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Birds and All Nature

IN NATURAL COLORS

A MONTHLY SERIAL
FORTY ILLUSTRATIONS BY COLOR PHOTOGRAPHY

A GUIDE IN THE STUDY OF NATURE

TWO VOLUMES A YEAR

VOLUME VI.

JUNE, 1899, TO DECEMBER, 1899

EDITED BY C. C. MARBLE

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BIRDS AND ALL NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. VI. JUNE, 1899. NO. 1.

CONTENTS

MY NEIGHBOR IN THE APPLE TREE.

NELLY HART WOODWORTH.

TROPICAL portions of the American continent, rich in an endless variety and beauty of bird-life, have shared with New England but a single species of Trochilidæ, *Trochilus colubris*, the ruby-throated humming bird.

This "glittering fragment of a rainbow" adds a decorative feature to our gardens, its nest so protected through diminutive size and perfect adaptation to the surroundings that it rarely comes under one's observation.

It is commonly asserted that the male is an arrant shirk, that he leaves the entire labor of building and furnishing the house as well as the heavy duties of housekeeping to the faithful mother, being in the fullest sense a *silent* partner either from choice or otherwise, a mere apology for a husband and head of a family.

Nor does he redeem himself when the prospective "twins" arrive and slender bills are lifted appealingly for food! No thanks to him that the naked, squirming little atoms replacing the two white eggs become gradually stronger, that some hint of plumage duly covers their nudeness, or that bye-and-bye they become birds in reality.

Two years ago this "little lady in green" made her nest upon an apple tree branch, concealing it so deftly that the gardener at work near by was unaware of the distinguished guests until the brooding was nearly over. When the little birds had flown the lichened residence, becoming a family possession, was considered the daintiest souvenir of the summer.

Being anxious to know if this rare, interesting episode would be repeated, the following summer I watched carefully for its repetition. Promptly in June I found that a humming bird was again "at home," this time upon a horizontal maple branch, twelve feet from the ground and directly over the sidewalk. This nest was soldered upon a long slender bough half an inch in thickness at the intersection of another, a mere twig a quarter of an inch through, the latter inwrought with, and concealed for a full inch in the structural fiber. Upon the 22d of the same month, by the aid of a ladder I found that two eggs "the size of yellow beans" were lying inside the downy cup shaped nest. Before this luckless visitation the tail of the brooding bird could be seen from the ground, but during the next two days there was no sign of life thereabout.

In the afternoon of the third day my bird was in the maple, darting hither and thither like a swallow, plunging into the insect swarms and securing several before they realized her presence. Then she came to the honeysuckle beside me, hovering over it in a bewildered, irresolute manner as if debating whether she could safely probe its scarlet cups. Just at this moment a big miller flew by and off she went in close chase, capturing it upon the wing. Then she rested upon a maple twig, leisurely preened her feathers, drawing each one gently through her beak, and after [Pg 2] a second visit to the honeysuckles darted toward the nest. Now, I thought, is the time, if ever, to decide if she is still housekeeping, and following quickly, I saw her standing upon the edge of the silken cradle. Her head moved rapidly from side to side as she regarded its contents, after which she rose lightly in the air, dropped upon the nest with the airy grace of a thistledown, and spread above it the feathered blanket of her soft, warm breast. For several minutes she ignored my presence, drawing her beak across the leaves or springing into the air for a passing insect which was captured and apparently given to her family. Once I detected a "squeak," and her head was instantly thrown to one side in a listening attitude. If it was the note of the mate he did not approach the nest, the thick leaves hiding the tree-top from which the sound proceeded.

There was a furious wind that night and the warm days were followed by a sudden fall in temperature.

From that time the nest was deserted; I could only conjecture that I had presumed too much upon her defenselessness, or, that the young, if young there were, were dislodged by the wind. This abandoned homestead was as round and perfect as a new coin just issued from nature's mint, a marvel of elegance in which all the instinctive gifts of decorative art united.

There were no visible signs of rebuilding during the twelve days that followed; casual trips to the honeysuckle, hovering over the flowers like some gorgeous insect with colors scintillating in the full sunshine, alone gave evidence of further interest or intention.

Upon the thirteenth day there was a marked change. Again she flew excitedly about the lawn, stopping abruptly to wheel about and dart off in an opposite direction, a vitalized complement of the spirit of the trees, mingling with and pervading the garden as freely as did the light and air. She threw herself against a summer warbler almost knocking him off his perch and, not content with this treatment, drew him from the lawn, which, by the way, was his own harvest field where he had gleaned diligently for several days.

Then the bird poised before me in mid-air, circled about my head before plunging into an apple tree in whose leafy mazes she disappeared. Just at that moment an accommodating breeze displaced the leaves; there was a flutter within, a flash of wings, an unusual agitation that told of something quite beyond the ordinary. As the breeze died away the leaves resumed their place thus preventing all further inspection. From the parlor windows, fortunately, there was less obstruction,—she was still twisting about, going and returning, dropping within the foliage and

going through the most singular antics.

An opera-glass revealed the meaning; she dropped into a half-finished nest that had all this time been directly in range of vision. The tiny tenement was so deftly concealed, blending in color and apparent texture with the bough that held it, and so sheltered by overhanging leaves that it was still difficult to locate a second time.

With unbounded delight I watched her come and go a dozen times in less than that number of minutes, bringing at each arrival a quantity of vegetable fiber soft as a silken cobweb, adjusted invariably while standing inside the nest and turning completely around several times as if shaping the interior to her better satisfaction. She reached far over and pulled the fluffy cotton into place, beating it here and jerking it there, sinking her little breast into and shaping it to fit the soft contours of her body; or, covering the outside with trailing wings, beat them rapidly against the felted foundation which at these times was entirely hidden beneath their iridescence. Though still unfinished the delicate structure was lichen-decorated, simply perfect so far as it went, in this case defying the assertion that humming birds' nests are always completed before this ornate decoration is added.

6-99 The changes a Feather undergoes in turning from Green to Yellow.

In the succeeding weeks—weeks in which I entertained an angel, not unawares, her two ways of approach were unvaried; either passing the nest entirely to rise from beneath, or, hovering over and over, drop down as lightly as a snowflake or the petal of an apple blossom. And such a pretty proprietary air—the complacence and importance for which great possessions are often answerable! As if the trees were there for her alone, the garden made simply for her convenience!

After working rapidly for two full hours she paused to rest upon a dead twig, opening and closing her wings in the twinkling fashion of a bluebird, an exercise prefacing a breakfast taken in the nearest tree as she poised beneath the leaves.

With appetite appeased she dropped upon the unfinished cradle and sat so still for twenty minutes that I was certain an egg was deposited. Doubtless the misfortunes attending previous nesting had interrupted the even tenor of life, the second housekeeping was more urgent than was anticipated.

For ten minutes more her form was motionless though her head moved from side to side in a ceaseless surveillance—a warbler lunching in the next tree glanced casually in her direction, and was evidently just wild with curiosity.

The situation was too much for him; he left his post hurriedly, flew over her and looked down, flew under and looked up, peered at her from an airy poise, still undecided as to who was rocking in that wonderful cradle. Craning his neck he hopped along the branch till he stood beside her, so near that his yellow coat literally brushed her garments, his attitude a quick pantomime of his thoughts, half paralyzed with questioning surprise as to what this remnant of a bird might be, not by any means to be bought *cheap* because it was a remnant.

A quick thrust from the hummer's beak brought him to his senses; he took leave for a few seconds, returning cross-lots to stare again from the same near point of view, which unwarranted impertinence was borne without flinching or changing her position. Later on these tours of inspection were thoroughly resented, the right of territory contested in many a battle when the defendant advanced and retreated with the rapidity of lightning, making furious thrusts at her adversary, and chasing him about till sheer exhaustion compelled her to desist. Then she would drop upon the nest still regarding him with undistinguished contempt till he took her to the tree-top, keeping an eye upon her as he dropped a song or swallowed an insect.

A young woodpecker came one day to her door; two quarrelsome robins stopped to say good morning; and goldfinches lisped their soft love notes, while she only hugged her eggs more closely with the dear, delicious shyness of affection.

When my little house-builder left that morning I was sure that the edge of a white egg rose above the low rim of the nest. From the attic window it was plainly visible, the cradled egg rocking in the wind, but, though the warbler was close by, to his credit be it said he did not once trespass upon other people's property.

Twice that afternoon my lady buzzed through the trees without halting to look in at home, nor when night came down did the wanderer return. She was busy about the next morning, all work being done in the early hours, and by eight o'clock a second egg lay beside the first. By nine o'clock the following morning the regular brooding began, the finishing touches being given to the nest long before the breakfast hour.

It was a noisy location, what with the clatter of lawn mowers, the drumming of pianos, and the singing of canaries, to which she listened with neighborly interest. In that chosen place, directly over the path leading from the sidewalk to the door, it was impossible to find even a degree of seclusion. The weather was fine, the piazza rarely vacant, and there were few hours in the day but someone passed the nest.

Nor did the trouble end with daylight; bicycle parties made the yard a starting-point for evening excursions, lanterns flashed while parting guests halted beneath the little house-beautiful, until I trembled for poor "Queenie" thus barred away from her own door.

Though she unvaryingly left the nest, the persons passing were never once conscious of the nearness of bird or nest, swinging breezes often bringing the latter so near that it almost touched their faces. [Pg 6]

I could see it hourly from my window, the overhanging leaf, the opalized lustre of the brooding bird, as if a store of sunshine was shivered, and falling over her feathers, then momentarily hidden as the swinging leaf intervened. More solid pursuits were forgotten or for the time regarded as of little importance; each delicate outline became familiar; the brooding leaf assumed a personality; it was a guardian of the home, vitalized, spiritualized, protective. It seemed to change position as the sun made the need apparent, shielding the little one in the long waiting days, so patient and passive in the sweet expectancy of nearing motherhood. My memory pictures her still, while a more tangible photograph upon my desk gives permanence to my "bird of the musical wing" as she brooded over the apple-tree nest.

With this home as a focus, lawn and garden seemed to hold the sunshine in suspension; uplifted grasses gave it recognition in smiling approval; shadows were invested with humane and beneficent attributes, and the very air was radiant with scent and gracious influence.

Sometimes the bird came to my window, her beak clicking against the glass in a vain effort to probe the flowers within.

There were visits, too, to the piazza, when the family were gathered there, poising above the embroidered flowers upon a lady's slipper and trying persistently to taste their illusive sweetness.

Thrice upon the fourth day of sitting she improved the nest with an extra beakful of cotton, holding it firmly for five or ten minutes before it was inwrought. This was repeated after two weeks when there was a decided change—the little, warm breast was pressed less closely against the nest treasures. Some amazing instinct, directly opposed to that dear experience by which *we* find a short path to a long wandering, taught her that their increased fragility would yield to her full weight, and her touch was of exquisite softness.

When three full weeks had passed a homely baby no bigger than a honey bee lay in the nest, a one day's advantage kept to the end, and noticeable in both size and strength. The next morning this mite was duplicated, their whole bodies trembling with every heart beat.

Life became now a problem of supply and demand, only a clearer expression of the one that has from all time agitated humanity. Then began that marvel of marvels, the feeding of the newly hatched birds. It was hardly worth while to question the wisdom of the process, though I confess

that after each feeding I expected only two little mangled corpses would remain!

The food, partially digested in the mother's stomach, was given by regurgitation, her beak being thrust so far down their throats that I surmised it would pierce the bottom of the nest, to say nothing of the frail bodies churned violently up and down meanwhile. The great wonder was that the infants survived this seemingly brutal and dangerous exercise in which they were sometimes lifted above the nest, the food being given alternately at intervals of half an hour to an hour. They thrived, however, under a treatment that gave strength to the muscles, besides aiding in the digestion of food.

From the first, the comparative length of beak was their most noticeable feature, the proportion becoming less marked by the fourth day when fine hairy pin-feathers appeared, these increasing in size and reinforced by a decided plumage seen above the rim of the nest before the second week ended.

By the ninth day they attempted their first toilet, drawing the incipient feathers, mere hairs, through the beak, and on the tenth day, more surprising still, they had found their voices. Several times daily the branch was pulled down to the level of my eyes, the twins regarding me with the surprise and innocence of babyhood, sinking low into the nest meanwhile, and emitting a plaintive cry almost human in its pathos and expression.

So far as I know no observer has recorded this pleading, pathetic note from the infant hummers so noticeable whenever I came too near. The branch replaced and the disturbing element removed, they reappeared above the nest's rim, the slight form of the mother palpitant as she hovered near. Early in their lives when a cold rain followed the long drouth, her enforced absences were brief; hasty trips merely to the flower garden in the rear of the house, or to the flowering beans in the next yard, a favorite lunch counter patronized every hour ordinarily. [Pg 7]

The leaf that served to so good purpose in the sunny days became heavy with raindrops, tilted to one side, and little streams trickled down upon her back and ran off her tail, while big drops splashing down from the higher branches threatened to annihilate the whole affair. Undaunted still, my Lilliputian mother hugged her precious charges, with drooping tail hanging over the edge of the nest, head drawn into her feathers, her whole appearance as limp and bedraggled as a hen caught out in a shower. When the infants had seen two weeks of life they refused to be longer brooded. From this time on they matured rapidly, filling the nest so full that my lady found no place for the sole of her foot, and often alighted upon their backs to give them food. In four days more their baby dresses were quite outgrown. These were replaced by green graduating gowns of stylish texture and fit, and, as my bird book stated that young hummers left the nest when a week old, I was watching eagerly for their debut.

Long before this the nest proper began to show signs of hard service. Before its occupants left it became a thing of the past, positively dissolving to a mere shelf or platform, and one side falling out entirely, the imperturbable twins sitting or standing upon what remained, content in the silence that all completed tasks deserve.

As I have said before, one of these little grown-ups surpassed the other in size and vigor, insisting gently or forcibly upon the best standing-place, and vibrating its wings for several seconds at a time. Plainly this one would be the first to launch upon the world.

Twenty-two days after hatching it spread its wings without apparent effort and alighted upon a neighboring twig. Clearly, life was regarded from a mature standard as it preened its plumage and looked about with an undaunted air.

Two days later the smaller twin followed the example, reaching the upper branches as easily as if flight were an every-day occurrence, both birds flitting about the familiar tree, and fed by the parent, until after the third day, they were seen no more.

There is something noble, simple, and pure in a taste for trees. It argues, I think, a sweet and generous nature to have this strong relish for beauties of vegetation, and this friendship for the hardy and glorious sons of the forest. There is a grandeur of thought connected with this part of rural economy. It is worthy of liberal and freeborn and aspiring men. He who plants an oak looks forward to future ages, and plants for posterity. Nothing can be less selfish than this. He cannot expect to sit in its shade nor enjoy its shelter, but he exults in the idea that the acorn which he has buried in the earth shall grow up into a lofty pile and shall keep on flourishing and increasing and benefiting mankind long after he shall have ceased to tread his paternal fields.—*Washington Irving.*

A DAY IN JUNE.

Bright is this day of smiling June,
When nature's voice is all atune

In music's swelling flow, to sing
Sweet songs of praise to nature's king.

From azure heights the lark's loud song
Is borne the balmy breeze along;

The robin tunes his sweetest strain,
And blithely sings his glad refrain

Of summer days and summer joys;
The tawny thrush his voice employs,

In chorus with the warbling throng,
To fill his measure of the song.

The river, too, with rippling flow,
As it winds through its banks below,

And leaps and plays in merry glee,
O'er rocky bed, 'neath grassy lea,

Or silent glides through sylvan shade,
To laugh again in sunny glade,

Sends back its murm'ring voice to swell
The music of each lovely dell,

Where Flora decks with brilliant sheen
The virgin sward of velvet green.

—*From a forthcoming poem by Geo. H. Cooke, Chicago.*

FROM COL. CHI. ACAD. SCIENCES. 6-99

Life-size.

WESTERN YELLOW-THROAT.

(*Geothlypis trichas occidentalis.*)

The birds are here, for all the season's late.
They take the sun's height, an' don' never wait;
Soon's he officially declares it's spring,
Their light hearts lift 'em on a north'ard wing,
An' th' aint an acre, fur ez you can hear,
Can't by the music tell the time o' year.
—*Lowell.*

THIS common, but beautiful resident of the western United States begins to arrive about the middle of April and leaves during the month of September. It is one of the most conspicuous of the warbler family, is very numerous and familiar, and is decked with such a marked plumage that it cannot fail to be noticed. The adult male is olive-green above, becoming browner on the nape. The female is duller in color than the male without black, gray, or white on head, which is mostly dull brownish. The yellow of throat is much duller than in the male. The young are somewhat like the adult female. This is said to be the prevailing form in Illinois and Indiana, the larger number of specimens having the more extensively yellow lower parts of the western form, though there is much variation.

This little fellow is found among the briars or weed-stalks, in rose bushes and brambles, where it sings throughout the day. Its nest, generally built between upright weed-stalks or coarse grass in damp meadow land, is shaped like a cup, the opening at the top. The eggs vary from four to six, and are of a delicate pinkish-white, the larger end marked by a ring of specks and lines of different shades of brown. The western yellow-throat inhabits the Mississippi valley to the Pacific coast. It is found as far north as Manitoba; south in winter from the southern United States, through central and western Mexico to Guatemala. With a few exceptions the warblers are migratory birds, the majority of them passing rapidly across the United States in the spring on the way to the northern breeding-grounds. It is for this reason that they are known to few except the close observers of bird life, though in season they are known to literally swarm where their insect food is most plentiful—"always where the green leaves are, whether in lofty tree-top, by an embowered coppice, or budding orchard. When the apple trees bloom the warblers revel among the flowers, vying in activity and numbers with the bees; now probing the recesses of a blossom for an insect which has effected lodgment there, then darting to another, where, poised daintily upon a slender twig, or suspended from it, he explores, hastily, but carefully for another morsel. Every movement is the personification of nervous activity, as if the time for the journey was short; and, indeed, such appears to be the case, for two or three days, at most, suffice some species in a single locality; a day spent in gleaning through the woods and orchards of one neighborhood, with occasional brief siestas among the leafy bowers, then the following night in continuous flight toward its northern destination, is probably the history of every individual of the moving throng."

CHARLEY AND THE ANGLEWORM.

ALICE DE BERDT.

CHARLEY was going fishing and he took great pride in the quantity of squirming bait he carried in the tin box.

He was quite a small boy, only eight years old, but country boys learn to take care of themselves sooner than city children.

When he reached the little stream where he meant to fish, he found some one before him. It was a stranger whom Charley had seen once or twice at a neighbor's, where he was boarding during the summer.

The old mill was the best place in miles for fish, and Charley wished that the city boarder had chosen some other spot in which to read his book.

He gave a shy, not very cordial reply to the stranger's pleasant "Good morning!" and began to arrange his line. In a few minutes one of the largest earthworms was wriggling in the water at the end of Charley's hook, and he himself was sprawled out upon the ground at the end of a long beam projecting from the mill intently regarding the water.

"No luck, my boy?" asked the stranger, watching Charley work with the struggling worm that was as hard to get off the hook as it had been to put on.

"No, sir," replied the little boy. "The fishes don't seem to bite."

"Not hungry to-day, eh?" said the stranger. "I should think that would be a good thing for the worms."

Charley opened his eyes. It had never occurred to him to consider the worms in the matter. They were to him nothing but ugly, stupid things, which, his father said, injured the roots of plants.

"Don't you think the worms are as fond of their life as you are of yours?" went on Charley's new friend. "In their little underground earth houses they are very comfortable and happy."

Charley smiled. This was a new view of the case to him, and he edged nearer to the stranger to hear what more he would say.

"They's on'y worms," said Charley.

"And a worm is a very good sort of creature in its way. They are harmless, cleanly animals. See, I can take that one of yours in the palm of my hand and it will not harm me in the least. Let me put it down on the ground and see how it hurries to get away. It is frightened. Now it is trying to force a way into that damp earth. I wonder if you know just how the worm makes its way through the ground."

Charley shook his head, and the stranger said:

"You have often noticed the shape of the worm, I dare say. One end of its body is much thicker than the other, which runs to a point. The thicker end of the body is the head. The body itself, you will see, is made of many small rings, held together by tiny muscles and skin, making it possible for the worm to bend and curl and wriggle in a way that is impossible for you and me, whose bones are fewer and fitted tightly together, so that they move about less easily.

"Now, if you will take this one in your hand," said the stranger, "and run your fingers very gently down its sides from tail to head, you will find that the body of the worm is covered with fine hooks. If you run your fingers along the worm in the other direction, you will think the body perfectly smooth. This is because all the hooks point in the other direction.

"When the worm wishes to enter the earth, it pushes its blunt head through the soil, lengthening its body by means of the muscles that hold together the soft, cartilage-like rings. At first only a few rings go into the ground. Master Worm then draws up his body into a thick roll by shortening his muscles. In this way he forces apart the soft earth to make room for his body, the points on the sides holding it there while he again lengthens his head, pushing more earth apart. It is in this way, by alternately or in turn lengthening or shortening his body that he makes his way through the earth, which is pushed aside to give him passage through its dark depths. [Pg 13]

"As his home is underground, eyes would not be of much use to him, so Mother Nature, whose children we all are, has given him none. One of her laws is that none of us shall have what we cannot or do not make use of. He has a strong mouth, however. It is placed on the second ring of the body. His food is earth, which he swallows to obtain the organic particles contained in it. This makes him especially interesting, for nearly all animals obtain their food from the soil quite indirectly. Some get it from plants, the plants themselves having gathered theirs from the earth through their roots. Certain animals depend on other creatures, which in turn get food from the plants.

"The life-giving particles which go to build up all bodies come directly or indirectly from the earth itself. It seems odd that a man who is starving, no matter where he may be, starves with the very food which he needs directly beneath his feet, only he does not know, nor has the wisest man yet learned, how to convert it into food which will directly sustain and give health to the body. Yet

the little earthworm, which you despise as stupid, has this wonderful secret, which day by day it puts into operation for its own benefit. Worms also eat leaves, which sometimes they drag into their homes.

"The worm has no feet as we understand them, but moves along the ground by sticking its sharp claws into the ground and by in turn lengthening and shortening its flexible body.

"The young worms grow from eggs, which are deposited in the earth in the autumn. They have to look out for themselves. During the winter they burrow deep into the ground, coming to the surface with the warm rains of spring. Worms also come to the earth's surface at night. If you look carefully in the garden with a lantern some evening, you may see them."

Charley was looking at his bait box with a good deal of respect.

"I guess I'll let the worms have another chance," he said, and he dumped them in a heap upon the ground, when, I regret to say, two hungry robins promptly pounced upon them and flew jubilantly home with two of the fattest in their beaks for a meal.

The stranger smiled kindly upon Charley.

"Never mind, my boy. Old Dame Nature meant the worms for food for the robins and perhaps bait for your hook when you really need fish for food, but she never meant any of us to needlessly harm any living creature, for when you are older and have learned to read well in her great story book you will find that after all, from earthworms to kings, we are only brothers and sisters in wise old Mother Nature's great family.

"I once knew a little boy like you who used to salute every living creature he met with 'Good morning' or 'Good afternoon' or 'Good evening.' He said it made him feel more friendly toward them. In his spare moments he loved to watch the woodland creatures and learn the secrets of their busy, useful lives."

"Where does he live?" asked Charley.

"Well, when he is not rambling over the earth hunting for curious insects he lives in a big city, where he sometimes writes books about butterflies and moths and other insects, and people, who as a rule know very little about the humbler children of nature's family, give him credit for being a rather wise man; but he really knows very little—there is so much to learn. Some day, when you are a man, if you keep your eyes open to what goes on around you, you yourself may know how little. That boy is a man now and takes great pleasure in having introduced you to Master Chætopoda, one of the humblest but most interesting members of Mother Nature's household."

And then Charley smiled, for he knew the stranger was talking about himself.—*Success.*

THE MYRTLE WARBLER.

(*Dendroica coronata*.)

C. C. M.

ONE of the most interesting facts concerning this beautiful warbler is that, though not common, it is a winter sojourner, and therefore of perpetual interest to the student of birds. About the last of March, however, multitudes of them may be seen as they begin to move northward. By the middle of April all but a few stragglers have left us, and it is not till the last of September that they begin to return, the majority of them arriving about the middle of October. The habitat of the myrtle warbler includes the whole of North America, though it is chiefly found east of the Rocky Mountains, breeding from the northern United States northward into the Arctic regions; and, what is regarded as strange for so hardy a bird, has been found nesting in Jamaica. Its winter home is from about latitude 40° south into southern Central America.

The adult female myrtle warbler is similar to the male, but much duller in color. In winter the plumage of the sexes is said to be essentially alike. The upper parts are strongly washed with umber brown, and lower parts more or less suffused with paler wash of the same. The young have no yellow anywhere, except sometimes on the rump. The whole plumage is thickly streaked above and below with dusky and grayish white.

The places to study these attractive warblers are the open woods and borders of streams. In their northern winter homes, during the winter months, spiders, eggs and larvæ of insects constitute their principal food, though they also feed upon the berries of the poison ivy, and in the early spring, as they move northward, upon "insects that gather about the unfolding leaves, buds, and blossoms." Col. Goss says that in the spring of 1880 he found the birds in large numbers on Brier Island and other places in Nova Scotia, feeding along the beach, in company with the horned lark, upon the small flies and other insects that swarm about the kelp and debris washed upon the shore. "They utter almost continually, as they flit about, a *tweet* note, the males often flying to the tops of the small hemlocks to give vent to their happiness in song, which is quite loud for warblers—rather short, but soft and pleasing."

These birds usually build their nests in low trees and bushes, but Mr. MacFarlane, who found them nesting at Anderson River, says they occasionally nest on the ground. Mr. Bremer says that in the summer of 1855, early in July, he obtained a nest of the myrtle warbler in Parsborough, Nova Scotia. It was built in a low bush, in the midst of a small village, and contained six eggs. The parents were very shy, and it was with great difficulty that one of them was secured for identification. The nest was built on a horizontal branch, the smaller twigs of which were so interlaced as to admit of being built upon them, though their extremities were interwoven into its rim. The nest was small for the bird, being only two inches in depth and four and a half in diameter. The cavity was one and one-half inches deep and two and a half wide. Its base and external portions consisted of fine, light dry stalks of wild grasses, and slender twigs and roots. Of the last the firm, strong rim of the nest was exclusively woven. Within the nest were soft, fine grasses, downy feathers, and the fine hair of small animals.

The eggs are three to six, white to greenish white, spotted and blotched, with varying shades of umber brown to blackish and pale lilac: in form they are rounded oval.

In autumn, when the myrtle warblers return from Canada, they mostly haunt the regions where the juniper and bayberries are abundant. The latter (*Myrica cerifera*), or myrtle waxberries, as they are frequently called, and which are the favorite food of this species, have given it their name. These warblers are so restless that great difficulty is experienced in identifying them.

FROM COL. F. M. WOODRUFF. 6-99

MYRTLE WARBLER. Life-size.

TAFFY AND TRICKSEY.

CAROLINE CROWNINSHIELD BASCOM.

A FEW of my readers may know who Taffy and Tricksey are, but as more will not I think it best to introduce them.

Taffy is the handsomest tiger cat I have ever seen, and as he has the crook in his tail, he belongs to the Tabby breed. Taffy is very large, usually weighing fourteen pounds, but he has a very small head, and very small, finely shaped paws. The under parts of them look like black velvet. In color he is jet black and the other fur very much like a raccoon's, light tan at the ends shading into yellow, then into drab. As the sun strikes him every hair seems full of light and he is one mass of iridescent colors. His marking is most beautiful. The top of his head is black branching out into five narrow black stripes down his neck. A black stripe three inches wide (without one light hair) going all the way down the back and to the end of the tail and under two inches; of course, on the tail the stripe is much narrower. Then, narrow black stripes go down each side of his back and tail. His tail is not long, but very bushy like a nice boa. I never saw more exquisite coloring and marking than Taffy has underneath, from his throat to his tail. His coat is beautifully soft and thick, and shines like satin, and his eyes are very green. He is particular about his toilet, but insists upon my helping him to keep it glossy. His own comb is kept on my dressing-table, and he asks me to comb him twice a day, and sometimes oftener.

I can tell you nothing of Taffy's antecedents, as I found him one morning in our back yard starved almost to death, and about as thick through the body as a shingle. At first I thought he had dropped down from Heaven, but I soon learned from his sayings and doings that he must have been quite intimate with the inmates of the lower region. I tempted him with chicken but it was some little time before I could put my hand on him; and to tame any animal you must be able to touch it with your hand. After two or three pats he seemed to realize that I was a good friend. Soon I had him in the house and for three years we have been devoted to each other. I have had a great many cats, but never one who had so much of the wild animal in him. All of my friends said I never could tame Taffy and it was many weeks before I had much influence over him, and I never feel quite sure now whether I am to be loved or scratched, as he still has the temper and the actions of a tiger when anything goes the wrong way.

He usually lies down like a tiger with legs straight out in front, tail straight out behind, and when I speak to him he will always blink his eyes and speak to me. If you touch him in passing he will grab at your feet and spit and growl. He never mews when he wants anything to eat, but will chase me or my maid, and grab at our feet. If he does not like what is given him to eat, he will walk all about his plate, and scratch as if he were covering it up.

I am the only one Taffy ever shows much affection for, but to me he is very loving. He will lie as long as I will let him with his paws about my neck, and head on my shoulder. If he is sound asleep anywhere, and I begin to read aloud, sing, or whistle, he will get directly up, jump on my lap, put his paws about my neck, his face close to mine, and begin to purr. As he always looks very pleasant I flatter myself he likes the tone of my voice.

When I had my bird, Little Billie, it would make Taffy simply furious if I put him out of my room and closed the door. One morning he was so ugly my maid did not dare open the door to come in. After that when I wanted him to go down stairs, I had my maid come to the bottom of the stairs and call "Taffy!" then there was never any trouble. When he is in a tearing rage I can always quiet him, by taking tight hold of his paws, and kissing his eyes. I have told all of these things about Taffy so my readers will appreciate what I have been able to do with him. It is needless to say that when Little Billie went away, Taffy was the happiest cat in town. His devotion increased daily to me and he lived in my room, only going down to get something to eat.

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I think by this time you are very well acquainted with Mr. Taffy, and I will present Tricksey to you. Of all the canary birds I have ever seen Tricksey is the prettiest, daintiest little bird you can possibly imagine. His color is light yellow with a much deeper shade between his wings, shading into almost an orange. His wings and tail are white with just a line of yellow on some of the feathers. His eyes are unusually large and bright, and his little legs and claws are very pink, and so slender they do not look strong enough to support his finely shaped body. Tricksey came from George H. Holden's, New York, so you will all know he is a very superior bird and sings like an angel.

Tricksey had never been out of his cage when he came to me, but before I had had him a week, he came out, perched on my finger, took things from my finger or mouth, would kiss me, and go all about my room on my finger, and very soon went all about the house with me. He was very fond of sweet apple, but I never let him have it inside his cage, but made him come to me for it. I kept a piece in a little dish on my table and he soon found out where it was and would help himself on the sly. I also kept on my table in a little china cup, some hemp seed which I gave to Tricksey as a great treat. Every time I would tap on the cup and make it ring, Tricksey would come out of his cage, down from a picture frame, or wherever he was, for a seed.

One day he had had his one hemp seed, and teased for more, but I said "no" and he went flying about the room having a fine time. Soon he flew back on the table, hopped over to the cup, gave it two or three taps to make it ring, then hopped on to the top, reached down and helped himself to two seeds. Tricksey is a very vain little bird and likes nothing better than to go over on my

dressing table, walk back and forth in front of the mirror or sit on my pin cushion and admire himself.

Tricksey came to me one afternoon and Taffy knew nothing about his arrival until the next morning. When he came upstairs and saw a little yellow bird in a house of gold, he was like the little girl's Bunnie, who "was not a bit afraid, but awfully much surprised," when she heard firecrackers for the first time. His eyes were like balls of fire, while his mouth opened and shut making a hissing sound, and his tail going at the rate of a mile a minute. He walked into my room like a wild tiger, with an air as much as to say, "If this is Little Billie come back dressed in yellow, die he must," and sprang at the cage. I took him firmly by the paws, looked straight into his big angry eyes and said in a soft, firm voice, "Taffy, this is Tricksey, and he is not to be eaten or hurt any more than my Little Billie who went away." I let go of his paws, he walked out of my room and downstairs without looking back. In about an hour I looked out into the hall, and there sat my dear old Taffy on the top step looking very meek and wishful. I spoke kindly to him and asked him to come in and see his new brother Tricksey. After a few moments he came in very slowly and went behind my bed. Soon he came from under the valance, (the cage sat on a chair and I in front of it) never looked at the cage, jumped into my lap, put his paws about my neck and began loving me. I took him to bed with me and he never moved until Tricksey began to sing in a most delightful way, then he looked at him and listened very intently. I talked to him, and "smoothed his feathers," and soon he snuggled down in my arms and went to sleep. When he got out of bed he never glanced at the cage, but went directly downstairs, and I felt I had made a good beginning. Everyone said I could never teach Taffy not to catch Tricksey, and the reason his catship did not kill Little Billie was because he was afraid of him, and so carefully watched. I [Pg 19] knew there was not a place in the house I could hang the cage where Taffy could not get at it if he made up his mind to do so. Of course for days and weeks I felt anxious, and did not mean to leave them alone together. I never turned Taffy out of my room. If he went up to the cage and put up his paw I would say "Taffy, you must *not* put your paw on the cage," and as he always minds he would take it right down, sit by the cage, and I would talk to him kindly. Fortunately Tricksey was not at all afraid of Taffy.

Taffy always wears a yellow satin collar with bells all around. Often I would hear him coming upstairs when I was lying down and I would keep very quiet to see what he would do. Sometimes he would come over to the cage, look at Tricksey pleasantly, then lie down by the fire and go to sleep; more often he would lie down without even looking at him. But the moment he heard me talking to Tricksey he would get up and come to me to be petted, and I always gave him a great deal. One day when Taffy was in another room I let Tricksey out, and tried to be very quiet. I was sitting on the floor with Tricksey hopping about me. Before I hardly knew it Taffy was in my lap, and soon I had Tricksey on my knee eating seeds. If I took the cage on my lap with Tricksey inside Taffy would immediately jump up and crowd in between the cage and me.

Taffy was very much afraid the first time he saw Tricksey take his bath, and ran under the bed and peeped out from under the valance.

One morning the cage sat on the floor, and Tricksey was ready for his bath, when Taffy came in and sat close to the cage. Tricksey took a big drop of water into his bill and threw it into Taffy's face, Taffy moved back a little and looked all about to see where it came from. While he was looking Tricksey went into his bath, and splashed the water all over Taffy's face in a very roguish way. To say Taffy was surprised is speaking mildly. He turned to me with an angry cry and went out of the room. The next morning the same thing happened; but instead of going out of the room, he went on the other side, out of reach of the water, but where he could see all that went on.

After that he became so interested he did not mind if the water was splashed all over his face and would sit as close to the cage as he could get. While Tricksey was eating his breakfast he would lie down close to the cage and go to sleep. As I previously said I never meant to leave Taffy in the room with Tricksey, but he was often there hours before I knew it. When I found him he was always asleep in front of the cage or by the fire.

One morning after the bath I put the cage up in the window. Taffy did not seem to like it at all. He looked at me most wishfully, and began talking cat language, and I knew he was saying, "Please put Tricksey back on the floor." I did so, and Taffy began to sing, lay down with his back close to the cage, stretched out and went to sleep. He had been lying that way for an hour when some visitors came. It seemed too bad to disturb Taffy so I left him, and thought I would risk it.

Two hours passed before I went back, and you may imagine my delight when I found my two boys (so different in color, size and disposition) as happy as two kittens. Tricksey was singing merrily. Taffy had wakened, changed his position, and looked as if he felt very proud, being left to take care of his small brother. His eyes were as soft as velvet, and he spoke to me in a soft, cooing tone. Since then I have never felt there was any danger in leaving them together. I regret to say Tricksey has a strong will of his own and almost as bad a temper as Taffy.

At different times I had three wee baby birds brought in to me, but they all died. Tricksey was very jealous of them, and when he saw me feeding them he would become very angry, beat his wings against his cage, and beg for me to let him out. One day I put one of the little strangers on the floor and let Tricksey out. He flew at the waif and tore feathers out of the top of his head. I took the poor little frightened thing in my hand. Tricksey flew on my finger and pecked at him. I [Pg 20] put him in my other hand and Tricksey flew at him more angry than ever. Then I put him on the floor, and Tricksey was so happy he flew on my head, hopped about my shoulders and kissed me

in the mouth. In the middle of the performance in walked dignified Mr. Taffy with a look which plainly said, "What more are you going to bring into this room?" He sat by my side looking at the newcomer and, before I knew what he was going to do, reached out his paw, and gave him a good slap which sent him off my lap onto the floor.

Early in the fall before I had any fire in my room I would bring Tricksey down in the morning and keep him until evening, and for two weeks Taffy never went near my room during the day, but stayed down there with Tricksey. The first day I had a fire in my room I did not bring Tricksey down as usual. After I gave Taffy his luncheon I missed him, but did not go to my room until five o'clock, and there was faithful Taffy sound asleep close to Tricksey's cage, and now he stays in my room all day. He has plainly shown that if Tricksey stays there he stays too.

I find that animals want to be treated very much like children. The more intelligent they are the easier it is to influence them, and the quicker they are to read you. First give them a great deal of love and kindness, always be firm, very patient, and above all *never* deceive them in the most trivial thing. I hope this little sketch of Taffy's and Tricksey's life may be of some help to those who love cats and dogs, but have felt they could not teach them to live in harmony together.

A SUGGESTION TO OOLOGISTS.

FRANK L. BURNS,
In Oberlin *Bulletin*.

BEFORE we enter upon another active campaign of bird-nesting, it is fitting that we should pause a moment to reflect upon the true aim of our toil, risks, and trouble, as well as delight and recreation. How many of us can define the phrase "collecting for scientific purposes," which, like liberty, is the excuse for many crimes?

If it is true, as has been asserted, that oology as a scientific study has been a disappointment, I am convinced that it is not on account of its limited possibilities, but simply because the average oologist devotes so much time to the collection and bartering of specimens that no time is left for the actual study of the accumulating shells. In other words, he frequently undertakes a journey without aim or object.

The oologist has done much toward clearing up the life-history of many of our birds, but as observations of this nature can often be accomplished without the breaking up of the home of the parent bird, it alone will not suffice as an excuse for indiscriminate collecting. After preparing the specimen for the cabinet his responsibility does not end but only begins. A failure to add something to the general knowledge is robbing the public as well as the birds. He who talks fluently of the enforcement of strict laws for the preservation of our wild birds, their nests and eggs, and fails to protect and encourage those about his premises, falls short of his duty; and if his cabinet contains bird skins or egg shells which might just as well have remained where Nature placed them, he is inconsistent, demanding that others abstain that he may indulge.

In conclusion I would say that when an oologist constantly keeps in mind and acts under the assumption that the birds are his best friends and not his deadly enemies, he cannot go far wrong, and the means he employs will be justified in the light of subsequent study and research of data and specimens. If any of us fall short in this we have only ourselves to blame. Let us then collect with moderation and fewer eggs and more notes be the order of the day.

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FROM COL. CHI. ACAD. SCIENCES. 6-99

BLUE-WINGED YELLOW WARBLER. Life-size.

THE BLUE-WINGED YELLOW WARBLER.

(*Helminthophila pinus*.)

NOT a great deal is known about many of the warblers, and comparatively little has been observed of this member of the very large family, comprising more than one hundred species. This specimen is also recognized by the name of the blue-winged swamp warbler. Its habitat is eastern United States, chiefly south of 40 degrees and west of the Alleghanies, north irregularly to Massachusetts and Michigan, and west to border of the great plains. In winter it lives in eastern Mexico and Guatemala.

It has been pointed out that the name of this bird is misleading, as the blue of the wing is dull and inconspicuous, and not blue at all in the sense in which this color distinction is applied to some other birds. When applied to the warblers, it simply means either a bluish-gray, or slate, which seems barely different from plain gray at a short distance.

In half-cleared fields which have grown up to sprouts, and in rich open woods in the bottom-lands, where the switch-cane forms a considerable proportion of the undergrowth, the blue-winged yellow warbler is one of the characteristic birds, says Ridgway. The male is a persistent singer during the breeding-season, and thus betrays his presence to the collector, who finds this, of all species, one of the easiest to procure. His song is very rude. The nest is built on the ground, among upright stalks, resting on a thick foundation of dry leaves. The eggs are four or five, white, with reddish dots. The food of the warbler consists almost wholly of spiders, larvæ, and beetles, such as are found in bark, bud, or flower. The birds are usually seen consorting in pairs. The movements of this warbler are rather slow and leisurely, and, like a chickadee, it may sometimes be seen hanging head downward while searching for food.

INDIRECTION.

"We hear, if we attend, a singing in the sky."

RICHARD REALF.

Fair are the flowers and the children, but their subtle suggestion is fairer;
Rare is the rose-burst of dawn, but the secret that clasps it is rarer;
Sweet the exultance of song, but the strain that precedes it is sweeter;
And never a poem was writ, but the meaning outmastered the meter.

Never a daisy that grows, but a mystery guideth the growing;
Never a river that flows, but a majesty scepters the flowing;
Never a Shakespeare that soared, but a stronger than he did enfold him;
Never a prophet foretold, but a mightier seer hath foretold him.

Back of the canvas that throbs, the painter is hinted and hidden;
Into the statue that breathes, the soul of the sculptor is bidden;
Under the joy that is felt, lie the infinite issues of feeling;
Crowning the glory revealed, is the glory that crowns the revealing.

Great are the symbols of being, but that which is symboled is greater;
Vast the creation beheld, but vaster the inward Creator;
Back of the sound broods the silence; back of the gift stands the giving;
Back of the hand that receives, thrills the sensitive nerve of receiving.

Space is nothing to spirit; the deed is outdone by the doing;
The heart of the wooer is warm, but warmer the heart of the wooing;
And up from the pits where these shiver and up from the heights where those shine,
Twin voices and shadows swim starward, and the essence of life divine.

OUT-DOOR SCIENCE.

FREDERICK A. VOGT,
Principal Central High School, Buffalo.

THE first step to take in teaching science to young people and in popularizing the study among older people is to throw away much of the traditional polysyllabic phraseology and use a little common sense and good old Anglo-Saxon now and then—to teach nature, instead of science.

There is not only great danger in being too technical, but in telling too much. We all like to talk on our pet subjects. We rattle along, airing our opinions and pouring out big volumes of knowledge, and expect the poor pupils, like great dry sponges, to absorb the gracious gift. But they don't absorb; it isn't their business; they belong to quite another sub-kingdom; and while we are just about to congratulate ourselves on our facility of expression and wise beneficence, we are rudely made aware that our eloquence was all lost; and, worse still, we have been guilty of repression, of stifling natural curiosity, and crushing what might become a priceless, inquiring, intellectual habit.

Is it any wonder that so few ever go on with this geology, mineralogy, botany, or zoölogy, after they leave school? What is our object as teachers? Is it to cram geology and botany down passive throats in one or two school terms, or is it to lead our students so gently and awaken so keen a desire that they shall study these sciences all their lives, to be a never-ending joy, a pure pleasure and a solace amid coming cares and darkening days? Oh, I, too, have been guilty, and may heaven forgive my exceeding foolishness! The remainder of my days are being spent in penance, in propitiating the office of the recording angel by a more humble and righteous way of life.

So much for the language of the teacher, and now for the means of giving reality to his teaching efforts. This can only be done by the laboratory method or investigation in the field. With the latter, out-door work only does this paper especially treat.

ACTUAL CONTACT WITH NATURE.

While I do not for a moment decry the use of books, either for collateral reading or for text-books —in fact, I plead for a wider reading and profounder study of the best scientific writers—still, I feel just as you must feel, that there is something radically wrong in much of our science teaching, and that we have come to regard books as more real than the earth, the sky, the rocks; the plants, and the animals, which are all about us.

Just why this is so, I am unable to understand. Nature is so lavish! On all sides, easy of access, are the phenomena and the realities, while the school-room is artificial, and the teacher, alas, in perfect keeping with the school-room.

Can it be that pupils are averse to actual contact with nature? Not at all. From the earliest childhood throughout life there is in most persons a remarkable turn toward curious investigation, and thorough understanding of the things of nature. That I know from my own experience while teaching in the grammar schools.

One day I asked the pupils to bring me in any specimens of stones they might find in the vacant lots and the fields; and then I promised to give them a talk about these stones. I expected perhaps twenty or thirty specimens. What was my amazement and secret horror when, the next day and the next came dozens and dozens of specimens until, in a few days, I had over a ton and a half, containing 3,000 specimens. There were granites, gneisses and schists and quartzes; there were sandstones, slates, shales, limestones, glacial scratchings, marbles and onyx; there were geodes, crystals, ores, stone hammers, arrow-heads, brickbats, furnace slag, and fossils. I took everything smilingly, and at night the janitor and I buried many duplicates and the useless stuff in a deep hole where they wouldn't be likely to get hold of it again.

We soon possessed an excellent cabinetful, and had fine times talking about the making of stones [Pg 25] —the crust of the earth—former inhabitants, the great ice age, and such simple geology as they could understand; and they did understand; that did not end it. We studied plants in the same way; physics and chemistry, with home-made apparatus. Of course, it all took time, and a good deal of it; and there wasn't any extra pay for it, either; but there are labors whose recompense is far more precious than dollars and cents.

And so I find enthusiasm also for out-door science, among secondary pupils and among the great body of intelligent people of our cities; and if nature is so accessible, and pupils are so eager for its secrets, and we still worship books and ignore the visible objects and forces so freely at our disposal, there is no other conclusion to arrive at, except that the teacher himself is either too ignorant or too indolent to make proper use of them. It takes time; it needs enthusiasm; it needs a genuine love for the subject in hand, and a profound interest in and sympathy with the student.

The subjects in which field work may be made very useful are geography, geology, botany, and zoölogy, and the objects are, of course, apparent to all. First, it cultivates a familiarity with nature, which is wholesome and desirable. We are living in an artificial age. Children nowadays get too much pocket money; there is too much theater; too much smartness; too much flabbiness

for the real business of life; too much blasé yawning; too many parties; too much attention to dress; the color of the necktie; the crease of the trowsers, or the make of a gown. The only meaning science has for many of the richer classes is the curved ball of the pitcher, the maneuvers of the quarterback, or the manly art of self-defense.

I know of nothing that will counter-act the indifference of parents and lead the young mind back to a simpler and more humanizing condition of life than to make it familiar with old mother earth, the stream, the valley, the tree, the flower, and the bird.

Another object of field work is to develop habits of correct observation. Pupils ordinarily take too much for granted. They will swallow anything that is printed in a book, or that the teacher may choose to tell, always providing the pupil is sufficiently awake to perform the function. It is hardly an exaggeration that they would believe the moon was made of green cheese, providing the statement came with august solemnity from the teacher's chair. There is too hasty generalization and a prevailing unwillingness to careful examination. Careful field work opens the eye and corrects much of this slovenly mode of thinking, creates honest doubt, and questions an unsupported statement. The pupil wants to see the pollen on the bee before he believes in cross-fertilization; he wants to see rocks actually in layers before he will believe they could have been deposited in water, and he pounds up a fragment of sandstone to get at the original sand; he wants to see the actual castings before he will believe all that Darwin says about his wonderful earthworms; and few things escape the eye of the pupils who go out with the understanding that it is business and their duty to observe and take notes.

Another object of field study is to see life in its environment. Stuffed birds and animals in cases are all very good; shells look pretty behind nice glass doors, and herbaria play a very important part; yet, after all, how much better to see a thrush's flight; to hear the pewee's song; how much more satisfactory to watch a snail creep and feed; how much more delightful to study the blossoming hepatica; to note its various leaves, its soil, its surroundings, and discover why it blooms at the very opening of springtime.

More can be learned from a handful of pebbles on the beach than a whole book written upon the same subject.

Yet another object is to acquire specific information not contained in books. The feel of a leaf, the odor of the honeysuckle, or the pine, the cry of the kingfisher, the locomotion of a horse, and the locomotion of a cow, the formation of miniature gorges in a rain storm, and the wearing of a shore under the action of the waves, these and countless other manifestations can never be described in mere words.—*The School Journal.*

FROM COL. CHI. ACAD. SCIENCES. GOLDEN-WINGED WARBLER.

Life-size.

THE GOLDEN-WINGED WARBLER.

(*Helminthophila chrysoptera*.)

THIS member of the large family of warblers is considered rare, or only common in certain localities of its range, which is eastern United States in summer and Central America in winter. Its common names are blue golden-winged warbler, and golden-winged swamp warbler. It makes its appearance in May, when it may occasionally be seen about orchards. It soon retires into dense underbrush, however, and few persons who are not woodsmen ever get more than a glimpse of it. It breeds all through its range, but only casually north of Massachusetts. It builds its nest on or near the ground, in a plant tuft. It is made of grass, and is deep and bulky. The eggs are four or five, white, with reddish dots.

Ridgway says that June, 1885, he found these birds breeding along the southern edge of Calhoun Prairie, Richland county, Illinois, and Mr. H. K. Coale states that on May 11, 1884, in a wood on the Kankakee river, in Starke county, Indiana, he found the golden-winged warbler quite common. Eight were seen—all males, which were singing. Some were flushed from the ground and flew up to the nearest small tree, where they sat motionless next the trunk. The locality was a moist situation, overgrown with young trees and bushes.

PET ANIMALS AS CAUSES OF DISEASE.

PAPERS presented last summer at the French Congress for Tuberculosis at Paris demonstrate, says *The Medical News*, what has hitherto been very doubtful, that aviary and human tuberculosis are essentially the same pathologic process due to the same germ modified by a cultural environment, but convertible under favorable circumstances one into the other. An Englishman has found that more than ten per cent. of canaries and other song birds that die in captivity succumb to tuberculosis, and parrots have come in for a share of condemnation in this connection. By far the larger number of monkeys who die in captivity are carried off by tuberculosis, and while, fortunately, the keeping of monkeys as house pets is not very general, at the same time there is some danger of contagion. Nocard, the greatest living authority on tuberculosis in animals, and the man to whom we owe the best culture methods for the tubercle bacillus, found in a series of autopsies on dogs that out of two hundred successive autopsies on unselected dogs that died at the great veterinary school at Alfort, near Paris, in more than one-half the cases there were tubercular lesions, and in many of them the lesions were of such a character as to make them facile and plenteous disseminators of infective tuberculous materials.

Parrots are known to be susceptible to a disease peculiar to themselves, and a number of fatal cases in human beings of what was at first supposed to be malignant influenza, pneumonia was traced to the bacillus which is thought to be the cause of the parrot disease. Cats are sometimes known to have tuberculosis, and that they have in many cases been carriers of diphtheria and other ordinary infections is more than suspected. There is not at present any great need for a crusade on sanitary grounds against the keeping of pet animals, but they are multiplying more and more, and it does not seem unreasonable that greater care in the matter of determining the first signs of disease should be demanded of their owners, and then so guarding them as to prevent their being a source of contagion to human beings. Attention should be paid to this warning as regards children, as animals play more freely with them and the children are more apt to be infected.

A FLY-CATCHING PLANT.

WILLIAM KERR HIGLEY,
Secretary of The Chicago Academy of Sciences.

Queen of the Marsh, imperial Drosera treads
Rush-fringed banks, and moss-embroidered beds.
—*Erasmus Darwin, in The Botanic Garden, 1789.*

SOME of the most interesting forms of nature are not the most showy and are not easily observed by the untrained eye. Many of their characteristics can only be known by carefully conducted investigations, both in the field and in the laboratory.

The advance of science has shown us that it is as natural for some plants to obtain much of their nourishment from the animal world, by a true process of feeding, as it is for animal forms to obtain their sustenance, either directly or indirectly, from the vegetable world.

There are many species among the lower orders of plants that are well known animal parasites, but there are also, among our more highly organized flowering species, forms that improvise a stomach and secrete an acid fluid for the digestion of nitrogenous food which is afterwards absorbed and used in tissue building. These are in no sense of the term parasites.

Such a plant is our common round-leaved sundew (*Drosera rotundifolia*, L.). The generic name Drosera is from the Greek, meaning dew.

This rather insignificant, but pretty little plant is distributed nearly throughout the world, and is usually found in bogs, or in wet sand near some body of water. The flower stalk is seldom more than six or eight inches in height and bears very small white or pinkish-white flowers.

The interesting feature of this species, however, lies in the rosette of about five or six leaves growing from the base of the stem. These leaves lie upon the ground and are usually about one-fourth to one-half of an inch in length, and are generally nearly orbicular in form. The upper side is covered with gland-bearing tentacles. The glands are covered by a transparent and viscid secretion which glitters in the sunlight, giving rise to the common name of the plant. There are usually over two hundred tentacles on each leaf and, when they are not irritated, they remain spread out. The viscid fluid of the glands serves as an organ of detention when an insect lights upon the leaf. The presence of an insect, or, in fact, any foreign matter, will cause the tentacles, to which it is adhering, to bend inward toward the center of the leaf and within a very short time all the tentacles will be closed over the captured insect, which is soon killed by the copious secretion filling its breathing apparatus.

Though these sensitive tentacles are not excited by either wind or rain they are by the repeated touchings of a needle, or any hard substance. It is said that a fragment of hair weighing but 1-78,740 of a grain will cause a perceptible movement.

By experiment it has been shown that a bit of hard-boiled egg, or a fragment of meat as well as an insect will cause not only an inflection of the tentacles but also of the edges of the leaves, thus forming an improvised stomach, the secretion of the glands then increasing and becoming acid. At this stage the secretion is not only capable of digesting but is also highly antiseptic.

This power of digesting and absorbing nitrogenous food is absolutely necessary to the existence of the sundew, for it usually grows in a poor soil and its few and not greatly elongated roots are of little service except to absorb water, of which it needs a large amount for the production of the copious secretion. Specimens may be developed by planting in moist cotton and furnishing with plenty of water.

The length of time that the tentacles will remain inflected depends on the vigor of the leaf and the solubility of the material causing the excitement. The time varies from one to seven or eight days. [Pg 30]

Easily dissolved and readily absorbed food in too large an amount seems to cause overexcitement and overtaxation, and frequently results in the death of the leaf.

The large number of insects, especially flies, captured by these plants would lead one to believe that they are attracted by the odor of the plant, or the purplish color of the tentacles, rather than by the desire to use the leaves as a resting-place.

The sundew belongs to the natural order *Droseraceæ*. This contains about one hundred and twenty-five species, of which one hundred and ten belong to the genus Drosera, and are chiefly natives of Australia, though the round-leaved species is common throughout the United States, Europe, and Asia.

Closely related to the sundew is the Venus fly-trap (*Dionæa muscipula*, Ellis). This is a native in the eastern part of North Carolina only.

The leaf of this plant is provided with two lobes, which close quickly when the sensitive hairs, which are situated on the upper surface of the leaf, are irritated by an insect. The acid secretion flows out and the leaves remain closed till digestion and absorption are completed.

Dr. Asa Gray has referred to this species as "that most expert of fly-catchers."

TREES AND ELOQUENCE.

W. E. WATT.

FORTY years in the pulpit of Plymouth Church in Brooklyn Henry Ward Beecher stood and poured forth a stream of eloquence which shook the world. During the stress of civil war he stemmed the current of English sentiment with his peculiar powers and brought about a change of feeling which was the salvation of our Union. This greatest of our pulpit orators was a lover of trees, and some of his finer passages were inspired by them.

Without doubt, better trees there might be than even the most noble and beautiful now. I suppose God has, in his thoughts, much better ones than he has ever planted on this globe. They are reserved for the glorious land. Beneath them may we walk!

To most people a grove is a grove, and all groves are alike. But no two groves are alike. There is as marked a difference between different forests as between different communities. A grove of pines without underbrush, carpeted with the fine-fingered russet leaves of the pine, and odorous of resinous gums, has scarcely a trace of likeness to a maple woods, either in the insects, the birds, the shrubs, the light and shade, or the sound of its leaves. If we lived in olden times, among young mythologies, we should say that pines held the imprisoned spirit of naiads and water-nymphs, and that their sounds were of the water for whose lucid depths they always sighed. At any rate, the first pines must have grown on the seashore, and learned their first accents from the surf and the waves; and all their posterity have inherited the sound, and borne it inland to the mountains.

I like best a forest of mingled trees, ash, maple, oak, beech, hickory, and evergreens, with birches growing along the edges of the brook that carries itself through the roots and stones, toward the willows that grow in yonder meadow. It should be deep and sombre in some directions, running off into shadowy recesses and coverts beyond all footsteps. In such a wood there is endless variety. It will breathe as many voices to your fancy as might be brought from any organ beneath the pressure of some Handel's hands. By the way, Handel and Beethoven always remind me of forests. So do some poets, whose numbers are as various as the infinity of vegetation, fine as the [Pg 31] choicest cut leaves, strong and rugged in places as the unbarked trunk and gnarled roots at the ground's surface. Is there any other place, except the seaside, where hours are so short and moments so swift as in the forest? Where else except in the rare communion of those friends much loved, do we awake from pleasure, whose calm flow is without a ripple, into surprise that whole hours are gone which we thought but just begun—blossomed and dropped, which we thought but just budding?

Thus do you stand, noble elms! Lifted up so high are your topmost boughs that no indolent birds care to seek you, and only those of nimble wings, and they with unwonted beat, that love exertion and aspire to sing where none sing higher. Aspiration! so heaven gives it pure as flames to the noble bosom. But debased with passion and selfishness it comes to be only Ambition!

It was in the presence of this pasture-elm, which we name the Queen, that we first felt to our very marrow that we had indeed become owners of the soil! It was with a feeling of awe that we looked up into its face, and when I whispered to myself, "This is mine," there was a shrinking as if there were sacrilege in the very thought of *property* in such a creature of God as this cathedral-topped tree! Does a man bare his head in some old church? So did I, standing in the shadow of this regal tree, and looking up into that completed glory, at which three hundred years have been at work with noiseless fingers! What was I in its presence but a grasshopper? My heart said, "I may not call thee property, and that property mine! Thou belongest to the air. Thou art the child of summer. Thou art the mighty temple where birds praise God. Thou belongest to no man's hand, but to all men's eyes that do love beauty, and that have learned through beauty to behold God! Stand, then, in thine own beauty and grandeur! I shall be a lover and a protector, to keep drought from thy roots, and the axe from thy trunk."

For, remorseless men there are crawling yet upon the face of the earth, smitten blind and inwardly dead, whose only thought of a tree of ages is, that it is food for the axe and the saw! These are the wretches of whom the scripture speaks: "A man was famous according as he had lifted up axes upon the thick trees."

Thus famous, or rather infamous, was the last owner but one, before me, of this farm. Upon the crown of the hill, just where an artist would have planted them, had he wished to have them exactly in the right place, grew some two hundred stalwart and ancient maples, beeches, ashes and oaks, a narrow belt-like forest, forming a screen from the northern and western winds in winter, and a harp of endless music for the summer. The wretched owner of this farm, tempted of the devil, cut down the whole blessed band and brotherhood of trees, that he might fill his pocket with two pitiful dollars a cord for the wood! Well, his pocket was the best part of him. The iron furnaces have devoured my grove, and their huge stumps that stood like gravestones have been cleared away, that a grove may be planted in the same spot, for the next hundred years to nourish into the stature and glory of that which is gone.

In many other places I find the memorials of many noble trees slain; here a hemlock that carried up its eternal green a hundred feet into the winter air; there, a huge double-trunked chestnut, dear old grandfather of hundreds of children that have for generations clubbed its boughs, or shook its nut-laden top, and laughed and shouted as bushels of chestnuts rattled down. Now, the

tree exists only in the form of loop-holed posts and weather-browned rails. I do hope the fellow got a sliver in his fingers every time he touched the hemlock plank, or let down the bars made of those chestnut rails!

BATS IN BURMESE CAVES.

INTERESTING caves exist at Hpagat, twenty-six miles up the Salween, from Moulmein. They are hollowed out in the base of an isolated limestone hill about 250 feet high, rising precipitously from the river. Capt. A. R. S. Anderson, the surgeon-naturalist, gives an interesting account of these caves in an Indian government report which is abstracted by "Natural Science." The entrance is about twelve feet high and is much ornamented by Buddhistic sculptures. As the sun was setting the party took their stand on the sand-spit facing the entrance of the caves and soon saw a pair of falcons leave their perch on the trees and fly to and fro over the river. They were speedily joined by other birds, including common kites and jungle crows, and the entire flock, to the number of sixty or a hundred, flew to the entrance of the caves, close to which they remained wheeling about in mid-air. A few minutes later the bats began to issue in ones and twos, and were soon pursued by the birds of prey, but appeared to have no great difficulty in eluding capture by their rapid and jerky flight, and their pursuers made no very determined or long-sustained efforts to capture them, but soon returned to their vigil over the cave. A minute or two passed and a sudden rush of wings was heard, and the bats were seen to emerge from the cave in a dense stream which slowly became more and more packed, and continued of about the same density for some ten minutes and then gradually thinned away, until, at the end of twenty minutes, the last had emerged. The stream of bats when at its maximum was ten feet square, and so dense as to closely resemble smoke pouring from a chimney in a gale of wind. This resemblance was increased by the slightly sinuous course pursued by the bats as they flew off into the afterglow. They were so densely crowded that they frequently upset each other and fell helplessly into the river below, where they succeeded in reaching the bank only to fall a prey to the expectant crow. When the great rush occurred the falcons, kites, and crows entered the stream of bats and, flying along with it and in it, seized as many bats as they required for food. Capt. Anderson, by throwing his walking-stick into the stream of bats, obtained six specimens. During the last twenty years the bats appear to have considerably diminished in numbers, owing to the depredations of their bird enemies and to their constant disturbance by collectors of bat manure.

A METAL BIRD'S NEST.

IN THE Museum of Natural History at Soleure, in Switzerland, there is said to be a bird's nest made entirely of steel. There are a number of clockmaking shops at Soleure, and in the yards of these shops there are often found lying disused or broken springs of clocks. One day a clock-maker noticed in a tree in his yard a bird's nest of peculiar appearance. Examining it he found that a pair of wag-tails had built a nest entirely of clock springs. It was more than four inches across and perfectly comfortable for the birds. After the feathered architects had reared their brood, the nest was taken to the museum, where it is preserved as a striking illustration of the skill of birds in turning their surroundings to advantage in building their nests.

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FROM COL. CHI. ACAD. SCIENCES.
6-99

MOURNING-WARBLER.
Life-size.

[Pg 35]

THE MOURNING WARBLER.

(*Geothlypis philadelphia.*)

BASKETT, in his valuable "Story of the Birds," says that the warbler forms feed variously, but they use little vegetable matter. Some have ground-haunting, and even swamp-haunting habits; others have fringed tongues hinting of juices and nectars, while tree-trunk exploring, as in creepers, nuthatches, titmice, etc., also prevails. They have been described as at once the most fascinating and the most exasperating of birds. In the spring they come with a rush and although the woods may be full of them, only a faint lisp from the tree tops gives note of their presence, and unless you are a very good observer you will not know they are about at all. If you listen to other birds, instead of resolutely devoting yourself to warblers, you will lose the opportunity of the sight of a diminutive bird disappearing in a tree top. Some of the warblers dash about among the leaves on the ground hunting for gnats, others hunt over the branches of the trees, though some of them hop gaily on the ground, while others walk sedately, bobbing their heads or tilting their tails. The majority of the tribe fly northward to nest in pine forests. A few, however, remain and build in our parks, gardens and shrubbery. They are all insect-eaters, destroying ants, flies, caterpillars, larvæ, plant lice, canker-worms, and May flies. They are therefore of great value in the protection of vegetation.

The mourning warbler, whose common name is black-throated ground warbler, has its habitat in eastern North America, breeding from northern United States northward; more rare in the Atlantic states. It winters in south-eastern Mexico, and Costa Rica, and thence south to Colombia. During the spring migration this bird is very common. Early in May, 1881, they were found in abundance near wheat lands in Indiana, most of them being observed about brush piles in a clearing, and along fences in the immediate vicinity. In the early part of June, 1871, a pair were seen in a thicket along the border of Fox Prairie, in Richland Co., Illinois, and it was presumed at the time that they were breeding there, but they may have been merely late migrants. It is known to breed in mountainous portions of Pennsylvania, New England, New York, Michigan, Minnesota, and eastern Nebraska, northward. It has been found nesting in Illinois south of latitude 39. Its nest is built on or near the ground in woods. One discovered by Burroughs in the state of New York was built in ferns about a foot from the ground, on the edge of a hemlock wood. It contained three eggs. The nests are usually composed of fine strips of bark and other fibrous material, lined with fine hair. The eggs are white, with a sprinkling of reddish dots near the larger ends.

The feeling that all life is one life slumbers in the child's soul. Only very gradually, however, can this slumbering feeling be transfigured into a waking consciousness. Slowly, through a sympathetic study of nature and of human life, through a growing sense of the soul and meaning of all natural facts and of all human relationships, and through recreating in various forms that external world which is but the objective expression of his own inmost being, the individual attains to a consciousness and unity of life and to a vision of the Eternal Fountain of Life.—*The Nest.*

THE RAVEN AND THE DOVE.

ELANORA KINSLEY MARBLE.

"YEA, master," croaked the raven, "I understand," and spreading his sable wings over the waste of waters he flew, anxious, as was Noah, for a sight of dry land.

The day passed, evening fell, and the raven had not returned.

"An ill-omened bird," gloomily said Shem, "so black and uncanny looking. His croak, even, hath to mine ear an evil sound."

"What thou sayest is true, brother," returned Ham. "Verily the raven hath a wicked look. A bird of more cheerful aspect, it seemeth to me, might well have been chosen. The albatross, so majestic, with powers of flight excelling all other creatures of the air; the eagle, or better still the stormy petrel, so light of body, its webbed feet enabling it, with expanding wing, to rest at will upon the face of the waters."

"Coo-o-o," came a low, plaintive call from a far corner. "Coo-o-o."

"Ah, my turtle dove," responded Japheth, "so loving, so true! Had the choice of a messenger been left to me, my brothers, verily would I have chosen the dove. Naught but death would have kept it, believe me, from its mate and us."

Noah turned from the window and gazed sternly upon his three sons.

"What signifieth the complexion of bird, beast, or man," he demanded gravely, "when one standeth in need of courage, intelligence, strength? Among all the winged creatures of the air within the ark, canst thou name one with instinct more subtle than the raven's? Black and uncanny looking, forsooth! Witness his speech, I tell thee," decisively, "the bird hath understanding."

As Noah ceased speaking, there came a low, faint tapping at the window. With a glad countenance he hastened to open it, and in flew the raven, quite exhausted.

"Water, water, everywhere," croaked the bird, and after wearily eating the food Noah gave him, tucked his head beneath his wing and was soon fast asleep.

Upon the morning of the next day, Noah again sent the raven forth, also the next, and the next.

"Water, water, everywhere," croaked the raven, as before, upon his return, and after wearily eating of the food which Noah gave him, tucked his head beneath his wing and was soon fast asleep.

"Verily," sneered Ham, who with his brothers had grown very impatient, "the sable-plumaged bird which thou dost insist upon sending forth daily, knoweth naught, to my mind, but the words which he so glibly speaketh. Surely he hath heard them uttered an hundred times."

Noah reflected. "What thou sayest, my son, may be true," he responded, "for of a surety when gazing from the window these many, many months, those words of our speech have been the daily burden. To-morrow, then," his gaze fixed upon the stormy petrel, "we will send forth——"

"Coo-o-o" came a plaintive call from the corner. "Coo-o-o."

"The dove," finished Noah, thoughtfully, "for verily it doth seem to answer me. Though devoid of speech, its affectionate nature may yet prompt it to devise some way by which its message may be interpreted."

And so upon the morning of the next day Noah opened the window of the ark and, the dove, poising upon his finger, spread her beautiful wings and over the waste of waters took her joyful flight.

The day passed, evening fell, and the dove had not returned.

A dark frown was settling upon the brow of Ham, when a faint tapping was heard at the window.

"Water, water, everywhere," croaked the raven, maliciously, as Noah hastened to open it and draw the exhausted bird within. "Water, water, everywhere."

"Verily, oh, raven!" despondently said Noah, "it doth appear that the dove, not more than thou, didst find a place for the sole of her foot. I will wait yet another seven days," he added thoughtfully, "ere I send her forth again." [Pg 37]

And Noah waited seven days, and on the morning of the eighth he sent the dove forth again in quest of dry land.

The day passed, but ere evening fell the bird returned, bearing in her bill, as a token that the waters had abated, a freshly-plucked olive leaf.

"Thou art God's own messenger," joyfully said Noah, tenderly caressing the dove. "Verily something more than instinct guided and prompted thee in thy flight this day."

And Noah waited yet another seven days ere he again sent forth the dove.

This time, to the ark, the dove returned no more.

"Coo-o-o," more plaintively than usual, called her mate the next morning. "Co-o-o-o."

"He mourns for his lost love," pityingly said Japheth, the youngest son. "Verily, something hath befallen the bird!"

"Nay," responded Noah, "liberty is sweet. After long captivity in a dark, close house-boat, freedom might well try the fidelity of e'en a turtle dove. She awaits his coming, perchance, in the nearest pine or willow tree. Open then the window and let him forth."

And Japheth did as his father commanded, but sorrowfully, for it chanced that in close companionship, lo, these many days, with these innocent children of nature, Japheth had come to acquire a tender love and care for both beast and bird.

"Go, thou mourning dove," he said, unconsciously bestowing a fitting name upon the gentle bird. "Go!" And, spreading his beautiful wings, off the dove joyfully flew, following with unerring instinct the path in the air yesterday taken by his mate.

And yet a few days and Noah removed the covering from the ark and looked, and behold, the face of the ground was dry.

THE MAYFLOWERS.

(The trailing arbutus, or Mayflower, grows abundantly in the vicinity of Plymouth, and was the first flower that greeted the Pilgrims after their fearful winter.)

Sad Mayflower! watched by winter stars
  And nursed by winter gales,
With petals of the sleeted spars
  And leaves of frozen sails!

What had she in those dreary hours,
  Within her ice-rimmed bay,
In common with the wild-wood flowers,
  The first sweet smiles of May?

Yet, "God be praised!" the Pilgrim said,
  Who saw the blossoms peer
Above the brown leaves, dry and dead,
  "Behold our Mayflower here!"

"God wills it: here our rest shall be,
  Our years of wandering o'er,
For us the Mayflower of the sea
  Shall spread her sails no more."

O sacred flowers of faith and hope,
  As sweetly now as then
Ye bloom on many a birchen slope,
  In many a pine-dark glen.

Behind the sea-wall's rugged length,
  Unchanged, your leaves unfold,
Like love behind the manly strength
  Of the brave hearts of old.

So live the fathers in their sons,
  Their sturdy faith be ours,
And ours the love that overruns
  Its rocky strength with flowers.

The Pilgrim's wild and wintry day
  Its shadows round us draws;
The Mayflower of his stormy bay,
  Our Freedom's struggling cause.

But warmer suns ere long shall bring
  To life the frozen sod;
And through dead leaves of hope shall spring
  Afresh the flowers of God!

—*Whittier.*

FROM COL. F. M. WOODRUFF. 6-99

CHESTNUT-SIDED WARBLER. Life-size.

THE CHESTNUT-SIDED WARBLER.

(*Dendroica pennsylvanica.*)

LYNDS JONES.

FOR one reason or another we come to think of this or that bird as an exquisite. This may be due to color pattern, form, carriage or song, but whatever it be, the bird's presence adds color and beauty to all our surroundings. It is not easy to tell why the chestnut-sided warbler impresses me as an exquisite. His colors are not so bright, nor their pattern in either the contrast or harmony that may be found with other warblers, but there seems to be something about the bird that makes the day brighter, the wearing field-work easier, and hours of fasting forgotten when he flits into view. I have sometimes half suspected that he was more than half conscious of my admiration from the manner in which he displayed his pretty colors and trim form. But no doubt this is base slander. The slightly opened wings, spread tail, and quick movements give an alertness to the little fellow which adds to his otherwise bright appearance. The females and fall birds lack the distinct contrasts of color found in the male in his spring dress, but they usually have some trace of the chestnut on the side of the body, which, with the small size, will serve to distinguish them from all others.

The tree-tops seem to possess few attractions for this warbler, but in village parks he may often be found well up among the branches gleaning from the buds and new leaves for insects and their eggs. In the woods he gleans much nearer the ground, but I have never seen him upon the ground searching among the fallen leaves. Many times he may be found among the low underbrush, preferably not at the edge of the woods, but usually a few rods in. He seems rather partial to damp woods, but may often be found among the uplands as well, where insect life is abundant.

The song is uttered while feeding, the bird seldom arresting his search for food, but turning his head this way and that scanning each leaf and stem. It is often a less spirited song than that of many other warblers, seeming to be a sort of soliloquizing accompaniment to the pressing duties of sustaining life, but it is none the less a pleasing song. There is a somewhat close resemblance to some phrases of the yellow warbler's song in the rendering of the chestnut-side, but a little attention and a discriminating ear will readily distinguish the difference both in quality and in quantity. The song is more often heard on the college campus here than in the woods, and there it sounds something like this: "*Wee-chee wee-chee wee-chee-e-e-e*," with the accent on the first syllable of each phrase. This, in common with other warbler songs, cannot be well represented by a whistle, but rather by hissing or whispering the syllables between the closed teeth. The pitch is too high for my whistle. In the woods a common form of the song is, "*te te te te wee chu*;" and occasionally, "*to wee to wee to wee tee e-e-e*." In the woods the song seems to be far more spirited than in the village, as well as being different. This difference may be rather due to the fact that the first migrants are those that visit the village, while the later ones are found in the woods. It is well known that with many of the warblers the first singers, or at least the first songs heard, are often different from the later ones.

In the vicinity of Oberlin, Ohio, this little warbler makes his appearance about the fifth of May and does not leave for the north until the last week of May. It can not be called common at any time, some years not being seen at all, but may usually be found in the shrubbery fringing woods, or in the shade trees in the village. None have been found during the summer months, and it is doubtful if any remain to nest. The winter is spent in the Bahamas and Mexico, and from there southward. The species ranges north to Manitoba, Ontario, and Newfoundland, and west to the plains, being a bird of eastern North America. It breeds from New Jersey and Illinois northward. I once found it breeding in central Iowa.

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The nest resembles that of the yellow warbler, both in situation and composition. It is usually placed in the fork of a bush or shrub from two to eight or nine feet from the ground, made of the fibrous bark of the milk-weed, or some other hempen material, grass and sometimes leaves, lined with some sort of plant down and long hairs. The bark fibers are wound about the bush twigs, securely lashing the nest into the crotch. The four or five eggs are of a creamy-white color, with a wreath of reddish and dark brown spots and dots around the larger end, the spots becoming smaller and less numerous both ways from this wreath. They average about .66 × .50 of an inch.

In the fall they are among the first warblers to appear, often being seen early in August, and continuing in the region for several weeks. At this time of year their bright colors are wanting, but they are the same birds for all that, and may be readily recognized by their trim form and animated carriage.

NATURE STUDY—HOW A NATURALIST IS TRAINED.

SOME VIEWS OF JOHN BURROUGHS.

THE knowledge of nature that comes easy, that comes through familiarity with her, as through fishing, hunting, nutting, walking, farming—that is the kind that reaches and affects the character and becomes a grown part of us. We absorb this as we absorb the air, and it gets into our blood. Fresh, vital knowledge is one thing; the desiccated fact is another. Do we know the wild flower when we have analyzed it and pressed it, or made a drawing of it? Of course this is one kind of knowledge and is suited to certain minds; but if we cannot supplement it with the other kind, the knowledge that comes through the heart and the emotions, we are poor indeed.

I recently had a letter from the principal of a New England high school putting some questions to me touching these very matters: Do children love nature? How shall we instil this love into them? How and when did I myself acquire my love for her? etc. In reply I said: The child, in my opinion, does not consciously love nature; it is curious about things; about everything; its instincts lead it forth into the fields and woods; it browses around; it gathers flowers; they are pretty; it stores up impressions. Boys go forth into nature more as savages; they are predaceous, seeking whom they may devour; they gather roots, nuts, wild fruit, berries, eggs, etc. At least this was my case. I hunted, I fished, I browsed, I wandered with a vague longing in the woods, I trapped, I went cooning at night, I made ponds in the little streams, I boiled sap in the maple-woods in spring, I went to sleep under the trees in summer, I caught birds on their nests, I watched for the little frogs in the marshes, etc. One keen pleasure which I remember was to take off my shoes and stockings when the roads got dry in late April or early May, and run up and down the road until I was tired, usually in the warm twilight. I was not conscious of any love for nature, as such, till my mind was brought in contact with literature. Then I discovered that I, too, loved nature, and had a whole world of impressions stored up in my subconscious self upon which to draw. I found I knew about the birds, the animals, the seasons, the trees, the flowers, and that these things have become almost a grown part of me. I have been drawing upon the reservoir of youthful impressions ever since.

If nature is to be a resource in a man's life, one's relation to her must not be too exact and formal, but more that of a lover and friend. I should not try directly to teach young people to love nature so much as I should aim to bring nature and them together, and let an understanding and intimacy spring up between them.—*The Outlook.*

JOHN'S HAWK.

EMMA YARNALL ROSS.

JOHN came home one evening from a ramble in the country with a peach-box under his arm. He set the box very carefully on the back porch and then sat down himself on the top of the box.

His mother was watering some geraniums in a bed near by and paused in her work to look at the lad.

"Where did you get those peaches, John?" she asked, coming toward him with a pleasant smile.

John gave a low laugh. "This is a peach *box*, mother," he said, "but if what is in it is a *peach*, it belongs to a new variety, I think. Look at him, he is a beauty!"

"John Bonham, I hope you have not brought another pet to this house! Where in the world are we to stow away all these creatures on one little town lot? There is your groundhog, your owl, the crow, the coot, the tub of fish, the big dog, the little dog, and three Christopher Columbus cats."

"Now, mother, please stop; poor Chuck stays most of the time in his hole under the corner of the house, and the owl keeps the mice out of the cellar, and Jim Crow has not stolen anything for a month except that half dollar and your piece of lace and sister's red ribbon. You said I might have the wash boiler to make a swimming-pool for the coot, and I am going to feed the fish to him, so they will soon be gone and you can have your tub again. I heard you tell Mrs. Bland that our dogs guarded the whole neighborhood from burglars, and my Christopher Columbus cats are cute enough for anyone to be glad to have them. Mrs. Goodall says she 'wants one of them real bad.' You see, mother," said John, persuasively, "this fellow was such a beauty I just had to bring him home. Jake Timmons shot him through the wing as he was carrying off a dove; he was going to wring the hawk's head off, but I told him I would give him ten cents for it, for I wanted to try an experiment with the bird. I know I can tame him and make a pet of him; see, he can move around even if his wing is broken."

John's mother looked through the bars of the peach crate and saw a full-grown hawk with a beautiful brown head, eyes with blood-red rims, a strong, hooked beak, and long talons which he struck angrily into the stick John thrust at him through the bars.

"I never saw a more fierce, cruel-looking bird," she said. "See him tear at that stick! He will be tearing you next."

"I shall give him no chance to tear me, mother, for I intend to tame him."

"You might as well try to tame a tiger."

"Well, I am going to try taming him," said John, in a low, determined tone. When his mother heard him speak in that way she knew his mind was made up to succeed, and he had never yet failed in taming any of his pets.

John put the hawk in his dog-house, the front of which was formed of strong iron bars, and the next day his mother saw him sitting before this improvised bird-cage, going through some fantastic motions with his hands and gently chirping to the bird. No accident happened to the young naturalist in his care of the hawk, and gradually his mother ceased to think of it.

One afternoon, about three weeks after this, the family were seated on the piazza when they were startled at seeing John come around the corner of the house bearing the hawk on his wrist. Over the bird's head was drawn a gay-colored hood adorned with tiny bells and tassels—John had read how hawks were dressed in medieval times, and had made the hood himself. A long string was tied to one of the hawk's legs, and, setting the bird down gently, the boy tied the string to a small tree. All were watching him to see what he would do next, and all kept silence as he lifted a warning hand and uttered a low "H-u-s-h!" He then removed the hood from the bird's head, when [Pg 43] it immediately began tearing at the string, snapping viciously at objects near it, and running to and fro in an excited and angry manner.

John seated himself on the ground before the bird and began clucking to it softly, with the index finger of his right hand extended and pointing straight at the bird's eyes; then he turned quietly in whichever direction the bird moved, slowly waving his hand round and round in a circle and never taking his eyes off the bird's eyes.

Gradually the hawk ceased to run about, then stood still gazing steadily, as though fascinated, at John's finger. It would shut its eyes slowly, then open them suddenly, only to shut them again more slowly than before. At first the bird stood perfectly erect; then its head began gradually falling over on its shoulder, and, without any warning, it tumbled backwards, its eyes shut, its legs sticking straight up in the air, its body perfectly rigid. John continued for a time to wave his hand in a circle with the index finger extended; then he walked over to the porch leaving the hawk on the ground, where he lay for nearly thirty minutes, when he gradually returned to consciousness.

A number of persons walking by had stopped in the street to look at John and the bird, and now exclamations of surprise were heard as they saw the actions of the hawk.

"What did you do to that bird?" asked a gentleman of John; "I never in my life witnessed so strange a performance."

"I call that hypnotism," said the lad. "I have been working with him every day since I brought him home, and for a week I have never failed to bring him under my influence and put him to sleep in this way. If I go to the cage to feed him, he flies at me in a great rage at first, but if I pass my finger in a circle before him several times he becomes quiet, and will take a mouse from my hand without biting or tearing me with his talons. Sometimes I partly hypnotize him and lay the mouse at his feet, and although he may be very hungry he will not touch the food until I let him out from under the influence of my finger. When he is over being hypnotized he is as fierce as he was when I brought him home, and I do not believe he can ever be made tame like other birds. Perhaps if I had captured him when he was young, with the down still on him, I could have tamed him, but now he is too old and fierce."

"Well, my lad," said one of the men, laughing, "if he is not tamed you have him pretty well under your thumb and finger at least."

John's wonderful hypnotic influence over the hawk was soon known throughout the town and crowds of people often gathered to see him go through this truly wonderful feat of hypnotizing the fierce hawk.

The hawk belongs to the family of the *Falconidæ*, which is so called from the Latin word *falcis*, meaning a scythe, the talons of the *Falconidæ* being curved in the form of a scythe, thus giving the name to the species.

The wings of the hawk are so short they do not extend to the tip of the tail, for which reason it is called an ignoble bird of prey, to distinguish it from the true falcon, the wings of which extend to the tip of the tail and which is called a noble bird of prey. The hawk's bill is short, curved from the base, often terminating in a sharp point called a tooth. They have rather short, exceedingly strong legs and long incurved talons with which they tear their prey.

The species are numerous and widely distributed over the world; the goshawk and the sparrowhawk are the best known and most important. The hawk is a diurnal bird of prey, which means that it hunts in the day time. It flies with exceeding swiftness, having been known to travel a distance of 1,350 miles in twenty-four hours.

The hawk has very acute vision; hence the expression, "Keen-eyed as a hawk." It soars to a great height, always endeavoring to get above the bird it is pursuing in order to swoop down upon it from above. It soars in a series of arcs and against the wind, which helps it to rise as it does a kite. The hawk does not attack its prey with its beak, as is generally supposed, but with its talons. [Pg 44] After securing its prey by swooping on it and fastening its claws in its victim it gently descends to the ground.

The young hawk yet in the nest is called an eyas, one that can hop is a brancher, and a young hawk able to catch game is called a soar hawk. Young hawks taken in flying are called passage hawks, and the training of these is called reclaiming.

Hawking was for many years a sport followed by kings and the nobility in Europe. It is of very ancient origin, having been followed in Asia and Europe before the time of the Christian era.

The hawk builds its nest in the forks of a tree or on some inaccessible cliff. The female is larger than the male and lays two or three eggs.

CURIOUS TREES.

1. In Malabar, a tree called "the tallow tree" grows; from the seeds of it, when boiled, is procured a firm tallow which makes excellent candles.

2. The "butter tree" was discovered by Park in the central part of Africa; from its kernel is produced a nice butter which will keep a year.

3. The *palo de vaca*, or "cow tree," grows on rocks in Venezuela, South America. It has dry and leathery leaves, and from incisions made in its trunk a kind of milk oozes out, which is tolerably thick and of an agreeable balmy smell. At sunrise, the natives may be seen hastening from all quarters furnished with large bowls to receive the milk.

4. A tree of Madagascar, called the "traveler's tree," yields a copious supply of fresh water from its leaves, very grateful to the traveler. It grows in the most arid countries, and is another proof of the tender care of our Heavenly Father in supplying all His creatures' wants. Even in the driest weather a quart of water can be obtained by piercing a hole at the bottom of the leaf stalk, and the liquid is pure and pleasant to the taste. The leaves are of enormous size, varying from ten to fifteen feet in length.

5. The date tree is a species of palm, and almost every part of it is valuable. Its fruit is delicious and it is also esteemed for the palm wine drawn from its trunk. Its leaves are made into hats, baskets, fans, and many other articles, and the fibres of the leaf stems are made into cord and twine. A department store might almost be furnished from this tree.

6. The "sorrowful tree" is found on the island of Goa, near Bombay. It is so called because it flourishes in the night. At sunset no flowers are to be seen, but soon after it is covered with them. They close up or drop off as the sun rises. It has a fragrant odor, and blossoms at night the year round.

7. There is a tree in Jamaica called the "life tree," whose leaves grow even when severed from the plant. It is impossible to kill it save by fire.—*Normal Instructor.*

[Pg 46]

FROM COL. F. M. WOODRUFF. 6-99

BLACK-THROATED BLUE WARBLER. Life-size.

THE BLACK-THROATED BLUE WARBLER.

(*Dendroica cærulescens.*)

LYNDS JONES.

THE bird-lover has many red-letter days in his calendar, particularly when the birds are moving northward. The earliest arrivals, while snow still covers the ground, give their own peculiar thrill of delight, and waken in him new energy and great anticipations for the coming season of bird study. But these early arrivals soon become a part of the landscape and cease to lend any peculiar delight. Not so with the host of warblers, for they are here one day and may be up and away the next, not to be seen again for two or three months or even a year. One must be on the alert during warbler time if he expects to catch a glimpse of the passing host. But there are distinctively "warbler days" during this warbler time. These vary in different years with the weather and the advance of vegetation, from late April to the second or even third week of May, in northern Ohio and central Iowa, and proportionately later or earlier north or south of that latitude.

The subject of our sketch is not among the early migrating warblers nor yet among the later ones. He usually travels with the second large flight, and may then be expected late in April or early in May. The earliest Oberlin, Ohio, record falls on April 27, 1896, and the latest on May 10, 1897. Whether the birds arrive early or late they usually remain in the vicinity two weeks, the males being present during the first week and the females during the second. I have never found the two sexes present on the same date. The species cannot be said to be common even during the height of the spring migration, nor yet are they rare. Few are seen during the fall migration at Oberlin, and they during the last week of September and the first week of October. Further west in the Mississippi valley the fall migrants seem greatly to outnumber those of spring.

This is not a tree-top inhabiting species, but seems to prefer the middle branches of the trees or the tops of shrubbery, often descending to the ground and gleaning there much after the fashion of the Maryland Yellow-throat. In the higher woods free from underbrush he seems to prefer ground gleaning, but where low underbrush affords a place for low gleaning he is seldom seen on the ground. In village parks he is fond of a much higher perch, and must be looked for there well up in the trees, even to the topmost branches, where he gleans among the bursting buds and new leaves. On the Oberlin College campus he is a regular spring visitor in early May, and here seems to appreciate his environment and rare opportunities, for he sings his best to the accompaniment of the medley of pianos in the Conservatory of Music across the way, and the deeper tones of the great pipe organ in the chapel hard by. Here I have heard him singing at all hours of the day, while in the woods his song is less often given. One is at a loss to assign a reason for the decided preference for the college campus, which is in the center of the village activities. Rumbling wagons and tramping feet cause the birds not the slightest alarm, but swiftly moving bicycles act upon the birds' nervous system much as upon that of an elderly woman.

The song of this warbler is variously rendered by the various writers upon bird songs. None of these renderings seems to describe the song as I hear it on the college campus. It is singing as I write: "*Tu euu euu e-e-e-e-e!*" A variation sounds, "*C'weu, c'weu, c'wee-e-e-e;*" sometimes "*c'weu, c'weu, c'w', c'w', c'wee-ee-e-e-e*." There is also often a single phrase which sounds more like a scolding note than a song. It is: "*Tw', tw', tw', tw', twee'e-e-e-e-e*," or even "*Z-z-e-e-e-e*," rarely it may sound simply "*Z-z-z-z-z-z*." The song is uttered in a spirited manner while the bird is feeding [Pg 48] and flitting about in the foliage, it interfering with the feeding only as a sort of after-thought, causing a momentary pause as the bird raises his head and straightens his body for the effort. It is one of the warbler songs that are easily recognized and not readily forgotten.

Were it not for the white spot or patch on the wing of both male and female at all seasons of the year and in all plumages, this warbler would easily escape the notice of all but the alert ornithologist. His black throat and breast, white belly and blue back and wings and tail are not conspicuous in the trees and foliage.

The black-throated blue warbler spends the winter months in Guatemala and the West Indies, and migrates north to Labrador and Hudson's Bay, nesting there and in the northern parts of the United States. It ranges west to the border of the plains.

The nest is placed in low shrubs or bushes from a few inches to two feet above the ground, and is composed of dry fibrous bark, twigs, and roots, lined with black rootlets and hair. The outside is often more or less covered with cocoons. The thick swampy woods with an undergrowth seems to be the favorite resort for the nesting birds. The four eggs are buffy-white to greenish-white, rather heavily blotched with varying shades of brown. They average about .69 × .50 of an inch.

THE EMPEROR'S BIRD'S NEST.

Once the Emperor Charles of Spain,
With his swarthy, grave commanders—
I forget in what campaign—
Long besieged, in mud and rain,
Some old frontier town of Flanders.

Up and down the dreary camp,
In great boots of Spanish leather,
Striding with a measured tramp,
These Hidalgos, dull and damp,
Cursed the Frenchmen, cursed the weather.

Thus, as to and fro they went,
Over upland and through hollow,
Giving their impatience vent,
Perched upon the Emperor's tent,
In her nest, they spied a swallow.

Yes, it was a swallow's nest,
Built of clay and hair of horses,
Mane or tail, or dragoon's crest,
Found on hedge-rows east and west,
After skirmish of the forces.

Then an old Hidalgo said,
As he twirled his gray mustachio,
"Sure this swallow overhead
Thinks the Emperor's tent a shed,
And the Emperor but a *macho*!"

Hearing his imperial name
Coupled with those words of malice,
Half in anger, half in shame,
Forth the great campaigner came
Slowly from his canvas palace.

"Let no hand the bird molest,"
Said he solemnly, "nor hurt her!"
Adding then, by way of jest,
"Golondrina is my guest,
'Tis the wife of some deserter!"

Swift as bowstring speeds a shaft,
Through the camp was spread the rumor,
And the soldiers as they quaffed
Flemish beer at dinner, laughed
At the Emperor's pleasant humor.

So unharmed and unafraid,
Sat the swallow still and brooded,
Till the constant cannonade
Through the walls a breach had made
And the siege was thus concluded.

Then the army, elsewhere bent,
Struck its tents as if disbanding,
Only not the Emperor's tent,
For he ordered, ere he went,
Very curtly, "Leave it standing!"

So it stood there all alone,
Loosely flapping, torn and tattered,
Till the brood was fledged and flown,
Singing o'er those walls of stone
Which the cannon-shot had shattered.

—Longfellow.

Transcriber's Note:

- Minor typographical errors have been corrected without note.
- Punctuation and spelling were made consistent when a predominant form was found in this book; otherwise they were not changed.
- Ambiguous hyphens at the ends of lines were retained.
- Mid-paragraph illustrations have been moved between paragraphs and some illustrations have been moved closer to the text that references them.
- The Contents table was added by the transcriber.

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