD.

PLATE XLVIII.

CATHARTES AURA, (LINN.) ILLIG.

Turkey Buzzard.

FEW species, if any, have such a wide distribution in America as the Turkey Buzzard. It is found more or less abundantly to the Saskatchewan, throughout North America, from the Atlantic to the Pacific coast, and in all portions of South America as far south as the Strait of Magellan. Individuals have been observed in Nova Scotia and New Brunswick, though these birds are generally uncommon north of Central New Jersey. From Eastern Maine, in the neighborhood of Calais, to Connecticut, specimens have been occasionally captured. In a single instance Mr. Lawrence observed a small company of nine at Rockaway, Long Island. West of the Alleghanies, from Central America nearly to the Arctic regions, it occurs more abundantly. Without exception it is found in greater or less numbers in all the Middle, Western, Southern and Northwestern States. From Lower California to Washington Territory, along the Pacific, numerous parties attest to its common occurrence. In the West Indies, the islands of Cuba, Jamaica and Trinidad, the last-named in particular, include it within their faunæ. In Honduras and Guatemala, as well as in the Falkland Islands, off the eastern coast of Patagonia, they are common permanent residents.

In Pennsylvania and New Jersey, where the writer has had many opportunities for studying the species, these Vultures summer quite plentifully. From their first appearance in March, large numbers may be seen, high up in the air, moving in large circles, apparently exploring the ground below for their favorite articles of food. In rural districts they

are more frequently observed than in the vicinity of densely-populated towns. The greater abundance of carrion to be met with in the former is doubtless the cause of this preference. However, in California and Oregon, according to Dr. Newberry, they are quite as common near towns as about the large rivers. In our Southern States they visit cities and large villages, and play the part of scavengers, in company with the Black Vulture. They are said to be so tame and unsuspecting in Kingston, Jamaica, that they roost upon the house-tops, or prey upon offal in the streets. In country places they are quite as familiar and trustful. This is evidenced while feeding. So intent are they upon the business before them, that the presence of human beings is unnoticed, and even when compelled to forsake their booty, sullenly repair to a short distance, but to resume their repast when the annoyance has ceased. The Common Crow has been observed to gather around the same food, and the utmost good feeling prevailed. A small flock will often settle down upon a dead horse, around which several dogs are gathered. The snapping and snarling of these creatures, when they approach the latter too closely, does not cause them to retire, but only to step a few paces aside, when, nothing daunting, they continue their feeding, apparently oblivious of their whereabouts and surroundings.

Although the sense of sight is rather keenly developed in these birds, yet that of smell is none the less so. This is an advantage, for both the visual and olfactory organs are called into requisition in determining the presence of decaying matters. As a proof that smell leads to food-detection, we cannot do better than cite an instance mentioned by Dr. Hill, and given by Dr. Brewer in the work entitled "North American Birds." It was a case where several of these birds were attracted to the house of a German emigrant who was prostrated by fever, by the strong odor escaping from his neglected food which had become putrid. Mr. G. C. Taylor, whilst a resident of Kingston, sufficiently tested their power of smell. He wrapped the carcass of a bird in a piece of paper, and flung the parcel into the summit of a densely-leaved tree, in close proximity to

his window. A moment or two elapsed, when the keen smell of these birds scented something edible, but they were unable to find it, for the obvious reason that the object was hidden from view by the enveloping paper.

Generally, their food consists of all kinds of animal matter. They are often accused of egg-sucking, and also of eating the young of Herons, as well as those of other birds. In Trinidad they are said to live on the most friendly terms with the poultry. As no breach of faith has been reported to have occurred in this instance, it is not likely that they would molest in any way our smaller birds, at least we are not cognizant of any such cases of interference, from our own observation, nor do we find them in the recorded experiences of our friends. They are worse-disposed, it seems to us, to their own kith and kin. When several are together, the most violent wrangles occur over their booty. Each strives to get the lion's share. It is rather amusing to witness their manœuvres. A fellow has just discovered a very choice bit, which he is endeavoring to make away with in a somewhat hurried manner, but before he has accomplished the task, he is soon beset by a near companion who has scarcely swallowed his morsel. A conflict ensues. The latter being the stronger, succeeds after a while in defrauding the other of his rightful property. When gorged, these birds appear stupid and indisposed to exertion, the period of digestion being ordinarily passed in a motionless, listless attitude, with half-spread wings.

Recovered from their semi-stupid condition, they do not at once go to feeding again, but pass a long time in the healthful exercise of their volant appendages. Few birds are more graceful, easy and dignified while on the wing. On the ground they may seem awkward, but it is while soaring above the earth that they are seen in all their glory. When prepared for their lofty flights, they spring from the ground with a single bound, and, after a few quick flappings of the wings, move heavenward. Having attained a great elevation, they move through the ether in ever-widening circles, or sail on nearly horizontal wings, the tips above being

slightly raised, with steady, uniform motion. These aerial diversions are never performed singly, but in small parties of a dozen or more, and are more common in early spring, and at the close of the breeding-period, than during the intervening time. It is also to be remarked that they are executed in silence, for the Turkey Buzzards, like their indigenous American relatives, are a mute species, the only sound of which they are capable, being a kind of hiss, which has not been inaptly compared to the seething noise emitted by plunging a hot iron in a vessel of water.

When ready to breed they look around for a hollow tree, or some stump or log in a state of decay, either upon the ground, or but slightly elevated above it. Generally, there are no indications of a nest. In occasional cases a few rotten leaves are scratched into the hollow selected for the deposition of the eggs, the latter being laid without any previous care having been taken for their preservation and shelter. In Southern New Jersey, we have sometimes strayed upon the nest in the midst of a deep and almost impenetrable morass, placed within an excavated stump. Within the rock-caverns along the wide, shallow Susquehanna, as many as a dozen nests have been observed in a few hundred yards of space, often as early as the last week of March, when the weather was favorable, but generally not till the middle of April. A few individuals have been known to remain in the vicinity of their breeding-quarters through the entire year, when the winters are not extremely rigorous. At Parkersburg, near the western boundary of Chester County, T. H. Jackson, of West Chester, Pa., has found it breeding; but within Philadelphia it rarely does, if at all. In Delaware County, paired individuals have been observed early in April under rather suspicious circumstances. In Southern Ohio it is a common summer sojourner. Mr. Gosse, in speaking of the birds in Jamaica, says that they nest in depressions in the rock, and in the ledges thereof, in retired localities, and also upon inaccessible cliffs. On Galveston Island, Audubon found the birds nesting in great numbers either under widespread cactus branches, or underneath low bushes, in the midst of tall grasses in level saline marshes.

In the vicinity of Cheraw, S. C., Dr. C. Kollock, as mentioned by Brewer, met with the Black and our present species as quite frequent denizens of the interior of swamps and dense forests, where they congregate in vast numbers during the entire year. These places are commonly designated Buzzards' roosts. Audubon once visited one of these roosts in the vicinity of Charleston, which covered more than two acres of ground, and which was completely denuded of vegetation. On the banks of many of the rivers of Southern Texas, Mr. Dresser found them nesting in large numbers, the timber along their borders constituting comfortable and secure shelter. Contrary to what has always been entertained, he affirms that they build large and bulky nests of sticks, which they place at great heights in an oak or cypress, close by the river-banks. Captain C. C. Abbott says that in the Falkland Islands the eggs are deposited in the midst of bushes beneath high banks, or on the summits of decayed balsam logs, during the early part of November, either upon the ground, or on the bare surface of a log. In certain localities, where the birds are not very common, paired individuals are frequently met with.

The eggs are generally two in number, although instances are known where but a single one is deposited. On the Falkland Islands they are said to lay three occasionally. In the West Indies, especially in the Bahama group, the nest-complement is the same as in the United States, and there does not seem to be any difference in the habits of the birds that abound in the latter country. Specimens from New Jersey, Texas, and South Carolina are creamy-white in ground, and are variously marked with divers shades of brown, intermingled with splashes of lavender and purple, which are often so faint as only to be perceptible upon close inspection. Brewer mentions a variety from near Cheraw, S. C., that was nearly pure white, and which showed but a few small red and slightly purplish lines and dots about the larger extremity. Recently, we have met with some from Texas answering the same description. In dimensions these eggs vary but little, and have, on the average, a length of 2.78 inches, and a width of 2.00, or rather less.

The duty of hatching falls not exclusively to either sex, but is shared by both. The time required to bring out the young is, under the most constant sitting, about twenty-two days. While occupied with family-matters the birds are seldom visited by strangers, and are allowed to rule in their own chosen realm with undisputed sway. Only the hardened collector has courage to enter their disgusting abodes, and rifle them of their treasures, a business not difficult of accomplishment, for the birds instantly vacate, and become silent watchers of the pillage. These birds do not seem to possess a particle of spirit, and are as cowardly as they are big. When captured they offer no active resistance, but very effectually warn off their aggressor, by disgorging the half-digested contents of their crop. When being killed they are perfectly passive and apathetic. Dr. Coues affirms that they will often simulate death when captured. On one occasion, an individual being shot, was picked up for dead. While being borne to his tent it was perfectly limp. Reaching his quarters, he carelessly threw it upon the ground, and went to work at something else. After a brief spell he looked around and beheld, to his surprise, that the bird had changed its position, and was furtively glaring around. On going to it, its eyes immediately closed, its body became relaxed, and it lay completely motionless, and apparently dead. After compressing its chest for several minutes, until he fancied life to be extinct, he dropped the bird, and repaired to supper. On returning, the bird had disappeared, it evidently having scrambled into the bushes as soon as his back was turned. This strategem is not new, and has been frequently observed by us, although unrecorded.

What they lack in courage they more than make up in the attention which they bestow upon their offspring. Like their parents, the latter are gluttonous feeders, and must be nourished at frequent intervals during the entire day. Their diet at first is the half-changed matter which is forced by the parents in their mouths. When they have been blessed with the use of their eyes, which occurs during the second week of their life, they are able to masticate small bits of meat that are brought to

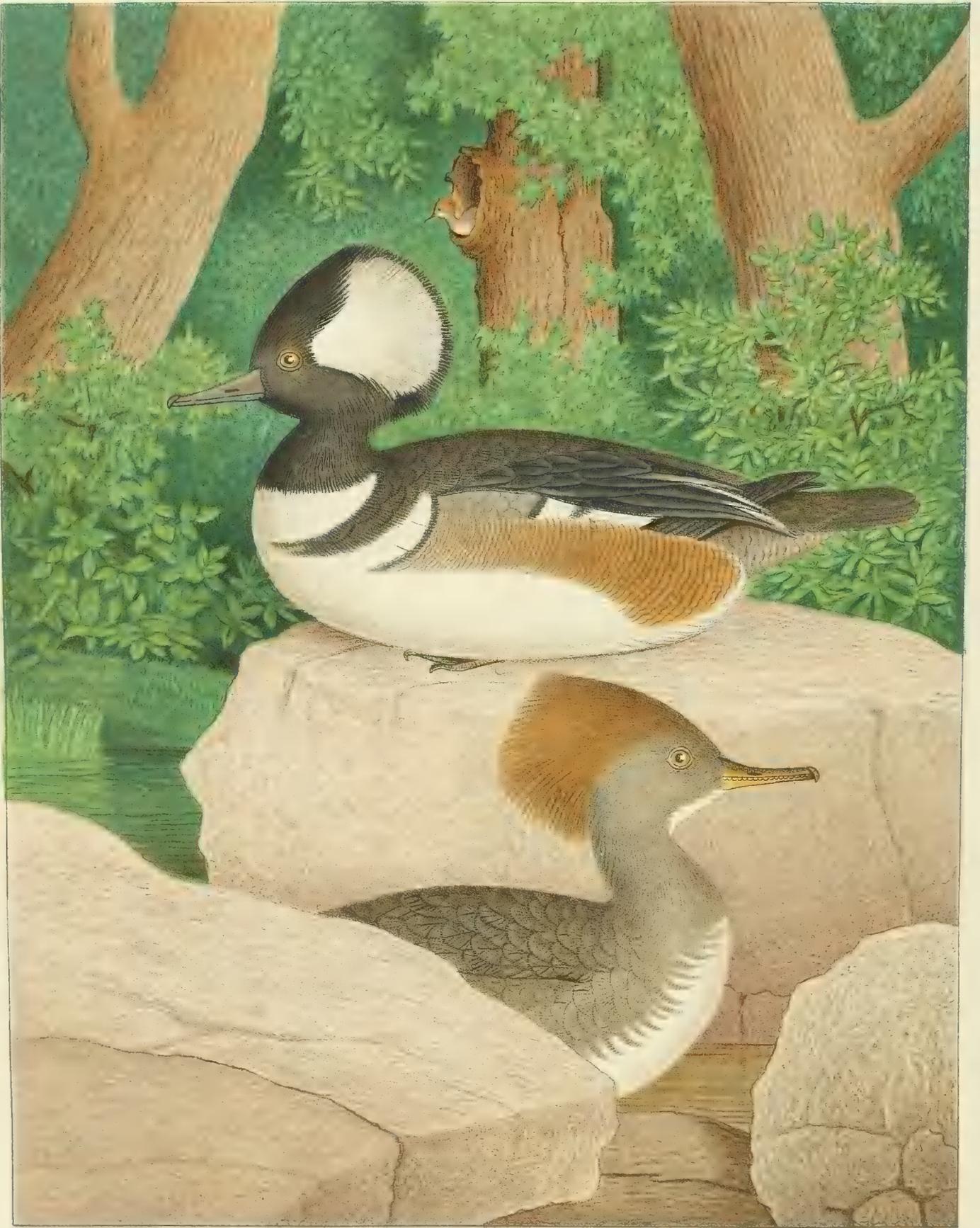
them, although the early method is still kept up until they are ready to hunt for themselves. This matter, together with that of an excrementitious character, which is found about the nest, renders the latter exceedingly offensive, and is hardly endurable to persons of weak nerves. But where numbers breed together the foulness of the resort is indescribable.

The young are covered at first with a whitish down; but as they increase in age, soon show traces of what they are to be, but of the precise period when they attain the adult plumage, we are ignorant. When they quit the nest they appear with the bill and naked skin of the head and neck, of a livid blackish hue, and the back of the head and nape with more or less of whitish down. Their dress is more uniformly blackish, the brownish borders above being less distinct, and the reflections rather green than violaceous. Mature birds have the bill white, the feet flesh-colored, and the head red. The general plumage is blackish-brown, and the quills ashy-gray on their lower surfaces. The skin of the head presents a wrinkled aspect, and is sparingly invested with bristle-like feathers, the plumage proper commencing in a circle on the neck. The nostrils are quite large and open, the iris umber, and the tail rounded. In length they measure about two and a half feet, and have an extent of nearly six. The tail is one foot long, and the wings two.

Notwithstanding their filthy habits, which render them obnoxious in the eyes of many persons, their harmless, peaceable natures should command for them respect from the lords of creation, even though they should not possess other claims to popular consideration. Like their nearest relations—the plundering Buteos and Falcons—they offer no harm to their smaller brethren, nor detriment to the husbandman's stock of poultry. They are essentially a useful bird, and in the Southern States where their services are most in demand, both they and the Black Vulture are protected by law, a fine being imposed upon any who should wilfully destroy their lives. But in more northern sections they are persecuted with impunity. Hence their avoidance of the residence of man. As scavengers we recognize in them great benefactors, and when left in undisturbed possession of

their freedom, they come in and go out among their human brethren, and seldom show the repulsive side of their character. In not endowing these birds with the same great force of character which she has lavished upon the Falcons, Nature has provided them with a means of defence, which is as serviceable to them as the powerful talons and bill of their courageous brethren.

Respecting the resident range of this species, as compared with its summer dispersions, it has not been observed to winter on the Atlantic seaboard beyond New Jersey, and is even more abundant here in summer than in the cold season. In Washington, where the bird is said to be quite common, no important diminution of its numbers has been noticed during several successive winters. In both the Carolinas the same condition of affairs is found to exist. Its winter range in the interior seems to be higher up, perhaps as far north as Minnesota, for it has been observed here late in October, and again in December, but the latter may have been an accidental occurrence. According to Dr. Coues, the isothermal line corresponding, on the Atlantic coast, with the fortieth parallel of latitude, may approximately indicate its farthest northern limit in the winter.



HOODED SHELDRAKE.

PLATE XLIX.

LOPHODYTES CUCULLATUS, (LINN.) REICH.

Hooded Sheldrake.

THE habitat of this species is nearly co-extensive with the whole of North America. Throughout considerable portions of the United States it is chiefly migratory, being seen only in the spring and fall. In the Missouri region it is the most common of the three species that inhabit this country, and is said by writers to breed in Northern Dakota, and also on the Upper Missouri and Milk rivers. It was found along the banks of the Yellowstone by the party under Lieutenant Warren, and by later expeditions, on the Green River. In New England, according to Samuels, it is less plentiful than any of the other Sheldrakes during the autumn, winter and early spring, but more recent writers—Messrs. Rich and Deane—have found it a not uncommon breeder in hollow stumps on Lake Umbagog. In Central New York, Eastern Pennsylvania and New Jersey it is quite often seen *in transitu*, and in some localities a few are known to winter. But the majority, after spending the summer in the northern parts of the United States and the British possessions to their utmost limits, only quit these haunts when the streams have become frozen, for the creeks and rivers of our Southern States, and the still warmer climes of Mexico and Cuba. E. W. Nelson says they are common winter residents upon Lake Michigan, and breed sparingly throughout the State of Illinois.

Though mainly an inland species, having a fondness for ponds, lakes and fresh-water streams, yet it does not confine its visits exclusively to such resorts, but forsakes them during very cold weather for the seashore,

where it can pursue its calling untrammelled by the accidents of winter, which are more certain to affect fresh than salt waters. By the sporting fraternity it is now called the "Hairy Head," an appellation which it fitly deserves, for the high, beautifully-rounded and particolored crest which so gracefully adorns the head, is rendered more conspicuous in the absence of the usual decorations which Flora had so recently lavished upon the landscape.

Like most Sheldrakes, in common with the Ducks and Geese, this species depends upon the water for the principal portion of its food. Consequently, it spends considerable time in swimming, and being endowed with keen sight, is able to discern its prey at some distance below. With the possession of this wonderful faculty, it unites great skill and nicety of address. Its movements upon the glassy liquid surface are performed with silence and gracefulness, so as not to produce undue alarm to the finny tribes and creeping things that dart hither and thither, or crawl their slimy lengths along the oozy or pebbly bottom; and the stroke of the head, when one has crossed its line of vision, is as rapid and unerring as the swift motion of the Heron when he deals the death-giving blow to some luckless reptile that has just emerged from its quiet retreats. In the case of the Sheldrake, it is not merely the head and neck that are immersed, but often the entire body receives the watery bath, especially when the game is out of ordinary reach. These baths are enjoyed; for no sooner has the bird arisen with its feathers glistening in the sunlight like gembedecked armor, than, with one slight ruffle, the jewels are dashed to pieces, and it is ready again. Fish, small crabs, molluscs, seaworms, reptiles, and such like creatures as dwell in water, are eagerly hunted and eaten. On the dry land, beetles, grasshoppers and lepidoptera contribute their share to its varied and voluminous *menu*.

When the spell of winter has been broken, and thousands of small birds are wending their way northward in April, the Sheldrakes catching the contagion of migration, leave their winter haunts, and following the great arteries of our continent, slowly journey northward. After a little

they bid adieu to these essential guides, and betake themselves inland, where by the grassy margins of lakes, ponds and small streams, in retired and unfrequented localities, in the declining days of May, or dawn of laughing June, they select their partners, and enter upon the duties of housekeeping. Around the bayous of the Ohio, on our Northwestern Lakes, by the borders of Hudson's Bay, and on the River St. Peters, they delighted to raise their numerous families in the happy days of Audubon, and there they still find suitable quarters, almost undisturbed by man and his minions. In our own beloved country they breed less abundantly, and only, as far as can be ascertained, in the regions, noted above, adjacent to British America.

In the holes of tall dead trees, or on the tops of stubs, twenty, thirty and forty feet from the ground, seldom higher, the female places her nest, giving it a warm and cosy lining of soft grasses and feathers. She has everything her own way, the male seemingly manifesting little or no interest. Here she deposits her treasures, and relieved of her mate, who dwells by himself in some remote and secluded locality, instantly repairs to its precincts, and for nearly three weeks remains a very assiduous and persevering sitter. Like the Wood Duck, when about to leave the nest for food, she is careful to cover her eggs with some of the materials of the nest, to prevent them from becoming cold. Though not often constrained to leave them, but when she does, she is apt to remain away for a considerable time, but not long enough to endanger the developing life within.

The eggs are thick-shelled, somewhat spherical, more so than any other species of Duck, and a trifle more pointed at one extremity than the other. They are of a clean-white color, but in some instances are made to appear somewhat yellowish on the surface, which is to be attributed to stains produced by moisture from the feet of the sitting-bird. From the other Sheldrakes they may be readily distinguished by color and size, but should these fail, which is not likely to prove the case, their identity may be recognized by a peculiar noise which is made when two of these eggs

are struck together, the sound produced resembling nearly that of a couple of ivory balls when submitted to the same treatment. In size there is considerable variation, but in no instance will the eggs be found to rival the others in dimensions. The average length is 2.13 inches, and average breadth 1.72. Samuels mentions specimens that were 2.30 by 1.75, and others, more rounded, that measured 2.10 in transverse diameter, and 1.80 in the other direction.

Though jealous of her treasures, yet the female is not known to risk her life to save them. If the nest is approached, she maintains the utmost silence, and only ventures out when terrified by heavy blows on the trunk of the tree which contains her nest. Driven out, she seeks the pond or stream close-by, and from its bosom surveys the actions of the intruder, with not so much as a cry of remonstrance. If the latter is hidden from view by the dense vegetation, she quits the water, circles over and about him, and is always careful to keep out of reach of harm. Her quiet demeanor and intense watchfulness betoken the distress and anxiety that reign within, and, to a person of the least particle of sympathy, are enough to cause him to give up his desire for pillage, forsake the scene, and leave that mute witness of his contemplated wrong in peaceful possession of her property.

In course of time the young are hatched. Maternal joy is now at its height. However, the parent does not permit herself to be so completely carried away thereby, as to lose sight of their interests, but sets to work to remove them from their closely-cooped quarters. If their home is some distance from the water, she carries them one by one in her mouth, and lays them down by its banks. In changing from one stream to another, where some space intervenes, this is her ordinary method of transportation in their early ages. Almost as soon as the chicks have been placed in sight of the water, they require no coaxing to induce them to enter, but impelled by feelings of instinct, they plunge into its depths, and act as though they had been there before. While disporting themselves in the aqueous fluid, the mother exercises a strict surveillance, to prevent being

surprised. If taken unawares, she utters a chattering, guttural cry. The whole brood dive and swim off under water to the shore, and conceal themselves in the dense herbage. While the young are disappearing, the mother counterfeits lameness, and by every conceivable stratagem known to her, endeavors to lead the intruder away from the spot. Succeeding in this, she takes to wing and flies off. If apprised of the approach in season, before the person has advanced within gun-shot distance, she swims away with great rapidity, her brood following after, until they have reached a bend in the stream. Here, out of sight of the pursuing party, they make for the shore, creep silently out of the water, and hide themselves until the object of their dread has disappeared. The female Wood Duck often encroaches upon the domains of this bird, and the most unhappy consequences follow.

When the young are able to provide for themselves, the male emerges from his solitude, and consorts with his family. Both old and young hold together during the remainder of the season, and then unite with other small flocks to constitute the larger ones which are seen in migration in the month of October. Young birds, when about two-thirds grown, are in great demand for the table, as they are excellent eating. From their habit of flapping the wings on the water, when endeavoring to escape pursuit, they have been called "Flappers." It is probable that they do not attain their full plumage until the next spring. Nuttall says the upper plumage is browner than in the adult, and the white speculum and bands on the tertiaries less perfect. The black and white bars on the shoulders, and the white stripe behind the eye, are wanting. On the head, neck, and upper portions of the breast, a soiled pale-brown color prevails, which is edged with whitish on the last. The chin is inclined to white. The bill is black above, and orange below, and the crest but slightly developed.

The adult male is black above, with two crescent-shaped spots before the wings, and a bar across the speculum, of the same color. The sides are chestnut, and striped with black, while the lower parts, speculum, bands on tertiaries, and crest-centre, are white. The nostrils are sub-basal,

and the bill nearly or quite black. His length is from eighteen to nineteen inches, and wing about eight.

From her lord the female differs somewhat in size, being smaller, and in a most marked degree in plumage. The two are easily distinguished. The compact, erect, semi-circular and side-compressed crest is smaller and less rounded; the head and neck are brown; back and sides dark brown, with paler edges to the feathers, and white on wings of less extent. The lower mandible is reddish at base. Upon comparison with the above description of the immature bird, it will be observed that a striking resemblance obtains between the two. Where the sexes materially differ in plumage, the rule seems to be that the young males take on the characteristic dress of the mother before assuming that which is to distinguish them later in life.

The disposition of the Sheldrakes to nest in obscure situations, remote from the haunts of man, and often difficult of access, perhaps, has much to do with the ignorance that enshrouds their history. Were they better known, and more easily approached, they might be subdued by the skill of man, and be made to associate with the Mallard, whose ancestors still live in a feral state. A little patience is all that is necessary to carry the project to completion, if it should be attempted, and reasoning from the success of the plan in the case of the Wood Duck—a species remarkably similar in general habits—we entertain no doubt as to its practicability. But would the plan be feasible? This is a question that we are not prepared to answer. At any rate, it is worthy of an effort. If the trial has ever been made, we are not aware of it, nor can we find anything in the literature of ornithology to warrant us in saying that it has. Beautiful in plumage, and noted for their grace, skill and ease upon the watery element, they might become interesting denizens of man's surroundings, even though they should never, by their usefulness, fully repay him for the care and expense which he would necessarily be compelled to bestow upon them.



BLACK-CRESTED FLYCATCHER.

PLATE L.

PHAINOPEPLA NITENS, (Sw.) ScL.

Black-crested Flycatcher.

THIS very remarkable bird was originally described from Mexico by Swainson, and appears to have been first assigned to our fauna by Colonel George A. McCall, who met with it in 1852, while traveling from Vallecita to El Chino. It is said to occur in mountainous regions throughout the southern portions of California, Nevada, New Mexico, Arizona and Texas, and probably in parts of Colorado and Utah. In Southern California, according to B. W. Evermann, of Bloomington, Ind., who has devoted considerable time to the study of its habits, it is quite locally distributed, and is rather a common summer resident in the smaller valleys and canyons, but is rarely observed "in the larger valleys or more open level country." Among the foot-hills in the vicinity of Fresno Flats, he encountered considerable numbers on the evergreen oaks, in July, 1880, but only a single pair at the entrance of the Yosemite Valley, and these were perched high-up in a tall sugar-pine, not silent, however, but calling to each other in their own peculiar fashion.

Our friend's first acquaintance with this species was made in the delightful valley of Santa Clara in October, 1879, while collecting Gambel's Sparrows. Intent upon the business before him, he was pursuing his way along a fence, when a strange bird, light and graceful upon the wing, was seen nervously moving from one point to another, ever and anon darting at some passing insect, and uttering in the intervals of feeding the oddest and most querulous note he had ever heard. This note, says our informant, was "full of sadness, desolation and despair." Never before

had he been so affected by song of bird as by this. Since then several opportunities have been afforded him, and many an hour has been spent in listening to its song.

In the lovely month of May, of the year that has just passed, while watching two pairs engaged in nesting, he was treated to a delightful and gratuitous serenade, late in the evening, when most birds had retired to their perches. Ceased from their labors, they had taken their stations upon the topmost boughs of the live oaks which supported their nests, when one of the males instantly tuned his pipe, and gave expression to the sweetest yet saddest of refrains, which was "low, slow, sad and indescribably delicious and fascinating." Mr. Evermann, in speaking of it, says: "I could think of nothing with which to compare it, but at times I thought I could detect a slight resemblance to the lowest, most subdued notes of the Sickle-billed Thrasher." The song is certainly wonderful and unique, and should entitle its author to a very exalted position among singing-birds. From all accounts it is most generally heard at nightfall, and only occasionally in the early part of the afternoon. Of the few writers who have treated of this species, Doctors Coues and Cooper seem to be the only persons, besides the one we have just referred to, who are willing to credit it with musical ability.

From their winter-home in Lower Arizona and Mexico these birds reach Southern California from the fifteenth to the twentieth of April—males and females together. At first they are somewhat gregarious, not from feelings of sociability, if we are rightly informed, but from the presence of favorite articles of food which abound in certain places. Though insects constitute a very considerable portion of their diet, yet like their supposed nearest affinity—the Cedar-bird—they are fond of the various berries that are to be found in their accustomed haunts. The fruit of the mistletoe is said to give them abundance of nutritious food during their entire stay. Henshaw says: "Large numbers of this species were found, on several occasions, in the canyon back of Camp Apache, Arizona. As they were noticed nowhere else in this vicinity, I judged that the abun-

dance of mistletoe berries here served as an attraction. These they were greedily feeding upon" The same author found immense numbers gathered together in the canyon at Camp Bowie, Ariz., feeding upon a species of wild plum and also of grape, fruits of which they were particularly fond. Their predilection for the berries of the mistletoe is attested to by other writers no less eminent.

Though close and vigorous feeders, yet they do not carry their greed to the extent that the Cedar-bird does, which, as we have seen, never seems to be in any very great hurry to enter upon the duties of nidification. The cares of the household early engross their attention. The flocks break up into pairs, and the latter soon start off in quest of suitable nesting places. The tree selected in Southern California appears to be the live oak exclusively, but in other localities, the mezquite sometimes shares with it the honor. Of seven nests examined by Evermann, four were saddled on a horizontal limb from four to twenty-five feet above the ground, and near the end; one was placed upon three small twigs, another upon two, and the last in a forked branch, thirty feet high, and in the extreme summit. In the work of building there seems to be no division of labor, and each bird appears to act independently of the other. The utmost caution is taken to prevent discovery. When a suitable twig, or other substance has been found by either, it is not carried directly to the nest, but the finder first flies to a neighboring bush or tree, where he alights for a brief spell, and shows his anxiety by a nervous twitching of the tail. Uttering a call, he spreads his wings for flight, and glides swiftly to another tree, and perhaps to another, each time approaching nearer and nearer to the nesting-tree, the bright white spot upon the wing gleaming in the sunlight in vivid contrast with the black body-color. If aware of your presence, he seemingly endeavors to delude you, for just when you think you are sure of his location, if you have not already discovered it by observation, he disappoints you by flying to a more distant tree, where he ceases his notes, rests awhile, but only to resume his hitherto circuitous flight directly to the wished-for spot. While working upon the nest the

most perfect silence is maintained, and the builder always leaves in the direction opposite to that by which he entered. The routine was so closely followed by Evermann, that he could generally guess with tolerable accuracy what movements were in contemplation.

We are told that from five to eight days are required for the completion of the domicile, and that laying commences on the day succeeding this event, one egg being laid daily until the full nest-complement is reached. By the fifteenth of May the birds are ready for incubation, although in some cases this business is entered into by the fourth, and occasionally not until the nineteenth of the month.

Respecting the number of eggs laid, Mr. Evermann finds that three is the usual number, although up to the time of his observations, it was the opinion of ornithologists that the birds deposited but two. Seven nests were secured by this collector, in the vicinity of Santa Paula, Cal., and all excepting one were found to contain three eggs, and this had but two. Dr. Cooper gives but two as the ordinary complement, and he is the first individual who called attention to the nest of the species. This structure was found near Fort Mojave, on the Colorado, on the twenty-fifth of April, and was placed in a mezquite branch at a height of twelve feet from the ground. No further particulars were given of this find, until Dr. Brewer described it in the first volume of the "History of North American Birds." Substantially, he says the nest was a very flat affair, four inches in external diameter, not two in height, and with a depth of cavity of less than an inch. It was composed almost wholly of flax-like fibres, fine grasses, plant-stems, and stalks of larger size, variously interwoven, and lined with a soft downy material of vegetable character.

This notice of Dr. Cooper's nest, though probably authentic, is thought by Coues not free from suspicion. The material of Captain Bendire, which may be found described in the Proceedings of the Natural History Society of Boston, though ascribed by Brewer to Townsend's Flycatcher, unquestionably belongs to the Black-crested, for the nest and eggs of the former

are too well known, through the exertions of Mr. Wilbur F. Lamb, of Holyoke, Mass., whose interesting narrative appears in the Bulletin of the Nuttall Ornithological Club, for 1877, to lead any intelligent naturalist to refer it thereto. Recurring to the subject, in the Appendix to the above "History," Brewer re-describes the Bendire material, although in very unsatisfactory terms. He says the nest was found saddled, most generally, on a horizontal branch of a mezquite tree, and is a shallow, nearly flat structure, measuring four inches across, and having a cavity two and a half inches in diameter, and one-half an inch in depth. Fine sticks and fibres of plants make up the external bulk, and within a little down of the cottonwood and a stray feather. The first nest, which was found May 16, was mainly lined with the shells of empty cocoons. Though the captain met with more than a dozen nests with eggs and young, yet, astonishing to say, he never found more than two in a nest—a striking contrast to Evermann's observations. In attempting to reconcile the difference he honestly says: "The thing is perhaps accounted for, and I am very positive about my views being correct, that in California they [the Black-crested Flycatchers] raise only one brood, while in Arizona they raise two and three." There is no doubt of the correctness of his opinion, for in this, as in many other species, the number of eggs in a set is probably larger in the northern parts of the breeding-range than in the southern, the difference being made up by the greater number of broods annually raised in the latter.

There seems to be considerable uniformity in the character of the materials utilized in nesting. Before us are six nests from Southern California, and, on close examination, each seems to be the exact counterpart of every other. Fine grass, small sticks, thin hairy stems, vegetable fibres and wool, empty cocoons and seed vessels, the latter attached to their stalks, curiously and ingeniously matted together, and presenting a rather even surface, considering the abundance of sticks utilized, make up nearly the entire structure. The cavity exhibits the same materials, but then they are more smoothly adjusted by the builders. None of the nests before us are per-

fectly round, such as we sometimes see in the Wood Pewee's lichen-clad home, but are somewhat eccentric in contour. The same irregularity is usually a conspicuous feature of the inside. In external diameter they are nearly four inches, and in length vary from one and a half to two, one side being sometimes a half inch thicker than the other, not an accidental occurrence, but probably the result of design, due, no doubt, to the position of the nest upon the branch, the thicker part looking outwardly where exposure is the greater. The depression is two and a half inches wide, and the depth usually but a half, but varying from that to as much as an inch. In the Plate it is represented natural in size, and saddled upon a horizontal branch of the live oak, a short distance in advance of the builders.

The eggs, two or three in number, are of an oblong oval shape, and vary from a greenish-white to a lavender and a grayish-white ground-color, and are rather strongly marked with small, distinct spots of divers shades of brown, interspersed with fine dottings of slate, which are pretty uniformly diffused over the surface, although most abundant about the larger extremity. The distribution of these spots presents some marked variations, but, according to our experience, a uniformity prevails in eggs of the same clutch. A set of three before us shows the following measurements: .94 by .69, .94 by .68 and .93 by .68. Incubation begins immediately after the eggs are laid, according to Mr. Evermann, and is the exclusive duty of the female for about fourteen days.

The young male partakes of the coloration of both parents, but the adult is a uniform lustrous black, the monotony of which is in a measure relieved by large white patches upon the wings, most of the inner web of each primary feather, excepting the first, showing this latter color. The female is brown, the white on the wings being much restricted, or obsolete. Their entire length is about seven and a half inches, wing three and three-fifths, and tail four and a quarter.

Part 1.

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ILLUSTRATIONS

OF THE

Nests and Eggs

OF

Birds of the Middle States,

With Text.

BY

THOS. G. GENTRY.

PHILADELPHIA:

J. A. Wagenseller, 23 North Sixth Street.

1880.



CEDAR-BIRD

THE
NESTS AND EGGS
OF
Birds of the Middle States.

PLATE I.

AMPELIS CEDRORUM, SCLATER.

Cedar-Bird.

THE CEDAR-BIRD, though mainly a denizen of the wooded regions of North America, is occasionally met with in cultivated fields and orchards. But, wherever found, it is the same gregarious, nomadic species.

In the Middle States, after the beginning of October, the search for food so completely engrosses the attention, that it is not until the latter part of May, or the beginning of June, that the flocks break up into pairs.

Nidification now becomes the all-absorbing passion, and the birds after mating, which business is generally conducted in a quiet and unostentatious manner, repair to the woods or hedges in quest of a suitable shrub or tree in which to establish a home. This matter requires considerable labor and care; and, ordinarily, no little time is devoted thereto.

The place usually selected, is a retired and unfrequented thicket or nook; or occasionally, an orchard in close proximity to an unoccupied dwelling. When the former, the cedar, with its tall, nearly vertical branches and dark green foliage, is, of all our forest-trees, pre-eminently

fitted to receive, support, and conceal the nest; when the latter, the apple is accorded the preference.

Having chosen the locality, the birds waste no time in idleness, but apply themselves to the task of building, with the most commendable zeal and perseverance. Each bird has its allotted part of the work to perform: the duty of the male being to collect the materials; that of the female, to shape and fix them in their proper places. Occasionally the latter, when not thus occupied, accompanies her partner in his frequent journeys, and assists in collecting and bringing in his load. The time employed in the labor of construction, making due allowances for recreation and rest, is between five and six days.

In form, the typical structure is nearly hemispherical, and presents a rather neat and elegant appearance. It is compactly made, and, in the generality of instances, exhibits anything but bulkiness. In position, it rests upon the horizontal limb of a tree, or is wedged in among several upward-growing branchlets, at elevations varying from three feet to about twenty.

During the period of nidification, almost any substance, having the requisite flexibility and strength, is in demand; consequently, the materials of composition are as varied as they are numerous, and depend in a great measure upon the *environment*. In thickets, small twigs, stems of grasses, dried leaves, lichens, and the tendrils of the vine, make up the bulk of the structure; but in places situated in close proximity to houses, wrapping-twine, strips of rags, and such other substances as are ready prepared and accessible, are utilized. The lining is generally fine roots of grasses, bits of string, flower-stalks, lichens and tendrils. The cavity seldom exceeds three inches in width, and scarcely two and a half in depth; while the external diameter varies from four and a half inches to five; and the height, from two and a half to three.

By far the most beautiful structure which the writer has ever seen, is the one which is figured. This nest was obtained in the vicinity of Bridgeton, N. J., in the summer of 1878, and was neatly erected upon the

horizontal branch of an oak, and held in position by two nearly vertical branches of the same tree. It was placed at a height of nearly twenty feet above the ground, and consists almost exclusively of fibres of the long greenish-yellow lichens which constitute so conspicuous a feature of the trees of that locality, in their sylvan retreats. Externally, besides a few fine rootlets, there is noticeable much white wrapping-string, which relieves, in a great degree, the monotony of the fabric. Internally, there is the same green moss-like lichen. The cavity is beautifully symmetrical, and measures about three inches in width, and nearly two inches in depth. The external diameter is five inches, and the height, two inches. The nest is most elaborately finished, and is evidently the workmanship of superior mechanics. The Plate represents it three-fourths the natural size, placed upon an apple branch.

Another fabric which the writer possesses, and which was obtained in June, 1871, in Germantown, Pa., was saddled upon the horizontal branch of an apple-tree. It is rather firmly and compactly built, and is composed, exteriorly, of stems of the common timothy, fine rootlets, dried leaves of the mullein, and green leaves of the apple, which are held together by broad strips of colored rags, bits of lint, and divers strings, the latter constituting a prominent feature. Interiorly, there is a promiscuous lining of flower-bearing stems, fragments of strings, fine roots of grasses, fibres of linen, and tendrils of some species of cucurbitaceous plant. The nest is about four and a half inches in external diameter, and nearly three in height. The cavity is three inches wide, and two and a half inches deep in the middle.

This last model of architecture, as already remarked, was placed upon the limb of an apple-tree, near its extremity, and barely at a distance of fifteen paces from an occupied dwelling. The rags, etc., which form such a prominent feature of the outside, were purposely furnished by an inmate of the house. When first proffered, it was thought that the birds would be slow to perceive the use to which they could be put, but not so, for they entered into the idea with the most praiseworthy alacrity. And even after the materials were no longer supplied, they would repeatedly fly to the

bush upon which they had been laid, as though soliciting a continuance of such favors.

The birds having constructed their home, the female commences on the day following its completion to deposit her complement of eggs. The time thus spent varies from four to six days, and depends upon the number which is to constitute a setting. Oviposition being accomplished, incubation follows, sometimes immediately on the deposit of the last egg, but, not generally, until the succeeding day. This is the exclusive task of the female for nearly fourteen consecutive days. Although the male does not assist in the labor, yet he shows himself to be a very kind and attentive husband, by providing food for his partner, and keeping a vigilant lookout for approaching enemies. This he signals by a low single note, which the female quickly acknowledges, and instantly the two timid creatures beat a hasty retreat to an adjoining tree or shrub beyond the reach of peril, where they become passive spectators of the demolition of their home, with all its precious burden.

The eggs, which are from four to six in number, resemble those of the Waxwing, but differ in size, being somewhat smaller. Their ground-color passes from a light slate to a dark stone-color. The markings are chiefly blotches of dark purplish-brown, lighter shades of the same color, and penumbrae of light purple, either by themselves, or surrounding the darker spots. In form, they are either oblong-oval, or slightly spherical; and in length, they vary from .80 to .90 of an inch, and in breadth, from .56 to .70 of an inch.



WOOD PEWEE.

PLATE II.

CONTOPUS VIRENS, CABANIS.

Wood Pewee.

THE WOOD PEWEE, like most of its congeners, is a very early comer. It visits the Middle States about the 15th of April, and from this time until its departure in September, it is principally an occupant of high-timbered woods with a scanty growth of underbrush.

But as the season advances, and the amatory feelings become awakened, these shady retreats are deserted by a few individuals of more venturesome disposition, and a temporary abiding-place is sought for amid the stirring scenes of active farm-life. This generally occurs during the last of May or the beginning of June, and is the prelude to the more important act of mating, which follows.

The assumption of matrimonial relations, however, is not a matter that is entered into without more or less consideration. Occasionally, much time is spent in its preparation. This is presumably the case when a young female is courted by some venerable male. But when an apparently experienced individual is the object of his devotion, the state of things is different. His advances are then either encouraged and reciprocated, or they are declined, and the disappointed suitor compelled to seek a partner elsewhere. It is probable, moreover, that the same birds pair together on each return of the breeding-season, unless prevented by death, or some other of the numerous vicissitudes of life.

The ceremony of mating being over—which business is ordinarily of short continuance, seldom lasting for a greater period than two days—the newly-wedded pair now set out to discover a suitable place for the building of a home. This is a matter of considerable moment, often

requiring the performance of long and extended tours of observation and exploration. These reconnoissances generally last for a week, but eventually result in the choice of a locality well adapted, as far as the essential conditions of shelter and security are concerned, to become the depository of a nest. The site generally chosen for this important purpose is a tall open woods with a preponderance of ash or oak trees; but where a time-honored orchard is the recipient of this favor, which is sometimes the case, the apple, on account of the many advantages which it possesses, is preferred above all other fruit-trees.

The site being mutually agreed upon, the happy pair proceed at once with all possible dispatch and diligence to construct a domicile: the male to collect and bring in the necessary materials; the female, to fix them in their proper places, and also to give shape and symmetry to the structure. The time devoted to this work varies with the industry of the builders, the style of the nest, and the character of the neighborhood. But, where the birds are laboring under the most favorable circumstances, the task is easily accomplished in five days.

This admirable piece of bird-architecture, which rivals in beauty and symmetry the nest of our little Ruby-throated Humming-bird, is either saddled upon a living or dead limb that is horizontal and lichen-clad, or else upon the crotch of a bifurcated branch, and is placed above the ground at elevations varying from five to thirty feet. According to Nuttall, "the body of the fabric" occasionally consists of "wiry grass or root fibres;" but we have yet to meet with a nest with "*small branching lichens* held together with cobwebs and caterpillars' silk, moistened with saliva," as that author remarks. In a structure before us, which is typical in its character, small strips of inner bark plucked from trees of chestnut and oak, bits of tow, and fragments of wool, circularly arranged and compactly pressed together, are the prevailing constituents. Externally, it is closely invested with the bluish-gray crustaceous lichens which are so plentiful upon the trunks of certain trees, and also upon fence-rails. In diameter, it measures three and a half inches; in height, one and a half inches.

The width of the cavity is about two inches; the depth in the centre, three-fourths of an inch.

The most beautiful fabric, as well as the most compactly built, which we have seen, was obtained in the spring of 1876, not far from Germantown, Pa. It was placed upon a horizontal branch of an apple-tree, in close proximity to a farm-house. Externally, it is thickly covered with *bluish-gray crustaceous lichens*, which are held in place by a few cobwebs, and fragments of the silk of caterpillars. The base consists of dried stems of grasses, and on these is reared a neat and cosy superstructure composed of the inner fibres of the wild and cultivated species of the vine, and a slight sprinkling of wool. These materials are variously interwoven, and arranged around the margin so as to form a cavity. The dimensions of this nest are as follows: External diameter, three and a half inches; height, one and a half inches; width of cavity, two inches; depth in the centre, three-fourths of an inch. In the Plate it is represented the natural size—built upon an oak branch.

In the details of form and dimensions, this nest differs immaterially from specimens which we have met with in New Jersey, Delaware, and elsewhere. But wherever obtained, they will mostly be found to bear a very close resemblance to one another, differing chiefly in the character of the articles which constitute the inner arrangement. We will merely mention one example which was taken by Mr. Welch, in Lynn, Mass., and which will give our readers some faint conception of the extent to which variation is often carried. This structure was placed upon a dead limb of a forest-tree. Its walls were composed of small dry stems and vegetable down, finely interwoven, and covered on the outside with lichens which were cemented to it by a viscid secretion that was apparently supplied by the builders. The base was somewhat flattened, much thinner than the walls, and composed of finer materials. The external diameter was three inches, and the height one and a half inches; the cavity, two and a half inches at the rim, and the depth one inch.

Having finished their home, only a day or so intervenes when ovi-

position becomes the controlling instinct. The female now proceeds to deposit her complement of four eggs, which she does on consecutive days, at the rate of a single egg daily. This is followed, on the day succeeding the last deposit, by the trying duty of incubation. Upon the female devolves this arduous and irksome labor. For about eleven days she is thus engaged, until her patience is finally crowned with success. Although the male takes no part in this duty, yet he contributes his share to the prosperity of the undertaking, by guarding his partner from danger, and supplying her with the essential articles of food. When his home is assailed by feathered enemies, if they are not more than a match for his strength, he is not slow to wreak instant vengeance upon them. But in the case of human depredators, where effort would be futile, no exertion is put forth to cause desistance from any contemplated assault, save a little scolding.

The eggs are four in number, and resemble in configuration those of the common Phœbe-Bird. They are obtuse at one extremity, and slightly tapering at the other. The ground is a rich cream-color, and is diversified about the larger end with a wreath of purple and lilac spots, which are large, and occasionally confluent. In length, they measure .76 of an inch, and in width .54. It is pretty well established that but a single set is deposited by any given pair of birds in a season. Nests with eggs, however, have been taken during the last of July, or the beginning of August; but whether a second laying or not, we cannot say—possibly the work of birds whose early efforts had been frustrated.

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Whilst several beautifully illustrated books on the birds of our country have been presented to the public from time to time, it is much to be regretted that no regular work, containing proper delineations of nests and eggs, had made its appearance, until that superb folio, now publishing in Circleville, Ohio, was undertaken by the Misses Jones and Schulze.

When we consider the inconvenient size of the latter work, the exorbitant price demanded for it, and the interest manifested by the youth of our land in that highly attractive department of Ornithology of which it treats, we are led to believe that there is yet room for another, which shall be none the less true to nature, but which shall have, in addition to accuracy, the important quality of cheapness. With this object in view, we have embarked in the enterprise, hoping that our ornithological friends will give it sufficient encouragement to warrant its continuance.

As its name indicates, this work will be something more than a mere book of nests and eggs. It will endeavor to bring into prominence those interesting and curious phases of bird-life which are present during the breeding-period, and which have been the principal study of the author for the past ten years. The text, therefore, will mainly be the result of his own observations.

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It is impossible to state, at present, exactly the number of parts which will constitute the work, but it will probably not exceed 25 or 30, which will figure 50 or 60 nests. The design of the author is to figure the typical nests of all our species, and the most marked variations therefrom, where this can be conveniently done.

Any one sending a Club of six 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, upon application to the Author, in *Germantown, Philadelphia*, or to the Publisher,

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OF

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OF

Birds of the United States,

With Text.

BY

THOS. G. GENTRY.

PHILADELPHIA:

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ILLUSTRATIONS

OF

Nests and Eggs

OF

Birds of the United States,

With Text.

BY

THOS. G. GENTRY.

PHILADELPHIA:

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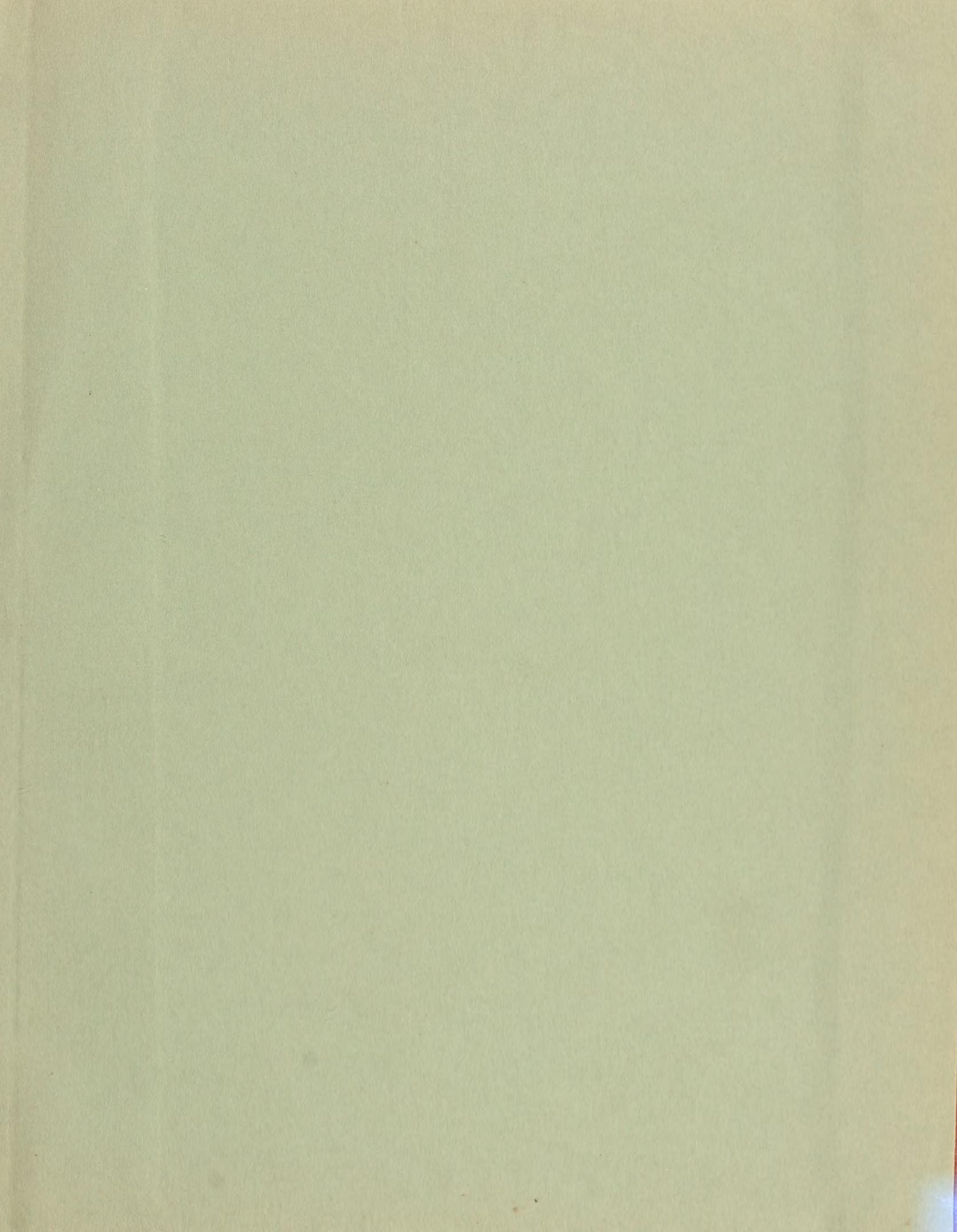
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