BIRDS and NATURE

IN NATURAL COLORS

FORTY ILLUSTRATIONS BY COLOR PHOTOGRAPHY

A GUIDE IN THE STUDY OF NATURE

VOLUME III.

EDITED BY WILLIAM KERR HIGLEY

CHICAGO
A. W. MUMFORD AND COMPANY, PUBLISHERS
378 Wabash Avenue
1906

INDEX.

VOLUME III.

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

THE SNOW

In the dark the snow is sifting, in a white shower swiftly drifting,
Like the seed the sower scatters from his rough and horny hand;
See it heaving into waves, swelling into shapeless graves,
Rippling into curves and frettings, like the ocean's silver sand.

How it hangs upon the eaves, how it dots upon the leaves,
Crystal round the ruby berries and the green and glossy leaf,
Clinging to the netted boughs, massing on a sloping house,
Filling all the mind and feelings with a blank, unreasoning grief.

Heavy swathes upon the brier, rising every moment higher,
Sloping in a massy buttress up against the old church wall,
Hollowed into roadside caves by the night-wind's gnawing waves,
Turning every roof to silver—hut and palace, farm and hall.

See the wild bird on the thorn, waiting for the peep of dawn,
Guarding yonder ruby berry, like a magic talisman,
Fluttered frightened at the snow rustling through the break below,
As the hare flew, scared and startled, from the coming steps of man.

As I look into the night, over hill and plain of white,
Comes a watchful angel's voice, clear yet softly through the dark,
As the wind grows louder, higher, spreading like a prairie fire,
And the elm shakes like the mainmast of a tempest-tossing bark.

"Soon the south wind shall blow soft, breathing over glade and croft,
Soon the blue will slowly widen, and the air with music ring;
And from out this snowy tomb, like a soul unto its doom,
Shall the Spring leap up in gladness, and to God his praises sing.
—WALTER THORNBURY, "Snow Crystals."

THE PASSENGER PIGEON

(*Ectopistes migratorius.*)

There are few, if any, birds of which it is more difficult and painful to write than the Passenger or Wild Pigeon, for it forcibly calls to mind the inhuman side of man's nature. This beautiful bird, which is now very rare and perhaps nearly extinct, was only a few years ago not only common but very abundant. In the year 1892 Captain Bendire fully appreciated the critical situation as regards the Passenger Pigeon. He then said: "In fact, the extermination of the Passenger Pigeon has progressed so rapidly during the past twenty years that it looks now as if their total extermination might be accomplished within the present century. The only thing which retards their complete extinction is that it no longer pays to net these birds, they being too scarce for this now, at least in the more settled portions of the country, and also, perhaps, that from constant and unremitting persecution on their breeding grounds, they have changed their habits somewhat, the majority no longer breeding in colonies, but scattering over the country and breeding in isolated pairs."

Both Wilson and Audubon tell us of immense flocks which they observed many years ago. Mr. Wilson speaks of having counted upwards of ninety nests on single trees, in a breeding place in the state of Kentucky. Near Frankfort, in the same state, he saw an immense number and says: "They were flying, with great steadiness and rapidity, at a height beyond gunshot, in several strata deep, and so closely together that, could shot have reached them, one discharge could not have failed of bringing down several individuals. From right to left, far as eye could reach, the breadth of this vast procession extended, seeming everywhere equally crowded." Curiosity determined Mr. Wilson to find out how long this appearance would continue. It was then about half past one o'clock. He says: "I sat for more than an hour, but instead of a diminution of this prodigious procession, it seemed rather to increase both in number and rapidity; and, anxious to reach Frankfort before night, I rose and went on. About four o'clock in the afternoon I crossed the Kentucky river, at the town of Frankfort, at which time the living torrent above seemed as numerous and as extensive as ever. Long after this I observed them in large bodies, that continued to pass for six or eight minutes, and these again were followed by other detached bodies, all moving in the same southeast direction, till after six in the evening." Mr. Wilson estimated that this flight of Pigeons must have included many more than two thousand two hundred millions of individuals.

If the Passenger or Wild Pigeons were so abundant, what was the cause of their relatively sudden disappearance? The last known stronghold of these birds was in Michigan and it was there that the last flight of any magnitude was observed. This was in 1888. The last group of Pigeons of any importance, in relation to numbers, nesting in Michigan was noted in 1881, a short distance west of Grand Traverse. It is said that the area occupied was small and only about eight miles long. This species has been practically, if not quite exterminated by the unsportsmanlike methods of hunting them. So numerous and countless were the Pigeons in the flocks at the nesting and roosting places that a gun seemed a totally useless weapon for the hunt. Wholesale methods of destruction were followed, and they were caught in nets, or knocked to the earth with poles. It is said that in the Michigan nesting period of 1881 at least

FROM COL. RUTHVEN DEANE.

125

PASSENGER PIGEON.
(Ectopistes migratorius).
½ Life-size.

five hundred men were engaged in netting the birds and it was thought by one Pigeon netter they may have captured twenty thousand birds apiece during the season. But this was not the worst feature of this inhuman method of hunting. Large trees containing a number of nests were cut down in order to obtain the fat young birds or squabs. Another excellent account, which helps to show why the Passenger Pigeon has been nearly exterminated, is that of Professor H. B. Roney, regarding a nesting area in Michigan during the year 1878. In the "Chicago Field" Professor Roney makes the following statement: "The nesting area situated near Petoskey, covered something like 100,000 acres of land, and included not less than 150,000 acres within its limits, being in length about forty miles by three to ten in width. The number of dead birds sent by rail was estimated at 12,500 daily, or 1,500,000 for the summer, besides 80,352 live birds; an equal number was sent by water. We have, adding the thousands of dead and wounded ones not secured, and the myriads of squabs left dead in the nest, at the lowest possible estimate, a grand total of 1,000,000,000 Pigeons sacrificed to Mammon during the nesting of 1878." Regarding the estimate of Professor Roney, Captain Bendire has said: "The last mentioned figure is undoubtedly far above the actual number killed during that or any other year, but even granting that but a million were killed at this roost, the slaughter is enormous enough, and it is not strange that the number of these Pigeons are now few compared with former years." Captain Bendire's statement was published in 1892, and now we may truthfully say that the beautiful Passenger Pigeons are practically no more; in the words of Mr. Dawson, they are "lost in the maw of human greed."

ALEX'S REINDEER DRIVE

Alex was getting impatient. Everything was ready and his uncle must know how anxious he was to start. He had been greatly interested in the harnessing of the reindeer. It took but a few moments for the Lapp to place the deerskin collar about its neck, pass the trace between its legs under the belly and fasten it to the front of the sledge, then tie a single rein to the lower left horn. While the Lapp was harnessing Alex's deer, Mr. Polaski harnessed his own animal. Mr. Polaski was a buyer of reindeer pelts and was taking a journey north to the land of the Lapps for that purpose.

It was Alex's first visit to Lapland. His uncle had long promised him a reindeer drive, and was now taking him a short distance of the trip. They were bundled up in their thick deerskin suits so that nothing was visible but their faces. Everything was ready for the drive but there was so much talking to be done, it seemed to Alex as if they never would get started. Mr. Polaski was making inquiries and receiving important information that would help him on his journey, but Alex could not understand the language his uncle and the Lapp were speaking, so it did not interest him. He was very glad when his uncle turned to him and said, "Well, boy, I guess we'll be going now. Get in the pulkha and I'll show you how to drive."

The sledge was shaped like a canoe. It had a flat bottom and was about five and a half feet long, a foot deep and a foot and a half wide. Alex jumped into it and sat upright with his back against the backboard and his legs stretched out

on the bottom. A deerskin robe had been placed in the sledge and Mr. Polaski wrapped another around him and put the rein in his right hand.

"When you want the deer to go to the right, drop the rein on his right side and when you want him to turn to the left, drop it on his left side. I will go ahead and your deer will follow on after mine so you will not have to do much driving."

Mr. Polaski got into his sledge, bade good bye to the Lapp, spoke the starting word to the deer and off they went. Alex's deer gave a leap which nearly upset him, and started on a run after the other deer. The sledge lurched so from side to side Alex found it no easy matter to keep his balance. They had not gone far when he was tossed out into the snow and over went the sledge bottom side up. The deer stopped, turned his head and looked with stupid surprise at the scene. Mr. Polaski halted to see if Alex was hurt, but the boy was only covered with snow and he soon had the sledge righted and started again. After four or five such upsettings, Alex learned to keep his balance better. The deer was now going at good speed and he began to enjoy the drive. There were no other people in sight, nothing but snow, everywhere, and Alex thought how dreary the ride must be to one traveling alone. His uncle was nearly always within talking distance so he was not lonesome. He was not uncomfortably cold for he was used to cold weather, but it made his legs ache to have them stretched out so. He pulled up his knees but at the next lurch of the sledge out he went.

"I've got to rest my legs a minute," he shouted to his uncle.

"I forgot you were not used to riding in that position and never thought about your legs aching. We will stop awhile and let our deer feed."

The deer were soon scraping the snow away with their hoofs and noses and feeding on the moss underneath, while Alex and his uncle walked about to keep warm and get the stiffness out of their legs.

"Well, what do you think of reindeer driving. Is it all that you expected or are you disappointed?"

"I like it even better than I thought I should, but it is kind of hard work to keep from tipping over."

"You would soon get used to the lurching of the sledge, then you would get along all right."

"How much farther is it to the place where we are to stay over night?"

"Between twenty-five and thirty miles, I should judge. We would better start as soon as you are ready, for it will be twilight before we reach there."

About three hours later they were warmly welcomed into the hut of a Lapland family. Alex was glad to get in out of the cold, but such a dingy place as it was! He wondered if the hut would seem like home to him if he had never known any other. How good the supper tasted! There was black bread, reindeer meat, butter and cheese made from reindeer milk and plenty of milk to drink. Alex did not realize how hungry he was until he began to eat.

"Anybody would think I hadn't had a thing to eat in a week," he remarked.

Mr. Polaski laughed and said, "I thought you would do justice to your supper. I know nothing better than a reindeer drive to sharpen one's appetite." When the meal was over, Mr. Polaski and the Lapps settled down for a long chat.

"Come, boy, I guess you'd better turn in if you're as sleepy as all that." Alex opened his eyes and rubbed them several seconds before he realized where he was. "You're to sleep right here on these deerskins. All you've got to do is to get into this sleeping sack. Put your feet into it and I'll help you." Mr. Polaski pulled the deerskin sack up to Alex's neck, then threw more deerskins over him. "There, I guess you'll be warm enough. Good-night."

After breakfast the next morning Alex and his uncle were taken out to see the herd of reindeer driven out to feed on the lichen. The Lapp was very proud of his herd and well he might be for it consisted of over four hundred well-conditioned animals. Alex was amazed to see so many deer together.

It seemed like an endless number to him and he amused his uncle by asking if this Lapp didn't own about all the deer there were in Lapland.

Mr. Polaski pointed out the owner's brand by which each deer was branded and explained to Alex that by that mark a deer that had strayed away from the herd could be known and returned to its owner.

The rest of the day was spent by Mr. Polaski in sorting and bargaining for reindeer pelts, and Alex was told to amuse himself. Left to his own devices, the boy's curiosity kept him busy until everything worth seeing had been examined.

"Well, how would you like to live here, young man?"

"Russia is good enough for me Uncle. The reindeer driving is all that I care about. Everything is so queer! The people look so odd and are bundled up so they don't seem like folks, and the huts don't look a bit like our houses. I'm sure I shouldn't like to live here all the time."

The next morning Alex was put in charge of one of the Lapps to be taken back to the settlement, while Mr. Polaski resumed his journey. The return drive was not quite so enjoyable to Alex for he and the Lapp could understand each other only by signs. The Lapp's animal was a very swift one and Alex's deer tried to keep up with it, so there was not so much lurching of the sledge and he had but two upsettings.

How they sped over the snow! Alex could hardly believe his sight when the settlement came in view. When dinner was over, the droshky stood ready at the inn door and Alex invited the Lapp to ride with him. The carriage and the three horses were a great attraction to the Lapp and no doubt he would have liked very much to have accepted the invitation, but he pointed in the direction they had come and gave Alex to understand that he was to start back for home at once.

The driver of the droshky was given all the details of the trip and was informed that reindeer went far ahead of horses. When Alex reached home, he was the envy and admiration of his comrades. To their minds, a boy that had been to Lapland, ridden in a sledge after a reindeer, and eaten and slept in a Lapland hut, had an experience that was worth boasting about. Always after that, his uncle's journeys to Lapland had a much deeper meaning for Alex, and Mr. Polaski was greatly pleased that the boy had gained so much from the trip.

MARTHA R. FITCH.

FOREST VANDALISM

Daily the axe is doing its quota in leveling our forests; removing the familiar giant growths throughout our farm-lands, about our homesteads.

Vast tracts of timber-lands are annually devastated, no vestige of past conditions remaining; even the smaller growths being utilized as a commodity of commerce, or annihilated throughout the clearing as refuse to meet the fire brand.

Over such arias new attitudes toward the general preservation of nature's equipoise throughout the states prevail and tend by just so much to disarrange a harmony which has proved in the past beneficent to man and essential to the best results of vegetable life.

The breath of the forest is no imaginary element of interest, but a factor among nature's forces as truly as are the winds upon which it is freighted.

The living tree inhales and exhales through its leaves; it takes from the air and from the soil elements which, within its marvelous laboratory not only build up its own structure but enable it to give back to the earth and air its breath and the principles of vegetable life in its fallen leaf.

The higher the development of tree formation the more pregnant its influ-

ences in determining its opposing power to the course of tempests, its huge arms holding the winds in check that would otherwise sweep on with increasing and devastating strength.

The service of forests in preserving the integrity of fertile lands, in breaking the sweep of winds before they develop into cyclonic power, is so widely known that reference to it here might seem unneeded were it not for the indifference with which in most quarters of this continent the felling of noble forests, the growth of centuries, is submitted to without protest.

Apart from the extensive tracts thus devastated, which have been the opposing forces to our winds and to considerable extent forces in regulating the supply of moisture to fertile lands, on every side of us we see the smaller girdles of timber-land opening up into clearings, affording ready avenues for the unimpeded tempest's sway.

The farms, where but a while ago the lower growths of timber were allowed to do their little in holding back the wind-forces from the fields, are becoming more and more the wide stretches of cultured soil, too well kept to be bordered by the familiar hedge-row, too valuable to be shaded by trees, or invaded by wide-spreading roots.

The felling of a tree, it should be remembered, is not an act independent of result and subject of interest alone to the hand that hews it. A tree is a benefactor which has done its own part in bringing fertility and preserving the same in the region where it has been permitted to accomplish its work of growth.

Not only have the trees which the axe is leveling been the instruments of inducing rainfall and baffling the havoc-dealing course of tempests, but they conserve the moisture where it falls, holding it in check by the net-work of its roots, retaining it to a slower, more helpful mission in the field beyond; holding it also in the matted tissues of its fallen leaves whence it drifts slower to some root or brook, thus inducing prolific vegetation and preventing the rush of water consequent upon the rapid deposits of pelting showers, which otherwise would, without resisting element, have swept the clearing with its unimpeded force, carrying with it in its turbulent course the best elements of fertility, the top soil, which it could have carried quickly to stream and river, leading on toward that period when the unresisting land may become, while rainfalls continue, but a watershed to wash out the fertility of fields, cut ever into new or deeper gullies, and to carry flood and disaster along the track of nature's swollen veins which she is powerless to relieve.

How soon public sentiment throughout this land will be awakened to the dangers impending through drouth, cyclone and flood by the disregard of obvious natural law by which alone calamity can be averted it is difficult to predict, but the sooner a widespreading attempt to insure this end is made the better it will be that districts now habitable and fertile may not be irretrievably given up to conditions prevailing over other desert regions of the earth.

Though the statement that lumbering demands must be supplied may be given as decisive and incontrovertible by those standing between our noble forests and the vandal forces preying upon them, and though the owners of estates may feel themselves independent and above reproach in destroying trees limiting vision or the boundaries of arable land, let it be ever remembered that there are unwritten obligations to the world which men are bound to consider and there are natural forces which no logic or commercial consideration can over-rule or mitigate.

Might not one way of tending toward the preservation of timber-land be found through the remission of taxes to the land-owner in proportion to the area of timber-reservation which his territory represents?

Even in very small estates this system might assist in stemming a tide which is carrying this country toward a vortex from which the future may find it difficult or impossible to recede.

GEORGE KLINGLE.

FROM COL. CHI. ACAD. SCIENCES.

123

FOX SPARROW.
(Passerella iliaca).
⅞ Life-size.

THE FOX SPARROW

(*Passerella iliaca.*)

The Fox Sparrow is one of our most interesting and engaging birds and sings a most fascinating song. It has an extensive range covering eastern North America from the Arctic coast, south to the Gulf States, and westward to the Great Plains and Alaska. It breeds, however, only north of the United States and winters chiefly south of Virginia and Illinois. For this reason this species is only known in the northern United States as an early spring and rather late fall migrant. During this period of journeying from its winter home to its summer nesting home in the spring, and its return in the fall, its wonderful song is not often heard. At these seasons, these Sparrows are very quiet, uttering occasionally a soft call note. While with us, the Fox Sparrows usually frequent moist woods and the edges of thickets. They are usually in small flocks, and though they may be in the neighborhood of other sparrows they do not mingle with them. While they seldom stray far from thickets they do frequent hedgerows and weedy grainfields. Frequently they search for their food upon the ground, scratching among the dead leaves and other debris in a manner fully equal to our ordinary domestic fowls, though they are much smaller birds.

In the spring the male Fox Sparrows become very musical and fortunate indeed are those whose pleasure it is to hear their song. Dr. Brewer has said: "His voice is loud, clear, and melodious; his notes full, rich, and varied; and his song is unequalled by any of this famiily that I have ever heard." Mr. Eugene P. Bicknell writes most glowingly of the song. He says: "Its song is not surpassed by that of any of our Sparrows. It is a revelation to hear it at sundown on some vernally softened evening of early springtime; little swarms of gnats hover in the balmy air; from the twilight meadows comes the welcome, half-doubtful piping of the first hylas—no other sound. Then perhaps from some dusky thicket a bird's song! An emotional outburst rising full-toned and clear, and passing all too quickly to a closing cadence, which seems to linger in the silent air. It is the song of the Fox Sparrow with that fuller power and richness of tone which come to it, or seem to, at the sunset hour. It breaks forth as if inspired from pure joy in the awakened season, though with some vague undertone, scarcely of sadness, rather of some lower tone of joy." Mr. Maynard, who heard the Fox Sparrows sing on the Magdalen Island, says of this magnificent melody: "These fine strains consist at first of three clear, rather rapid notes given with increasing emphasis, then a short pause ensues, and the remainder of the lay is poured forth more deliberately, terminating with a well rounded note, giving a finish to a song which for sweetness and clearness of tone is seldom surpassed even by our best performers." Mr. T. C. Smith, who has made a careful study of this bird's song, says: "The voice of the Fox Sparrow in its full power is clear, sustained, and rendered rich by overtones. It has not, of course, the metallic, vibrant ring of the thrushes or the bobolink, it is rather the sparrow or finch voice at its best, a whistle full of sweetness with continual accompanying changes of timbre."

The Fox Sparrows build their nests either on the ground or in trees or bushes. When built upon the ground the site selected for the nest is usually well concealed by the low branches of trees and tall grass. The nests which are usually large for the size of the birds are constructed with loosely woven dry grasses, animal hairs, and moss which forms the outer wall. In some localities there is placed inside of the outer wall of the nest a second layer of finer grass and moss. The lining or bed consists of hair and the feathers of various species of water-fowls. In one nest, Mr. Audubon found the down of the eider duck. The Fox Sparrows often nest in colonies.

AN AUNT JANE STORY

NAMES OF BIRDS

"How did birds get their names, Auntie"? Alice enquired, as the group of children at Woodland gathered around a table covered with pictures of brilliantly colored birds.

"The ornithologist is responsible for the long, difficult-to-remember nomenclature, but the popular names of birds describe their distinguishing characteristics. Think a moment, and you will find that the popular name is usually simply descriptive of a special color, a peculiar song or call, or some striking peculiarity in form or habit of life."

"The Shrike gets his name from his shriek, doesn't he? for his harsh, rasping voice has suggestions in it of a bird of prey," asked Howard.

"Yes, and it is a bird of prey, too, though classed among the singers."

"I know where the Storm-petrel gets its name, for it is a namesake of Peter, so called because like him it seems to walk upon the water," exclaimed Edith.

"You are right," Aunt Jane responded, "sailors also call it 'Mother Carey's Chicken'—Mother Carey was perhaps a witch—because it foretells storms. It is a small, dusky bird of graceful flight resembling the Swift in its motions. It is said that it feeds its young at night on an oily substance from its own stomach."

"I've often wondered," said Edith, "about the queer name of the Lapwing."

"That name refers to the birds' peculiar flight which is thought to be due to its wide rounded wings, the steady and ordinarily slow flapping of which impels the body with a manifest though easy jerk. This bird is found in most countries except America. Its absence here is to be regretted as it is not only excellent game and furnishes the plover's eggs of commerce, but it is also a good friend to the agriculturist sustaining itself entirely on insect pests."

"Isn't the Lapwing a Bible bird?" Alice enquired.

"The Lapwing of Scriptures is an entirely different bird" was the reply. "It is the Hoopoe of conspicuous crest. It has no idea of the sanitary care of its nest. The female scarcely leaves it during incubation as she is fed by the cock. The Jews classed the Hoopoe with unclean birds, but the Arabs reverenced it and used it as a charm.

"There is a bird with an odd name which frequents the Yellowstone park" Aunt Jane went on. "It is called the 'tallow hawk' because it is so fond of grease. It will swoop down to the table of campers or picnic parties and carry off all the butter or any kind of fat it can find. It is a lead colored bird only a little larger than a jay."

"I wonder" said John, "if travelers put up with its pranks or if they shoot it."

No, birds are not allowed to be killed in the park, so it becomes very tame. Most persons are merely amused by its pilferings, though, of course, others are annoyed."

"I think the Umbrella Bird has a curious name, why is it so called?" Edith enquired.

"It is a native of Brazil," was the reply, "and has two descriptive names. It is about the size of a raven, with dark blue, glossy plumage. Its crest is formed of plumage two or three inches long, thickly set and with hairy plumes curling over the ends. These, when erected, resemble an umbrella covering the head and long beak. Its loud cry gives it also the name of 'Trumpet Bird.'"

"I can think of a number of birds named for their color" said Alice, "such as Black, and Blue Birds, Red Bird, and Yellow-throat, White-head and others."

"Many of the birds are named for their note, cry, or call," said Howard, "such as Dickcissel and Bob-white."

"A few of them, too, for the shape of the bill," added Edith, "as Crossbill, Spoonbill, and Grosbeak."

"Quite right," Aunt Jane responded. "We may add, also, that the manner of taking food has suggested various popular names such as Sapsucker, Woodpecker, Nuthatch. The Snake bird has its name from the shape of its long neck,

the Sheldrake, from its variegated plumage, the Coot, from its short tail. Cormorant comes from two words which mean sea raven. The name Raven denotes the rapacious character of the bird that bears it."

"But, Auntie, Ravens are some times petted and much beloved, as was the case with Dickers pet Raven, Grip," said Edith. "I remember reading that it had been taught to talk and its favorite expression was 'Hello, old girl!'"

"Why is the best bird-talker called Parrot?" asked John.

"The name is from a human being—'Pierrot,' the diminutive of 'Pierre.' Of all the more than one hundred species only one is found in the United States. The Carolina Paroquet has been seen in twenty different states but it is rapidly being exterminated and soon will be known only in museums and in literature. It's a great pity it should have been exterminated before its habits were thoroughly studied."

"I suppose," said Edith, "that the Hummingbird has its name from the humming sound of the wings when poised above flowers."

"True, and it frequently cross fertilizes the flowers. In tropical countries Sunbirds, Honey Eaters and Lories do the same helpful work. Darwin says the Hummingbirds of Brazil fertilize various species of Abutilon. Fortunately where these birds abound, the flowers are large, so the birds are as well adapted to them as insects are to the flowers of colder climates. It is also to be noted that there is an abundance of honey-bearing flowers as if for the special use of the 'honey-eaters' who are so well named after their favorite diet."

"Where did the Ibis get his queer name?" Howard asked.

"It is the Egyptian 'Abose-mengel,' 'father of the sickle' named from the shape of its bill. It was once a sacred bird, dwelling in temples instead of museums. It was the direct gift of Osiris to Isis, or the soil, after being overflowed and thus fertilized by the Nile. Wilson tells us that two species of the Egyptian Ibis are occasional visitors to the coast of the United States."

"Haven't we any native Ibis?" questioned John.

"Yes, the Wood, the White and the Red or Scarlet Ibis. Then there is the Flamingo which gets its name from its flame color. It belongs to the warm regions of America, but is an occasional visitor to Florida."

"But I'd like to know how a bird ever got such a name as the 'Puffin.' Perhaps John has read something about it as well as the Flamingo," said Alice.

"Not a word," was the response, "ask Aunt Jane."

"The Northern Puffin is named from the appearance of the young," she said, "who, wanting feathers, are covered at first with wooly black down, making them resemble little puffs. The Puffin is a marine bird whose flesh is said to resemble fish in taste. It not only moults its feathers but also certain horny appendages on the bill. There is another bird of somewhat similar name, the Puff Bird of South America. It has a head large in proportion to its body, with a habit of raising all its feathers on end hence its name. The Penguin has no feathers on its wings but as they move freely at the shoulders it uses them as paddles in the water and for progression on land. It is a plump bird and its name is derived from a Latin word meaning fat."

"I can see why the 'Stilt' is so called but I should never have guessed the Penguin," said Edith.

"The reason of the Stilt's name is self-evident. It has long, bare legs adapted to its habit of seeking food in shallow water," continued Aunt Jane. "The Plover, or Rainbird, is named from a phrase which means to rain, and the Snipe from its long bill. The Shearwater is named from its habit of swimming lightly on the water. It is especially adapted to getting its food on the waves. The lower mandible is sharp, the upper one, short and pointed. Its food is swallowed at once, mastication being performed by a gizzard of unusual strength. As there must be resistance to water as well as air, the wings are broad.

BELLE PAXSON DRURY.

THE RED-EYED VIREO

(*Vireo olivaceus*)

It is to be regretted that the beautiful Red-eyed Vireos are not better known, but they do not like to be watched and will usually retreat when they find that they are observed. They are the most common of our vireos and they frequent the shade trees of the streets and lawns of villages and cities as well as those of orchards and woodlands. Their range is extensive as it covers eastern North America westward to Utah and British Columbia, and from the Arctic regions southward. They winter in Central and the northern portion of South America and they breed nearly throughout their North American range.

These Vireos show a most happy disposition. They sing their loud though musical and simple song as soon as they arrive from their winter home and continue singing until about the time they leave us for the south in the fall. The song consists of only a few notes which are uttered in a pathetic though somewhat urgent voice and are frequently repeated throughout the day, even when the heat of the noon hour has silenced the voices of other birds. The song of the Red-eye is so constant and of such a nature that he was given the name Preacher by Wilson Flagg, who has given us the following excellent description: "The Preacher is more generally known by his note, because he is incessant in his song, and particularly vocal during the heat of our long summer days, when only a few birds are singing. His style of preaching is not declamation. Though constantly talking, he takes the part of a deliberative orator, who explains his subject in a few words and then makes a pause for his hearers to reflect upon it. We might suppose him to be repeating moderately, with a pause between each sentence, 'You see it—you know it—do you hear me?—do you believe it?' All these strains are delivered with a rising inflection at the close, and with a pause, as if waiting for an answer."

While the Red-eye Vireos are beautiful birds in every respect, this is by no means all that can be said in their favor. There are probably no birds which are more beneficial. Their principal food consists of many kinds of destructive and noxious insects. Mr. Ridgway has said: "Seeking for these is his constant occupation, as he hops along a branch, now peering into some crevice of the bark or nook among the foliage, even uttering his pretty song during the interval between swallowing the last worm and finding the next." Though their usual habitats are the woodlands and larger groves, they also industriously seek their insect food upon the orchard and shade trees which they may frequent. Probably one of the most valuable of their services to man is their careful search for insects in buds and on leaves. The majority of the insects which they capture are not in motion but occasionally they are caught while on the wing. Because of the latter habit, the are frequently called Red-eyed Flycatchers.

The homes of these vireos are neat pensile nests. It is said that the females perform most of the work in the building of the nests, though they are assisted by their mates who bring materials. The appearance of the nests varies quite a great deal. The walls are made of woven fine strips of bark, fibrous vegetable substances and other materials. Sometimes the exterior is left rough and unfinished in appearance, while in other instances the exterior surfaces are beautifully decorated with the webs of spiders and caterpillars and with light colored vegetable hairs. When thus completed, the nests bear a very finely finished appearance. The nests are very

FROM COL. CHI. ACAD. SCIENCES

122

RED-EYED VIREO.
(Vireo olivaceus).
$\frac{9}{10}$ Life-size.

strong, for the materials are firmly woven and they are suspended from forked twigs from four to fifty feet above the ground.

The generic name, Vireo, of this beautiful bird is an interesting and appropriate name. It is a Latin word meaning to be green. Mr. Dawson suggests: "One cannot be sure whether it was the bird's color, or good cheer, or characteristic note, which led Vieillot in 1807 to select for this group the name Vireo, a Latin word meaning, I am green, or flourishing."

EVENING IN THE SALT MEADOWS

Now, glimmering plumelets of grasses swing slow,
By brown-seeded heads of withering hay,
And nourishing worts, which your cattle know
For the briny tang of each salt-jointed spray.

Here the rosemary drowses with leathery leaves,
And spikelets of blue, like a spinster on guard;
But around her gray form one faintly perceives
The kindliest sifting and drifting of nard.

And tall as a man, the marsh-mallow towers,
With stiff woolly stems, and soft downy leaves—
Our hollyhock's cousin with flesh-colored flowers,
All bending their heads when the night-wind grieves.

The hare is seeking his shelter; the tern
Has hidden her young; but abroad in this dusk,
Are folk of the marsh, you can scarcely discern,
Save the bat for his whir, and the mole by his musk.

Now, the marsh wren sleeps in her rushy nest,
With its dim side-door, and its plastered dome;
When she leans to the brood, her white little breast,
How dear seems the tiny and sheltering home!

Like shadowy heaps, on the summer drift-grass
Lie your salt-meadow cattle, and over them blows
The land-breeze to sea, and night-herons pass
With clamor, nor mar their honest repose.

—Eliza Woodworth.

FOOT PRINTS IN THE SNOW

Each season has its peculiar charm and pleasures. Spring, a gallant youth whose promises are about as stable as one of his April days; summer, the season of hot sun teeming with life; autumn, the time of mellow sunshine, hazy woods and fields; winter, white and silent, the great expanse of snow lighted at night by myriads of glittering stars. Each is pleasant in its way, its own way.

Winter is conceded to have the least of animate life. What there is may be well studied in the snow. Bare ground and dry leaves make but faint foot-prints and many things go on with no one any the wiser. But it is not so easy for such things to take place in winter for the soft snow leaves impressions that may be read. No night prowling without its trail the following morning.

When I go out after a fall of snow I am impressed with the amount of rambling about done by rabbits, cats and mice. Around the house and barn the cat and rabbit tracks form a maze in all directions. Here, there and everywhere they go. But the cats are domestic and not so interesting from a wild animal point of view. The rabbits are. Here one hopped along quite deliberately, almost walked in fact. Farther on he has moved faster and then seems to have been panic stricken, making long leaps. Over there by the fence is some freshly cut brush and the signs of his nibbling very apparent. I well know what will happen to the young apple-trees if they are not protected in some manner. The inner bark, cambium, is excellent food when clover is a thing of the past. He has one peculiarity that no one seems to be able to explain. He will always nibble cut brush or sprouts before that still standing. I have seen the trimmings in brush heaps and cut sprouts completely denuded of bark while the hazel bush near by was untouched. It is needless to say that this meets with the hearty approval of the horticulturist.

I know of few prettier sights nor any that I much more enjoy watching than rabbits at play some bright night when the moonlight falls on the snowy ground making it almost as brilliant as day.

Snow is probably "Brer Rabbit's" worst enemy, for through it the hunter relies on tracking his game. The palm tree is not more grateful to the desert-weary Arab than the first fall of snow to the boy with a new gun. One of those clear bright mornings in early winter when the freshly fallen snow lies over field and swamp, when the air is just sharp enough to be exhilarating, it is delightful, only sometimes I am forced to think with "Punch," "What a heavenly morning! let's go and kill something!"

Of the squirrel family but two are found in winter about here, the red and fox. Mr. Chipmunk keeps himself securely hidden this zero weather. A snug, warm den, with a goodly store of nuts and seeds, is much more to his liking than hustling about in deep snow. But the red or pine squirrel does not lay up a winter supply. Sometimes he will store some nuts about in a rather desultory fashion, a walnut here, a hickory nut there, but does not make a store-house like the chipmunk. Oft-times they will carry walnuts to the attic, in spite of vigorous protests from the mistress of the house. Then sometimes in daylight, sometimes at night, a sound of rolling walnuts is heard accompanied by vigorous chattering, and we know the squirrels are at work. But this is not the ordinary course of events. Generally they stay in the woods, where they are more numerous than any others. Tracks are always plentiful leading from tree to stump and from tree to tree. I hardly ever go there for any time without seeing some. Indeed, there is no trail found in a nut-bearing wood that is in any way near as common as that of the red-squirrel. Its track is much like that of the rabbit, only shorter and more compact, generally smaller and closer together. The trail will run

along clear and distinct for several feet, when suddenly a hole in the snow, with some upturned leaves in the bottom, shows where he dug out a breakfast. How he is able to unerringly locate nuts under a foot of snow is one of the interesting problems naturalists have yet to solve. It would seem that he has a sense of location that lies dormant in man. Possibly it is the sense of smell, but the power must be very acute to penetrate a deep snow.

On a cold day when the songs of winter birds are reduced to low twitters and calls it stirs a person's blood up to hear that defiant scolding voice from some giant oak or hickory. Amusing, to watch how he runs along the branch pausing every little bit to give renewed emphasis to his scolding chatter. And few sights in Nature are prettier than to see him perched on a branch overhead nibbling away at a walnut. Sometimes you can hardly tell which, a squirrel with a tail attached or a tail with a squirrel attached. In spite of the several sins that might be laid to his calendar he would be sadly missed in the woods, especially in winter.

Probably the prettiest little track is that made by deer-mice. It is a tiny creature that seems more of the nature of an elf than a mouse. When moving slowly there is a long double chain across the snow, but when hurried, go by leaps varying from six to eighteen inches. Do you know this little mouse? A tiny creature about three inches long with tail even longer, light gray on back, white underneath, white feet. The ears are large, very thin, eyes also large with a look of wild life in them though not in the sense of timidity. Frequently there is the print of its tail in the snow. The trail will be along the snow for some distance, several yards, may be a rod, then it will disappear down into a hole that leads to an under-ground tunnel. I have disturbed many a nest while working in the woods, always a source of regret to me. They will be in the hollow of a log, a wood-pile, or any dry place. The outside is of leaves and fibers, the inside of rabbits fur or some equally soft material. Surely the rigors of a January night have no terrors for him. He lays up provisions for winter but not always near home, so has to travel from store-house to store-house. Perhaps he would be better off if the store-room were under-ground but if it were, another feature of winter life would be missing.

The field or meadow-mouse is well-named. He is seldom found anywhere else. Almost twice as large and sometimes larger than the deer mouse, short ears and tail and more cylindrical body, the whole having the effect of being compactly built even if rather long. He has none of the elfish appearance of the deer-mouse, is plain and common-place. After the snows have melted, an intricate net-work of tunnels through the stubble shows their path-ways in winter. Their tracks will be about corn-shocks especially if it is unhusked. And you may rest assured there will be a family to every shock. The tracks do not have the same suggestion, to me, of wild life that the others do, but may be that is prejudice. Like all ramblers they will suddenly dive under the snow then after a time the tracks re-appear.

Sometimes other tracks will be seen about corn-shocks, such as the rats, in my estimation the despicable of all things that roam the fields or woods.

Occasionally a possum ventures out after a thaw, a mink or coon sally forth. Once in a while a fox will glide stealthily along the sand-ridge but they are not common in this vicinity. Farther north foxes are more abundant and every spring a grand fox hunt is held in Harrison Township. Farther south-west along the river bluffs they are quite numerous.

Bird tracks are always easy to find. Dead weeds to which seeds still cling form an excellent feeding ground. Whether by accident or design it matters not but when a sparrow or junco is pecking at the seeds a great many are knocked off. For these there are always birds on the ground waiting so the snow is sprinkled with their tracks. Golden-rod, rag-weed, iron-weed, asters, lambs-quarter and weeds of a like nature, whose seed-pods do not open all at once,

form a particularly fine feeding ground, It is always very pleasant to come upon a flock of these feeding chattering away in sweet varied tones. Even the sight of their tracks call up pleasing pictures of the merry crowd that had been there before me.

The blue-jay's tracks is more conspicuous; it is longer and looks as if the maker was in right good earnest, which he doubtless was. About a corn-crib or in fresh gravel is a good place for them. Here the jays come for feed and grit and spend a good deal of time before they are satisfied. I am always sure of finding them in an old rail crib that stands far from the house close to timber.

The birds so far considered are all hoppers, but there are some walkers also. At the head of the list stands the crow. He generally walks with a stately step and the tracks would indicate that he had been in no haste. I am always sure of finding them about lots where cattle or hogs are fed or the remains of some dead animal. In strong contrast to the large size of the crow is the little track of the shore-lark. He is a walker also and likes to feed with hogs. But unlike crows, will spend much time along roads.

What a world of pleasant thoughts quail tracks bring up. I can see the very place where a covey spent the night before. I can hear the clear call or low talk which keeps the flock together. Happy for them if the farmer inadvertently leaves a pile of corn out during the winter. Other supplies of food failing, they will come about the barn or sheds of the farm. One season a flock stayed all winter about ours. It was always very pleasant to have them around. As a commentary on people in general nearly every one that heard of it said "Why don't you shoot them! There is no better eating in the world!"

Chickadees, nuthatches, titmice, and woodpeckers cling to trees, so not much is seen of their tracks.

It is surprising how much of this traveling about is done at night. Morning shows the history of the night before. It is curious how many things do take place in a single night. Sometimes curious wavy marks in the snow and a few drops of blood or a bunch of feathers is too plainly evidence of a tragedy among the forest folk. But oftener it is the record of their ordinary actions, the simple annals of the fields and woods.

WARREN HIGGINS.

GOOD CHEER

(Translated from the German of Karl Ebert.)

Embodied song, the lark mounts high;
Its rapture wafts it toward the sky,
And sends it circling through the air:
"The world is fair!"

The flower awakes when dawn is bright,
Upholds it's chalice to the light,
And sheds its perfume like a prayer:
"The world is fair!"

Like molten silver, in the stream,
Wave after wave reflects the gleam,
Bedews the bank and whispers there:
"The world is fair!"

Why dost thou stand apart and scan
Thy gloomy heart, O brother man?
Behold the gladness everywhere.
"The world is fair!"

—ALICE M. DOWD.

FROM COL. F. M. WOODRUFF

124

BOB-WHITE.
(Colinus virginianus).
⅔ Life-size.

THE BOB-WHITE OR QUAIL

(*Colinus virginianus.*)

Hark! what is that sound rising clear as a bell across the meadow? then listen, and again in accents clear comes the call ringing over the intervening space; "bob-white; bob! bob! white." It is the call note of one of the most familiar of the game birds, the Quail. Observe him now as he mounts the top rail of yonder fence, lifts his head with its snow-white throat high in the air and again gives vent to his feelings in the familiar cry. He is a beautiful sight as he perches there clothed in his coat of brown with its gray trimmings.

The Quail is a bird of the open clearings or bushy tracts of country, and is seldom or never found in woodlands. Like other native birds it follows closely in the wake of civilization and has spread from the natural clearings along river valleys and on prairies to the clearings made by men. Here it has thriven and were it not for the omnivorous sportsman the Quails would be almost as common as chickens.

The food habits of this bird are interesting. Its diet is quite varied, including such grains and other crop seeds as oats, barely, rye, wheat and corn. The seed of noxious and other plants, such as smart-weed, rag-weed, partridge berries and wild grapes are also eaten, many of them being gathered in the fields while feeding upon the scattered grain seed. Grass and some other green food is also eaten as well as various insects, grubs and beetles, which form a goodly part of their food during the breeding season. In winter beechnuts and acorns are eaten. The farmer does not seem to value this bird as he ought to do. While it is true that some grain is eaten, it is also true that the grain is mostly gathered from the ground and with it a host of seed of noxious weeds. It would seem from a study of the food habits of the Quail that a flock or two in a wheat or corn field would be a boon rather than a curse. The fact should not be lost sight of, also, that during the breeding season, when the young birds are being raised, a large number of insects and insect-larvæ are eaten.

The mating season begins about the first of April and egg-laying about a month later. The nest is built on the ground and is made up of different grasses. It is partly covered over, an opening being left for entrance and exit. The nest is placed in any favorable situation where some measure of protection is afforded, such as in a fence corner, near a stump or in depressions in grassy clearings. Like all gallinaceous birds, the Quail is a prolific egg layer, the set consisting of from ten to twenty-five eggs, the average being about fifteen. The eggs are perfectly white and measure about an inch and a quarter in length by less than an inch in width. Incubation requires about four weeks time. Unlike the young of passerine and some other groups of birds, the newly hatched Quail, as well as other gallinaceous birds, are able to take care of themselves as soon as hatched, and do not require the parents to feed them as do the young of the higher birds, the nests of which are mostly built in trees and bushes for protection against predaceous animals. The mother conducts the young Quails about much as does the old hen her chickens, and the young are brooded under her wing as in the case of the domestic fowls. The artifice resorted to by the parent when she and her young are surprised is interesting and amusing. The young disappear in every direction as though the earth had swallowed them. The parent meanwhile, flutters along, beating the ground with her wings and showing every evidence of being sorely wounded. She acts in this manner until the pursuer is a considerable distance from the spot where her chickens are, when she suddenly takes wing or runs swiftly along and disappears, rejoining her

young in a roundabout way. In nine cases out of ten this artifice will succeed in luring the pursuer away from the vicinity of her young. Both sexes have been known to incubate the eggs and several instances are on record in which the male finished the incubation of the eggs after the female had been killed.

The Quail ranges over the eastern part of the United States and southern Ontario, west to eastern Minnesota, Nebraska, Kansas and Texas; southward it extends to the Gulf States. The Quail does not migrate but remains a resident at or near its summer home. Late in the fall, however, they change their usual habits and become uncertain in their movements, congregating about habitations—even villages and cities—in large numbers, uttering their peculiar plaintive call, which is so different from the clear, bold note of the spring. At this season they have been known to kill themselves by flying against plate glass windows. These gatherings are probably faint evidences of the migrating instinct, so marked in many of the passerine birds. The Quails are very erratic in their movements during the winter, deserting one valley for another on short notice and for no apparent reason.

The Quail is a favorite game bird and the love of this sport by man has well nigh exterminated this bird in some sections of the country. Under proper regulation the pursuit of this bird in the open season is a perfectly legitimate and healthful sport. Who can describe the feelings of the sportsman when a covy of these plump birds is flushed from some thicket; the very ground seeming to pour forth a stream of birds and the air to be full of them for a second; and then all is over, for they disapear as quickly as they come. The sportsman must indeed be quick (and not become rattled) if he would bring down one of these brown-feathered creatures, as they dash quickly out of sight in every direction. Even when the hunter is experienced and is looking for this very thing, the surprise of their sudden apearance is enough to disconcert him for the moment. So close do these birds lie that one can almost step upon them before they will fly.

In the early part of the last century the Quail was one of the most abundant of birds, following the pioneer as he cleared the forest and in many instances building their nests and rearing their young in close proximity to his dwelling. Then they had but few enemies and as a result their numbers increased largely. In later years they have been so relentlessly and persistently hunted, not only with guns, but with dogs and traps, that their numbers have been sadly reduced. Added to its human foes, which seem bent on exterminating it, the Quail has to contend against certain natural enemies such as foxes, cats, weasels, skunks, and even snakes which feed upon the contents of the nest. It is earnestly to be desired that laws may be enacted in all states in which this bird is found, which shall prohibit the killing of the Quail until they have had time to recover from the ruthless slaughter which has been, and is even now, going on against them. The Quail is one of the farmers friends and he should take every means of protecting them, at least upon his own premises.

A word about the common name of this bird. The name Quail is now confined to a group of Old World birds much smaller than the subject of this sketch, and our bird should be called a Partridge. However correct this name may be, it will probably be difficult, if not impossible, to change the name of such a familiar bird, and to the sportsman and farmer it will ever be known as "Quail" and "Bob-white."

In Flordia this common bird is replaced by another and smaller variety (*colinus virginianus floridanus*) which, however, has about the same habits as its northern relative. Another variety (*texanus*) is found in southern and western Texas and in northern and western Mexico.

COLLINS THURBER.

OUR LITTLE GRAY HELPER

We have a little gray helper who cannot hear, or make any noise, who can only see sufficiently to distinguish day and night. He wears a little gray coat, and he lives in tiny caves which he burrows out for himself. Our little gray friend has no feet; he crawls. He works busily for us all day in the ground under our feet, coming out at night to get his food. He does not take anything which any one wants, but only dead leaves and bits of stems which no one cares about and which we are glad to have out of the way.

He is the Earthworm or fishing worm as children call it and belongs to the great class of ringed or jointed animals. His body is made of from 100 to 200 rings. These rings are larger in the middle of body than at either end. Each ring has on it tiny hooks—too small for you to see—which take the place of feet. By the aid of these hooks the worm moves along and digs his way in the ground. Try pulling him out of his den and you will see how fast he can hold. Did you ever see a robin brace his feet and tug with all his might before he gets his worm loose?

We have five senses—we can hear, see, feel, smell, and taste. The Earthworm cannot hear or make any noise, that it can see sufficiently to distinguish light from darkness, is shown by the fact that it only comes out for food after dark. It can smell a little—we can try burying an onion near its burrow and it will soon find it. Its chief food is dead leaves and stems. It is very fond of onions and cabbages. But its most delicate sense of all is that of touch. Jar the earth a little or blow lightly on it and it will disappear into its burrow.

He has a system of bloodvessels, a nervous system and a brain, and is our only jointed animal that has red blood. When you first find him he is dark colored, because his body is full of the earth which he swallows, but keep him out of the earth for awhile and his skin will get pale and clear and you can see the red blood in two long veins, one down his back and the other along the underside of his body. There are tiny holes, like pin pricks, in his body for the air to reach his blood, so as to keep it red and pure. His brain or nerve center is in the back of his head, not far from his mouth. He can crawl both backward and forward.

Earthworms are most helpful to us. They make long, winding tunnels or streets, some inches below the top soil. These little tunnels are channels for water, air, and the roots of plants to penetrate. Mr. Darwin says that the plough is a very old and very valuable invention but long before the plough existed the land was regularly ploughed and continues to be thus ploughed by Earthworms. By constantly bringing up soil and depositing it on the surface, they in time form a rich black layer of what is called vegetable mould over the original surface.

When they make their tunnel homes—burrows—they fill their long bodies with the earth, and carring it to the top of the ground deposit it in piles called "worm-casts." These may be seen early in the morning over all the garden paths or just after a rain. The worm's soft body will stretch like india-rubber and will hold a good deal, besides, there are so many worms busy all the time that each year they bring up tons of earth. This shows us the power that is in small, weak things.

The eggs of the Earthworm may be found by sharp eyes near the openings of the burrows along in June. They are done up in a kind of case, or skin bag, about the size of mustard seeds. It would be interesting to hatch some of the eggs in a glass adding a little moistened earth as soon as they come out. Baby worms are just like the parent worms, only smaller, and have not so many rings. As they grow they get more rings by the dividing of the last one.

Young worms know how to dig houses, carry out the soil, find food, and plug up the door of their houses for winter. They know these things without having to be taught.

MARGARET M. WITHROW.

THE CROWNED PIGEON

(*Goura coronata.*)

The order of Pigeons is one of the most interesting of all the bird groups. It has been called, "The order of beautiful birds." Its technical name *Columbae* is from the Latin word Columba, meaning dove. There are about three hundred known species of Pigeons and Doves. Of this number only twelve species are known to frequent North America though about one hundred are known to frequent the American Continent. The larger number of these birds are excellent fliers and are known to traverse long distances in a very short time. They are really two classes of Pigeons as regards the nature of their habitat. Some species live only in trees, while others are only terrestrial. While nearly all the species are inclined to form flocks after the breeding season is closed, they do not all nest in colonies, for some of the species are only known to nest in isolated pairs.

The Crowned Pigeons, of which there are about six known species, are the living giants of the order. They are given their common name because their heads are adorned with an erect, more or less fan-like crest. In their distribution they are confined to Australia, New Guinea and adjacent islands. It is to be regretted that but little regarding the wild habits of these birds has been recorded. It is known, however, that they spend a large part of their time upon the ground, searching for their food of fallen fruits and seeds. If frightened, they fly to the lower branches of trees, where they also roost at night. The nest of the Crowned Pigeon is said to be a loosely constructed structure of woven twigs placed upon the branches of trees. It is known that the male assists his mate not only in the building of their nest, but also in the duties of incubation. The eggs are never left uncovered except but for a moment, during which time the parent birds are exchanging places.

The Crowned Pigeons have been imported quite frequently into the zoological gardens of Europe and to some extent into those of the United States. They have mated and nested also in captivity, but it is said that no young have ever been raised. The bird of our illustration is one which died while in captivity.

A LADIES' SLIPPER

Between the green leaves, it is hanging yet!
—A fairy slipper of golden hue,
With fluttering ribbons and jewels of dew,
That the Elf-Maid dropt in her pirouette.

—Ella F. Mosby.

FROM COL. CHI. ACAD. SCIENCES

121

CROWNED PIGEON.
(Goura coronata).
$\frac{3}{4}$ Life-size.

VESPA, THE PAPER-MAKER

The wise men call her *Vespa maculata,* but to us she is plain Hornet. Most of us, no doubt, have seen her great paper nest, perched under the eaves of a barn, or hung from the branches of an apple tree. It is probable too, that we have come in sharp contact with the fiery lady herself, and have had ample cause to remember the circumstance.

She has many cousins. Some of them are carpenters, miners and masons. These belong to what is known as the "Solitary" branch of the family. Others, the "Paper-makers," are social in their habits. They live in communities, and rear their young in common habitations. There are three genera of Paper-makers in the United States. *Polybia,* found only in California; *Polistes,* the well-known brown wasp, who builds her pretty paper combs, without a protecting outer wall; and Vespa, including our friend the Hornet, and another familiar acquaintance, the yellow jacket.

Vespa maculata may be known by her white face, and the white markings on her body. She is the largest and most distinguished of her family and her nest, in its delicacy and beauty, is a wonderful piece of insect architecture.

Not without reason has she been called the first paper-maker. While Egypt still traced her records on stone, or on the inner bark of the papyrus, the ancestors of Vespa, were manufacturing a paper, that man has finally learned to make after the same principle; for paper is only vegetable fibre reduced to pulp, and pressed into sheets.

In the Wasp community the female is unquestionably the better-half. The male is necessary, but on the whole, superfluous in the hard work of life. Like the worker, he dies in the fall, and leaves his partner to bear her responsibilities alone. As this is a circumstance over which he has no control, he is not to be blamed for it.

Unlike the bee, the Wasp colony exists for a season only. At the approach of cold weather the nest is deserted and its once busy and bustling inmates crawl about in an aimless sort of fashion, numb with cold and miserable generally. Only the Queen, upon whom rests the hope of the race, has power to survive the winter. Realizing the weight of her responsibilities, she seeks out some warm cranny, where with wings and legs folded closely about her, she may sleep through the cold period. Of the many who thus dispose themselves in fall, comparatively few live to see the spring. Sometimes an unusually hard frost penetrates their chosen retreat; again a heavy rain may wash them out, or a bird, in search of his breakfast find their hiding place. If, however, good luck attends her, Vespa awakes in the spring, full of plans for the new colony, which she alone must found, for unlike the Queen Bee, she has no helpers ready to labor for her. Vespa, however, does not shrink from the big task before her. After throwing off her torpor in the warm sunshine, and eating a breakfast, for which her months of fast have, no doubt, given her an appetite, she gets down to real work.

Her tools are a remarkable pair of jaws which have been gradually adapted to her needs. After choosing, and alighting on an old stump, she begins to gnaw the wood fibre, lengthwise of the grain. To watch her when so engaged, is extremely interesting. She is the perfect embodiment of restless activity. Bending down her head, she plies her strong jaws until a bit of wood is dislodged; her wings, meanwhile, being kept in a state of continual agitation, and her legs incessantly lifted and set down except at the moment of dislodging the wood, when they are stiffened and braced for a strong tug. Then she spreads her wings, and is off to another spot, where she goes through similar antics. At last having gathered a small ball of wood fibre, she throws herself back upon her two pairs of hind legs, and standing thus

in a semi-erect posture, like a squirrel, eating a nut, she adjusts the pellet to her jaws, with her fore-legs, and flies away to the site selected for her nest. Her material is not yet ready for use, but must be chewed by her powerful jaws, and mixed with a secretion from her salivary glands, which, corresponding with the sizing used by paper manufacturers, helps to bind the fibrous pulp into a compact mass. When it attains the proper consistency Vespa begins to build her home; making first a slender stem or support, to the end of which she hangs a little cluster of three, or more, hexagonal cells. They are all mouth down, and she does not finish her first, before starting another. When it is half finished she lays an egg in the first one, and then continues her building. As soon as each cell is large enough it receives a tiny oblong, white egg, covered with a sticky substance, which effectually glues it to the cellwall. Completing her first row, Vespa surrounds it with a second, laying her eggs, as cells are ready to receive them. When perhaps a dozen are thus finished and filled, a protecting wall of the same paper material, is built about them, enclosing but not attached to them.

The nest now resembles a pretty little gray ball with a hole in the bottom for entrance and exit, but the labors of the little architect are not yet over. Indeed, fresh duties have devolved upon her, for her first eggs are hatching into small white maggot-like larvae, and the number increases each day. They are very greedy babies, and though they are fixed to the cells by their tails, their mouths are quite free and are always opening for something to eat. Their poor mother is kept so busy trying to satisfy their appetites that we may forgive her if her temper seems short, when we interfere with her efforts in that line. Evidently, she cannot afford to be over particular in her marketing. Not only does she collect flies, spiders and other insects, all of which she chews before she feeds them to her children, but also she darts into any convenient dining room or kitchen, and helps herself to whatever she finds. Fruit she sucks with utter disregard of property rights. Indeed it would seem that she has a perfect genius for finding the sunniest and ripest side of a pear or an apple. To pick up what appears to be a fine specimen of either fruit and to see a wasp emerge therefrom, tail first, with a sting ready for business, has probably been a common experience with many of us. Often a dozen find lodging in the same apple, and leave it through the same hole, one by one, but never head first. To do otherwise would be, obviously, not good wasp military tactics.

Well fed babies grow fat and the wasp larvae are no exception to the rule. Their cells soon become what might be called a tight fit. At the same time, each larva finds the mouth filled with silk, which exhudes through a hole in its lips. It wants no more food now. There is work to be done, and the little worm-like creature knows just how to do it. Touching the side of its cell with its mouth, it draws its head back. This operation it repeats again and again, each time putting out sticky threads, that harden into fine, glistening silk. Thus it lines all but the bottom of the cell, and to accomplish the latter task, it reaches out its head, and weaves back and forth until a cap of a tougher sort of silk covers the opening.

Thus lying in a silken bag of its own manufacture, the little creature undergoes a marvellous change. The fat larval form disappears. There is a clearly defined waist line, with a ringed abdomen below, and thorax above; incipient legs and wings, and a waspish looking head. Our little friend is now in the pupa state, and though white as snow at first, she soon grows darker colored, and in time a perfect wasp lies in the silk lined cell. During her larval life, she has shed her skin as she increased in size, and now, a full fledged wasp, she throws off her last delicate covering and is ready to step out into the world, and see what is going on there. With her jaws, she cuts a hole in the cap over her head, moistening the spot with saliva as she works. This hole is soon large enough to let out one of her antennae, and presently her face can be seen fill-

ing the opening. Next a foot appears, followed by a fore-leg, whose first duty is very likely to clean the antennae.

The spectacle of young Vespa, with only her head and forelegs visible, yet industriously cleaning her face and polishing up her antennæ, is very amusing. In fact, this function is interesting, even in old wasps.

While she makes her toilet a wasp is not unlike a neat tabby.. She washes her face and hands with her tongue, and putting her paws, so to speak, in her mouth, licks them clean, and, while they are still presumably damp, she draws them over her head, turning that part of her diminutive person this side and that, much as puss does. Her wings, thorax and abdomen, she cleans like the bee, with her legs.

After her first bath, apparently a fatiguing, operation, young Vespa rests awhile. Then she proceeds to pull herself quite out of her cell, and to eat a breakfast supplied by the queen mother. She is smaller than a Queen and will not be an egg-layer, for from the first eggs, and in fact all eggs laid during the early part of the summer only neuters, or imperfect females, are produced. They are commonly called workers, and soon prove their right to the name. From the beginning, they take upon themselves the whole work of the nest, while the Queen Mother thus relieved devotes her time to egg-laying. As only about a month is required for the development of the egg into the perfect insect, the same cells may be used twice, and even three times. They are always thoroughly cleaned, before receiving a fresh set of eggs. This task falls to the workers. They also enlarge the comb by adding new cells. Evidently they need no instruction as to how to gather wood-fibre, and chew it to the proper consistency for use. A cautious observer may often see these interesting little architects at work. It is well however to choose a cool, cloudy, day, as they are less easily excited under such conditions. Dr. Ormerod, who has carefully studied wasps, thus describes the method of nest building. "When a Wasp came home laden with building materials, she did not immediately apply these, but flew into the nest for about half a minute, for what purpose I could not ascertain. Then emerging she promptly set to work. Mounting astride on the edge of one of the covering sheets she pressed her pellet firmly down with her fore-legs till it adhered to the edge and walking backwards, continued this same process of pressing and kneading till the pellet was used up, and her track was marked by a short dark cord lying along the thin edge to which she fastened it. Then she ran forwards and as she returned again backwards over the same ground, she drew the cord through her mandibles, repeating this process two or three times till it was flattened out into a little strip or ribbon of paper which only needed drying. to be indistinguishable from the rest of the sheet to which it had been attached."

A flourishing Wasp's nest is a scene of constant tearing down, and building up. Walls are gnawed away from the inside, and layers added on the outside, to give space for the enlargement of the comb, without exposing it. When a comb attains a certain size no more cells are added, but another is suspended below it. The new structure is fastened to the old by a stout paper pillar support in the center, both hanging free. The interior of this remarkable habitation is kept perfectly clean and well aired, for Wasps ventilate, as do the bees, by fanning their wings in the entrance. Also like the bees, they have sentinels who fly out to investigate the cause of any unusual occurrence. At their alarm the other inmates rush forth in an angry swarm and pounce upon anything or anybody without reference to shape, size, or position in society.

Though its beginning is modest, a Wasp's nest, towards the end of the season, attains to an immense size, and contains many thousands of inhabitants.

As we learned before, only workers are developed during the first weeks, but later the Queen lays some unfertilised eggs in the larger cells, and from these the drones or males are hatched. The drone is larger than a worker, more brightly colored, and has no sting. He

is certainly not a strenuous fellow, as he likes to put his head into an empty cell and stay there, with only his tail visible.

In the largest of the cells, are laid the fertilised eggs which develop into the perfect females, or Queens. The larvae of these are supplied with abundant food, and the Queens emerge at the proper time, large and handsome, and very differently marked from the other members of the community. On sunny days, the Queens fly abroad, and mate with the drones.

These excursions seem to mark the beginning of the end. Realizing that cold weather is near at hand, the busy little colony loses heart. The Queens and males are turned out, the former to find winter quarters, the latter to be killed by the cold. The eggs and larvae so carefully tended until now are pulled from their cells, carried outside and left to die. The workers themselves finally desert their nest or return to it to starve to death or die of cold. Only in the few sleeping Queens rests the hope of the Wasps in the future.

LOUISE JAMISON.

JIM CROW

When Jim Crow became a member of our family, he was very young and could hardly balance himself upon his slender legs. We fed him upon raw eggs and scraps of raw meat until the bird grew strong and the black feathers became smooth and glossy and the bright eyes grew brighter and Jim Crow changed into a beautiful bird.

A smart bird was Jim, devoted to his master and mistress, hailing them with a loud caw whenever their steps were heard and hopping about to greet them.

Jim could talk a little and would have acquired much more knowledge of the language had he lived longer. He would spread his sable wings, purple in their deep black, and call in a hoarse voice, "Come on, Come on," very distinctly. He would greet his master with "Hello, Pa-pa," and delighted in feeding from his hand. He knew when the butcher boy came with the meat, and was at the cook's side when she received the basket, croaking for his share.

Jim delighted in a plunge bath and would splash away in an earthen crock, a dozen times a day, if it was filled for him. He also loved red and blue, and if ladies called at the house dressed in those hues the lordly young crow would become frantic, spreading his wings and tail, bobbing his head from side to side and circling around with loud cries of "Come on, Come on," to the great amusement of all. He would even go to the gate with the visitors and have to be brought back. He would often eat corn with the chickens and would act very greedy, rapidly filling up his bill with the precious grain, rushing away and hiding it, then coming back for more; so unless the chickens made haste Jim got the lion's share.

Jim enjoyed his life in the long rich Kentucky blue grass and would sun his glossy feathers upon the emerald sward, and many a truss of scarlet geranium was caressed too rudely by his powerful bill. He was a remarkably intelligent bird, perfectly contented with his home and petted and loved by his mistress. But poor Jim was hurt one day by a stray dog and closed his bright eyes in farewell to the beautiful world in which he had so much enjoyment.

FANNIE A. CAROTHERS.

FROM COL. O. C. PAGIN

126

SHORT-EARED OWL.
(Asio accipitrinus).
⅜ Life-size.

THE SHORT-EARED OWL

(*Asio accipitrinus.*)

There are few if any birds which have a greater range than the Short-eared Owl. It is nearly cosmopolitan and in America it is found in all suitable localities from the Arctic Ocean to the southern extremity of South America. It is a well known bird and bears many popular names, the more common of which are Swamp Owl, Ghost Owl, Prairie Owl, Snipe Owl and Prairie Eared Owl.

The Short-eared Owls frequent prairies, meadows, and marshes near bodies of water. The marshes seem to be the most popular with them both for nesting and feeding, especially if the grass is rank. Here the Owls meet an enemy in the person of the hunter of ducks and snipes, birds which also nest and feed in the low swampy grounds surrounding our lakes. The hunters imagine that the Owls destroy the game birds in the early dawn and in the evening and, for this reason, almost invariably shoot them. It is probable, however, that the Owls feed only upon the dead and wounded birds left by the hunters themselves. I once had an experience which well illustrates the feeling of hunters against these birds. One April, while hunting with a companion in the marshes bordering the Kankakee River, we found five pairs of the Short-eared Owls nesting within a radius of two square miles. These nests were placed on the tops of the small hillocks in the swampy ground and were simply depressions in the dead grass with little or no covering. On returning to the clubhouse, we exhibited a set of eggs which we had taken. I then discovered that some of the other hunters had discovered nests of the same description and had destroyed the birds and the eggs. They laughed at me, when I expressed indignation, saying that they had protected the game birds by destroying the nests.

The Short-eared Owls should be protected as they are of very great service to the agriculturist for they destroy large numbers of field mice. It has been estimated that at least seventy-five per cent of their food consists of mice. They also feed upon other small mammals such as gophers, shrews and small rabbits. Dr. J. C. Merrill reports that in one specimen he found a pellet ready for regurgitation which contained ten nearly perfect skulls of a species of shrew.

In Yarrell's "British Birds" there is an interesting account which shows the economic value of these Owls: "Undoubtedly field mice, and especially those of the short-tailed group or voles, are their chief objects of prey, and when these animals increase in an extraordinary and unaccountable way, as they sometimes do, so as to become extremely mischievous, Owls, particularly of this species, flock to devour them." Several cases of this kind are mentioned, and the writer adds: "In all these cases Owls are mentioned as thronging to the spot and rendering the greatest service in extirpating the pests." Similar incidents have been reported from our own and other countries.

It is true that to a very limited extent these Owls feed upon birds. Dr. Fisher gives the following as the result of the examination of one hundred and one stomachs. Eleven contained the remains of small birds; seventy-seven, mice; seven, other mammals; seven, insects, and fourteen were empty. A very exceptional incident is told by Mr. William Brewster and quoted by Dr. Fisher: "A small colony of these birds had established itself upon a certain elevated part of the island (Muskegat), spending the day in a track of densely matted grass. Scattered about in this retreat were the remains of at least a hundred terns, that they had killed and eaten." The Owls seemingly paid but

little attention to the flying terns but were seen on several occasions to pounce upon a sitting bird and bear it off.

In its habits the Short-eared Owl is quite unlike nearly all the other Owls which frequent the United States. It is not near as nocturnal and shuns timbered regions, frequenting open regions where it makes its house in areas covered with rank growth of herbaceous plants. Its nest is a rough loose structure built of sticks and coarse grass and slightly lined with finer grass and feathers. The nest is usually placed on the ground where it is well hidden by tall bunches of grass or bushes. In a few instances nests have been found slightly elevated above the ground in the bases of clumps of low bushes.

FRANK MORLEY WOODRUFF.

PLANT STUDIES

PART I, A FEW SECRETS OF SEEDS

The scarlet maple keys betray
What potent blood hath modest May,
What fiery force the earth renews,
The wealth of forms, the flash of hues.
—Emerson, "May-Day.

When May comes, or even a month earlier, let us take a long walk and look for the seeds that have begun to sprout after the warm spring rains. Warmth and moisture are the two conditions most essential to the germination or sprouting, so that now, all the seeds that have been waiting during the winter, are ready to start into active growth. Under a sugar maple we will probably find thousands of seeds that have fallen to the ground in autumn. They are bursting out of their coats, or perhaps already are well started seedlings.

Let us examine a seed that has not yet begun to sprout. Notice the covering on the outside, the testa—a little later we will think what this is for. Split open the testa and take out the seed curled up within is a tiny plant, the embryo, consisting of two long seed leaves, cotyledons, and a short stem or caulicle. In between the cotyledons is a tiny bud, the plumule, which soon develops into a pair of leaves. The cotyledons, can hardly be considered leaves and some times do not appear above ground, or when they do, soon wither. If possible, imagine how many seeds there are! If all of them were to grow, in a short time the whole earth would be covered. Just one little plant of the shepherd's purse, *Capsella,* produces 12,000 seeds and one of the purslanes, 40,000. What becomes of all these seeds, and why is it necessary that there should be so very many? It is plain that most of them die, either while they are seeds or after they have become seedlings for they have many enemies.

The first enemy is bad weather; that is, so much moisture that the seed is rotted. Now we can understand the purpose of the testa, for it protects the seed and keeps it dry and warm. Some times the testa has a polished surface which still better keeps out the water, as in the case of the castor bean; as it is covered with hairs, which protect the seed from water or from penetrating germs.

Lack of nourishment is often fatal to seeds. In the examination of the embryo we found the cotyledons fat or thick, for they were filled with food for the young plant. In case of need, they serve to keep the plant alive until all the reserve material is exhausted, when usu-

ally the real leaves and the root are developed, and the plant can get food from the air and soil.

Many seeds are eaten by the birds and other animals, and many are used by mankind for food. The testa is often developed into a very hard coat, as in the nuts, which protects the seeds from many animals, though not from boys and girls. Sometimes the kernel is very bitter or disagreeable to the taste. The hard testa often serves in another way as it prevents the seed from being crushed. But the worst enemies of all to the seeds are other seeds. Imagine all of the seeds of a plant or tree dropping down under the parent and immediately taking root. Think how very many would be crowded out as there would not be space for all, and the weakest would surely die. Some would die, not only from lack of room, but because after awhile, when the plants became a little larger, there would not be food enough.

So it becomes desirable for seeds to be scattered in every direction. As soon as the seeds discover this need, they begin to look about for friends to help them. (Grains, wheat, corn and rice, men help to scatter by planting them everywhere). The wind is the most ready helper, so the seeds set to work to manufacture air-ships. If we remember the shape of the maple seed, we will recall the long, thin wing. The wind blows these seeds about because of this device. Then, the dandelion seeds and the milk weeds, how feathery seeds they are! And there are other seed balloons which sail gaily before the wind.

The seeds have pressed man into their service, flowering plants, many trees, the grains, and many others are distributed by intentional planting; but others quite by accident. The cockburrs, Spanish Needles, and Beggarslice stick to our clothing and so get free passage to many locations pleasant to them. A more polite device of seeds is to hide themselves in luscious fruit. After the birds, man and the other animals have eaten the fruits, the seeds are cast off, and so distributed.

There are a great many secrets that seeds have, some of which we can never know. But there are a few that we can discover by close watching; so it is quite worth while to be on the lookout for new ones. MARY LEE VAN HOOK.

THE PINES

Outside my chamber window stand
The pines, a gloomy row;
A melancholy, brooding band,
Their ranks a guard of spirit land,
All secrets dark they know.

Through countless slender fingers green
The ceaseless breezes sift,
And nestling where the tops careen,
The moon shines out the boughs between,
As through a cloudland rift.

By hours I sit and search my soul
To find, if there I may,
What mysteries the pines control
Which lie below the human shoal,
So deeply hid away.

—FRANK FARRINGTON.

THE ROSE-BREASTED COCKATOO

(*Psittacus roseicapillus.*)

The Rose-breasted Cockatoos are natives of Australia and frequent the larger portion of that continent. They are gregarious birds though the flocks are never very large. It is said that they dislike the strong and hot rays of the sun and during clear days frequent the tops of trees where they are shaded by the foliage. They are very careful of their plumage, when in the wild state, and spend much time in preening their feathers. Their habits are exceedingly interesting as they are graceful in their motions and playful. Dr. W. T. Greene says regarding the habits of this Cockatoo: "He is quite a gymnast too, and the way in which he swings himself round and round on his perch, with expanded wings and tail, is no less amusing than interesting. The love-making again of a pair is a sight to be seen. What a series of bows and capers, what tender, self-contained warbling! To hear him 'coo' to his lady-love, you would never suppose him to be the pink fiend, whose piercing shrieks but just now drove you from his presence with your fingers in your ears." When dissatisfied or hungry these Cockatoos are very noisy, but when in a satisfied mood their notes are much more quiet and less unpleasant.

While the notes of Mr. Greene apply more particularly to these birds when in captivity they are also noisy in their native haunts, but their utterances do not seem as harsh and grating. In this connection Mr. Greene has said: "A flock of Rosy Cockatoos playing among the branches, or seeking their food among the long kangaroo-grass of some untilled plain, or disporting themselves by the margin of a pond, or creek, afford one of the prettiest sights it is possible to imagine; their noisy outcries are not so noticeable then, but mingle rather harmoniously as the altos in the great concert of nature, in which the cicadas, or locusts, take the treble parts."

While the Rose-breasted Cockatoos show a decided fondness for shade during the period of midday heat, some of the other cockatoo species will ascend in large flocks to such heights, even though the heat of a tropical noon is very great, that they are hardly visible to the unaided eye. None of the cockatoos do much in the way of nest building. Their eggs, varying from two to four in number, are usually laid upon the refuse which has gathered in the hollow of a tree. The Cockatoo, which we illustrated, though it usually nests in the hollow branches of the gum trees of the forests in the area which the birds of this species inhabit, is said also to nest at times in the hollows of rocky ledges. Two or three white eggs are laid which are hatched in about twenty-one days.

The food of these Cockatoos, and also of related species, consists of fruits, seeds, larvæ and adult insects. As they are gregarious, it is said that sometimes flocks will do great damage while feeding in freshly planted grain fields, and for this reason are greatly disliked by agriculturists of the regions they frequent, and are destroyed in large numbers. This may be done easily, for they are neither shy nor watchful birds.

The elegant and brightly colored plumage and the graceful movements of the Rose-breasted Cockatoos would make them very desirable pets were it not for their loud and discordant notes or, perhaps more properly, screams. They are also much more noisy than some of the other species. While they are easily tamed when young, a cage never seems to become a pleasing habitat for them and their piercing voice is frequently heard in protest.

FROM COL. OHI. ACAD. SCIENCES

127

ROSE-BREASTED COCKATOO.
(Psittacus roseicapillus).
½ Life-size.

ALL THINGS COME TO HIM WHO WAITS.

The oldest inhabitant of the barnyard could not remember the time when Benedict Arnold, or "Old Ben, the Decoy," as he was called, had been young. There was a tradition to the effect that some wild geese eggs had been found in a field one day, brought home and set under a big Buff-Cochin hen; that six of the eggs hatched and that the goslins led their foster mother through such feather raising adventures that to this day there is a saying in the yard: "As bad as the Buff-Cochin's troubles."

The tradition further stated that five of the goslins succumbed to the dangers that beset their young lives, and the recounter invariably added in a low voice—always a very low voice—that it was a great pity Old Ben didn't have the same luck. Old Ben survived, however, to rule the barnyard with an iron wing and to lure many of his kind to a tragic fate. On a crisp fall day the decoy and his master might have been seen betaking themselves to a field of stubble or some other feeding ground of the wild geese. The hunter, after staking Old Ben, would take cover in a carefully constructed pit. Soon the familiar honk of the wild goose rings out. The feeding flock, hearing the well known sound, draw near, then a shot gun sings and wounded and dead birds are falling.

Whether Benedict enjoyed this perfidious betraying of his brothers, or whether these crimes born of his slavery were revolting to him, it was impossible to tell. I have often watched him returning from some expedition, surrounded by the spoils of the hunt, and wondered whether his discordant notes betokened anguish or triumph; whether that stride with its side-long swing was a swagger, or if his burden of woe was so great he staggered.

One thing sure: Be it grief or joy he felt, his duplicity and deeds of darkness had a most disastrous effect upon his disposition. The cheerful songs of the barnyard found no echo in his heart; even the innocent peepings of novices fresh from the shell failed to inspire him with the proper sentiments. The peacock never tried but once to dazzle Old Ben with the glories of his tail, the haughtiest gobbler grew humble before him. Even Prince Charlie, the lordliest cock that yard had ever known, and prodigiously vain of his clarion note reaching many fields away, maintained a discreet silence when the decoy was near. There had been a time when Prince Charlie, conscious of his own importance, and secure in the knowledge that he descended from game stock, confidently disputed leadership with Old Ben, but the powerful blows of the decoy's wings, and the fierce stabs of his beak, considerably weakened Prince Charlie's faith in his ancestry.

The belle of the yard was Betty, a charming young thing with a comb red as a rose and glossy feathers a beautiful golden brown. Her graceful manners and coquettish airs equalled her beauty, and all from Prince Charlie to Master Bantum were her devoted slaves. Her feelings may be imagined then, when one day, in full view of her giggling rivals, Old Ben seized her by the wing and gave her a violent shaking.

It happened this way: Old Ben arose one morning (after a most successful hunt) in a really shocking frame of mind. Breakfast had just been brought to the barnyard and a bevy of hens were hurrying from an empty grain house to the full pans. At the door, however, Old Ben barred the way, driving the more timorous back and giving a vigorous peck or blow to the daring few who passed him. Betty determined to neither be cheated of her breakfast nor submit to such treatment. A small window directly over the door opened from the loft, and from this window she proposed to alight at a safe distance.

Just before the flight, however—oh fatal weakness of her sex!—she cackled. Ben was instantly on guard, and she had no sooner landed than he was by her side and proceeded to inflict such punishment as he deemed proper.

"I'll not stand it!" she shrieked hysterically to Mother Plymouth Rock. "Prince Charlie shall avenge me. He has often said he would gladly die for me."

The old hen looked thoughtful but said nothing, and Betty hurried away to find Prince Charlie. He was usually quick to answer her first call but this morning she had considerable difficulty in locating him. At length she discovered him half buried in a comfortable dust heap. His eyes were shut tight and his sleep must have been exceedingly sound for she had to speak three times before he opened them. Then jumping to his feet he shook the dust from his feathers, and in his most delightful manner exclaimed:

"Why, my dear creature, what a pleasure it is to see you! And how very charming you look!"

"Oh, Charlie!" Betty cried breathlessly, "I want you to fight Old Ben at once. Did you see that disgraceful performance just now?"

"What performance?" inquired Prince Charlie innocently, deeming it unnecessary to state just what he had seen peeking from behind a bunch of sunflower stalks.

"Old Ben shook me," Betty replied, quivering with indignation at the remembrance.

"Is it possible!" Prince Charlie cried in surprise. "I had no idea Ben was such a playful old chap."

"It wasn't play at all," Betty declared, her comb growing redder than ever. "It was just—just disgusting, that's what it was, and I want you to punish him terribly. He will probably kill you before you are through, but of course you won't mind that."

"Of course not," said Prince Charlie hastily. "Of course not." Then, after a pause—"I shall quite enjoy it, doubtless. But my dear Betty," he exclaimed feelingly, "take my life and welcome, but spare, I implore you, my honor," and he swelled out his chest. "Do not ask a young giant like me to attack such a venerable bird as Old Ben. We should respect the aged," he reminded her virtuously.

"Is that all your fine words amount to!" cried the fair Betty. "Then never dare to speak to me again, never!"

Prince Charlie watched her little yellow feet pattering away from him as fast as they could and soliloquized thus:

"Fight Old Ben! Knew I 'wouldn't mind'! Well I never! It's got so these days a fellow cant be agreeable and make polite speeches without some silly thing wanting him to let a crazy old goose pull him to pieces! I'm glad Ben did shake her," he added vindictively. "Wish he'd shake all of 'em." And with that he flung himself down in the dust heap again.

Hereafter Betty met Prince Charlie with head coldly averted, or disdainfully tilted, except once when she screamed "coward!" full in his startled face. This was all somewhat trying of course, but Prince Charlie bore it calmly, saying to himself, "I will trust to time. Waiting often does more than working, and is quite as agreeable if you only go at it right."

"Here, you kids, what do you mean by these disgraceful actions!" he demanded sternly of two little chicks tugging fiercely at opposite ends of a worm. "Now run away quick."

The frightened chickens dropped their prize, and as it slid down Prince Charlie's throat he repeated reflectively, "If you only go at it right!" My dear Miss Leghorn," turning affably to a white leghorn passing, "with what matchless elegance you always carry your feathers! And can any color equal white!"

Miss Leghorn simpered, and Prince Charlie (after a careful survey of the yard) flew to the top of a post and crowed. The crow was so entirely satisfactory he was about to repeat it, when he noticed Master Bantum tearing down the lane at such a pace that his short legs were stretching level with the road.

"Wonder what's up," mused Prince

Charlie, hopping to the ground and walking sedately to meet Bantum.

"Oh Prince Charlie!" gasped the little fellow with wildly rolling eyes, "Old Ben is dead, quite dead."

"What's that?" sharply demanded Prince Charlie. "Say it all over again."

"Old Ben is dead. He surely is. I saw him die."

For a second Prince Charlie's head reeled, but promptly recovering himself he answered with dignity:

"Certainly he is; I killed him."

"Oh, but please," piped Bantum, you couldn't have killed him this time, Prince Charlie, because I saw a man—a strange hunter—do it. Ben was in the edge of the field, and he made that same noise he always did to call the wild geese, and then the hunter shot him."

"Bantum," said Prince Charlie slowly, "you better forget that shilly shally story about the man with a gun if you want me for your friend. If you don't!" —Here Prince Charlie showed his spurs and glared so fiercely that poor little Bantum tumbled over in a fright. "Now then," he added more kindly, "you may run and tell the others how you saw me this morning, after a terrible battle, kill Old Ben. But make no mistakes," he warned.

Prince Charlie was gazing fixedly at the windmill as Bantum raced away. This did not, however, prevent him from noting the growing excitement as the news spread, nor from taking account of the admiring glances directed towards him.

After waiting what he considered the proper time, he stalked solemnly over to a group of young hens where some golden brown feathers shown conspicuously. He had intended to punish Betty by treating her with the utmost coolness, but she was so irresistible standing on one dainty foot and glancing out coyly from under her drooping comb, that Prince Charlie stopped in front of her, and shaking his head mournfully exclaimed:

"Ah, what cruel things we do to win the smile of beauty!"

"Oh Charlie! It was so sweet of you to kill Old Ben!" Betty cried tenderly.

"Poor Ben, poor Old Ben! So brave! So wise!" lamented Prince Charlie in a choking voice. "How can I ever forgive myself!"

"You are so good, Charlie; much, much too good for me," murmured Betty softly.

"Do not let that fact disturb you, however," said Prince Charlie generously. Then suddenly recovering his wonted cheerfulness he suggested brightly, "And now, my dear Betty, shall we not go and lunch? I know where there is a full grain bag with a hole in the sack."

As Prince Charlie marched majestically through the yard, Betty close to his side, the barnyard birds said it was what it always should be,—the mating of the bravest and the fairest; and one old hen wept aloud because, she said, it reminded her so much of her own youthful days.

KARRIE KING.

A NATURALIZED CITIZEN OF CALIFORNIA

In converting lands of little rain and burning sun into habitable places man has found no helper more efficient than the Eucalyptus tree. It is a native of Australia, where it has many kindred. There are about one hundred and forty members of its genus; and the family to which it belongs, that of the classic myrtle, is entirely tropical. But the Eucalyptus is a good traveler for it adapts itself readily to change of scene and circumstances. It thrives in marshy districts and in places that are almost deserts because of the lack of water. It grows without irrigation in countries where the annual rainfall is only eight or ten inches.

Its roots drink in moisture eagerly,

going deep and far in search of it, and storing it for time of greater need. It is said that in dry regions, where the wanderer can find no water, he need not perish with thirst if a Eucalyptus tree is in sight, for its roots will yield him their supply of water, the moisture it has had the marvelous power of gathering far below the surface of the parched earth.

It has gained a reputation for drying marshy soils and preventing malarial diseases. Planted on the Campagna at Rome it has rendered habitable some places formerly deserted. Its aromatic, camphor-like fragrance, as well as its avidity for water, may have something to do with its beneficial effects in malarial regions. Mosquitoes are said to disappear from the neighborhood of Eucalyptus plantations. It is a rapid grower, sometimes adding fifteen feet to its stature in a single year.

The Eucalypti are frequently of immense size and they rival, in height, at least, the famous redwoods of California. They are often called gum-trees, because of the amount of resin they contain. The bark is entirely gone from the trunks of the older trees, and on the branches it hangs in long, curling strips; hence the common name of the Eucalypti in Australia is String-bark Trees.

The species most frequently planted in Southern California is the Blue Gum, or *Eucalyptus globulus*. The bark and foliage have a bluish white color, and a field of seedlings seen at a distance by its waxy sheen and peculiar color reminds one of a field of cabbages.

Growing in dry soil the tree has learned several devices for protecting itself from too much sunshine. The leaves of the seedlings and of young and inexperienced shoots are opposite, horizontal, and stemless. The leaves that appear later are narrower; there is but one leaf at a joint, and they have stems that by a dextrous twist, bring the leaves to a vertical position, thus presenting only their edges to the noon-day sun. The older leaves are leathery in texture and their thick cells guard against too much loss of water through evaporation. The young leaves are protected by a wax-like covering. In some species in Australia this waxy coating is a hard, opaque, sweet substance that is known as Australian manna.

Eucalyptus trees do not spread their branches to the light and air, but send them almost directly upward. In this respect they remind one of the poplar, but they have not as reserved an aspect as poplar trees.

In Australia, the hard timber of the tall, straight trunks is used for ship-building, for telegraph poles, and for railroad ties. In California the trees cannot be spared for timber, but, lining the avenues, they offer grateful shade to those who pass their way. Long rows of them indicate the roadways in the distance, and a grove of these tall guardians betokens a dwelling near them.

The tree has its name from a peculiarity of its bud and blossom. The word Eucalyptus comes from two Greek words and signifies well covered. The calyx never opens in the ordinary way, but the top of it, shaped like a little, shallow, acorn-cup, falls off like a lid, or like a cap from a head of flaxen hair. Under this covering, on the edge of the calyx-dish, are many rows of stamens, which push off their caps, shake out their fair tresses and make a pretty crown for the seed-cup. The calyx-tops as well as the leaves contain much resinous oil useful in medicine; used also in making perfumery and varnishes.

The Eucalyptus traces its line of ancestry to a remote past compared with which all the children of Adam are new comers to this planet. Geologists tell us that the trees' fossilized remains are found among the early forms of plant-life. It is fortunate for us that the descendants of this ancient and honorable race still live to be our contemporaries and helpers.

ALICE M. DOWD.

MOUNTAIN PARTRIDGE.
(Oreortyx pictus).
¾ Life-size.

FROM COL. F. M. WOODRUFF

THE MOUNTAIN PARTRIDGE

(*Oreortyx pictus.*)

The Mountain Partridge, which is also called the Plumed Partridge and the Mountain Quail, is common in the higher mountain ranges of California and Oregon. In the Sierra Nevada range they are frequent in summer to an altitude of seven thousand feet, where Mr. J. G. Cooper found them in the month of September. He found the young not quite full grown and the old birds moulting. In their habits and in their flight these Partridges resemble other quails but they are less gregarious. The flocks seldom contain more than from ten to twenty individuals. Mr. Cooper says: "Their note of alarm is a rather faint chirp, scarcely warning the sportsman of their presence before they fly. They scatter in all directions when flushed, and they call each other together by a whistle, very much like that of a man calling his dog." The mother bird calls and leads her young brood by a cluck not unlike that of the domestic hen. Dr. Newberry once found a hen with a very young brood which scattered on noticing him, and uttered notes not unlike those of young chickens. When the fear of danger had passed, the little birds were recalled by the clucks of their mother.

The Mountain Partridges are hard to find for they frequent the shrubbery and chaparral of dwarf trees of rather inaccessible places on the mountain sides. They ordinarily seek safety by running rather than by flight. Dr. Brewer states that Dr. Heermann found the birds of this species wild and difficult to procure, flying and scattering at the least symptom of danger, and again calling each other together with a note expressive of great solicitude, much resembling that of a hen-turkey gathering her brood around her." Dr. Brewer also states that: "When a flock is startled, they utter a confused cluckling note, something like that of the common eastern quail. The male has a very pleasant crowing-note, which sounds some like *koo-koo-kooe.*"

The Mountain Partridge is a larger and more handsome bird than our eastern bob-white. The two attractive plumes of the adult are about three or four inches in length and the spot from which they will grow is indicated in the young soon after leaving the egg, as a tuft of down. It has been claimed that these birds do not often nest much below an altitude of four thousand feet. The eggs are laid on a bed of leaves lying on the ground beneath bushes or tufts of grass or weeds. The eggs are said to have a very rich cream color which is slighted tinted with a reddish shading.

BIRD LEGENDS IN RHYME

THE WOODPECKER

There is a bird in Norway-land,
That the children never will feed;
Because, they say, it's a wicked bird,
For it once did an evil deed.

When on this earth the Master trod,
  Faint, weary and foot sore,
He stopped to rest at a cottage small,
  Where the housewife sat at her door.

The dame was busy making bread,
  She wore a bright red hood;
Her only thought was for her work,
  That her loaves be light and good.

When the Master begged for a piece of bread
  Said she: "My loaves are small,
They will scarcely do till baking day
  So I'll give the least of all."

Lo! when the cake was on the fire
  It large and larger grew
Till she declared—"'Tis quite too big
  To give away to you."

So she made a smaller cake of dough
  And placed it on to bake;
But as before the bread did grow
  And became the larger cake.

When this she refused, the Lord was wroth,
  And spoke in His justice dire;
"You love me little to grudge me food,
  Go up in your hood of fire!"

"Up the chimney black, out into the air
  Fly forth, Woodpecker vain,
And seek your food 'neath the bark and bole,
  With never a drink till it rain!"

From that day to this, with soot on wings
  She tappeth the trees for her bread,
And is ever athirst as she whistles for rain
  With a warm red mutch on her head

Tis a native legend of Norway-land
  But its lesson may be world wide;
Not that of charity alone—
  For a deeper truth doth it hide.

Oft midst the drudgery of life
  The Master doth appear
And offers us angelic work,—
  But we hold the loaves too dear.

BELLE PAXSON DRURY.

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

NIGHT

Mysterious Night, when our first parent knew
Thee from report divine, and heard they name,
Did he not tremble for this lovely frame,
This glorious canopy of light and blue;
Yet 'neath a curtain of translucent hue,
Bathed in rays of the great setting flame
Hesperus with the host of heaven came,
And lo! creation widened in man's view.
Who would have thought such darkness lay concealed,
Within thy beams, O Sun! or who could find,
Whilst flower and leaf and insect stood revealed,
That to such countless orbs thou mad'st us blind?
Why do we then shun death with anxious strife—
If light can thus deceive us, wherefore not life?

—JOSEPH BLANCO WHITE.
(1775-1841.)

THE RED-BELLIED WOODPECKER

(*Melanerpes carolinus.*)

The handsome Red-bellied Woodpecker has a fairly extensive range, but it is common only in southern and western portions. This range includes the eastern and southern United States, as far northward, casually, as New York, Ontario, Michigan and South Dakota. To the westward its range extends to Nebraska, Kansas and Texas and possibly it may be an occasional visitant as far to the west as the base of the Rocky Mountains. It is one of the most common of the woodpeckers in southern Illinois, Indiana and Ohio. Major Bendire says that it is a constant resident south of about latitude 39 degrees, and that not a few winter, even at the northern limits of its range. As is the case with many birds which have a rather extensive distribution and are abundant only in certain localities, the bird of our illustration is burdened with a number of common names. It is also called the Carolina and the Checkered Woodpecker. It is sometimes given the name Woodchuck, but its most beautiful name is that of Zebra Bird. In the south, especially in Florida, where it is especially fond of the sweet juice of oranges it is called the Orange Sapsucker. The adult males of this species vary greatly in the amount of red color in the plumage of the lower parts. Specimens found in the western portion of its range are usually more brightly colored, the plumage of the under surface of the body being more deeply tinged with red, than is the case with those found in the Atlantic States.

The Red-bellied Woodpeckers are generally considered rather shy and retiring in their habits. While this is probably true in many localities where it frequents only forests, Mr. Ridgway did not find it so in Illinois. He says: "Next to the red-head (*Melanerpes erythrocephalus*) this is probably the most abundant Woodpecker in southern Illinois. It is also, perhaps with the same exception, the most conspicuous and, instead of being shy and retiring, as has been recorded of it by writers, it is almost constantly to be seen in orchards and the vicinity of houses, as well as in the depths of the forest."

The Red-bellied Woodpeckers, like nearly all of their relatives, are rather noisy birds. Their call note is quite similar to that of the red-headed species. Mr. Amos W. Butler has described its call as sounding like the syllables *kurr-urr-urr* and he also speaks of the notes which they utter when hammering or when disturbed, as resembling the syllables *chow-chow*. However, these last notes sound more like syllables spelled *chawh-chawh*. But this is not all, for they utter some very unpleasant notes which can not be expressed, and during the season of mating they utter low cooing sounds which might be likened to those uttered by the mourning dove.

The food of the Red-bellied Woodpecker consists of both animal and vegetable substances, probably in nearly equal proportions. Their animal food consists of grasshoppers, beetles, flies, ants, as well as larvae of various species. Their vegetable food consists chiefly of wild fruits and seeds, such as juniper berries, wild grapes, poke berries, beechnuts and acorns, and in coniferous regions, pine seeds. Unfortunately, they also eat to a limited extent cultivated fruits, such as blackberries, strawberries, cherries, apples and oranges. They are very fond of ripe apples and have sometimes become a nuisance when numerous in the vicinity of apple orchards. But it has been demonstrated that these birds are worthy of protection for the amount of cultivated fruits which they eat is greatly overbalanced by the number of insects and their larvae which they destroy.

The nesting habits of these Woodpeckers are very interesting. The nest-

RED-BELLIED WOODPECKER.
(Melanerpes carolinus).
⅝ Life-size.

ing cavities which are excavated in trees at heights varying from five to over seventy feet above the ground are prepared by the united efforts of both sexes. Both the sexes assist also in the incubation of the eggs and are devoted to their young, frequently, it is said, allowing themselves to be captured rather than desert their young. Their nests are said to average about a foot in depth and may be excavated in either living or dead wood. It is said, however, that a nesting site is never excavated in any portion of a tree that is wholly dead. Major Bendire, in his "Life Histories of North American Birds," says: "Deciduous trees, especially the softer wooded ones, such as elms, basswood, maple, chestnut, poplar, willow and sycamore, are preferred to the harder kinds, such as ash, hickory, oak, etc." In the south the nesting sites are frequently excavated in pine trees, and in Texas and prairie regions they often nest in telegraph poles. While these birds are shy and retiring especially during the nesting season, throughout the greater part of their range, Major Bendire quotes one observer who states that the Red-bellied Woodpecker has been known to excavate nesting sites in the cornices of buildings in Manhattan, Kansas.

THE WILLOW'S WAYS

Down beside the pasture brook
Where the cattle drink,
Swing and sway the willows lithe,
O'er the water's brink.

With each breeze that brushes by
Bends the willow copse,
With each gale; blow low or high;
Bow the willow tops.

Springtime's overflowing stream,
Winter's roughest blast,
Hurricane or thunderstorm,
Harmless rushes past.

How the graceful willows there,
Though the days be rough,
Bow before each rampant storm,
Boisterous and bluff!

You, O comrade, profit by
The yielding willow's ways:
Incline before the storms of life
And lengthen so your days!

—Frank Farrington.

BETH AND THE BIRDS

Little Beth was snugly seated in a big arm-chair before a cheery grate-fire. A little earlier she had watched Uncle Ed go plowing through the snow. His parting words had been, "Well, I guess you and Auntie will have to stay indoors today: there will not be much going out for pleasure until some of this snow is out of the way." And then Beth had taken Auntie's new book about birds and was soon absorbed in its contents.

"Beth, Beth," it was Aunt Mary's cheery voice calling, "Don't you want to come and help Auntie fix some refreshments for some of her little friends?"

"Why, Auntie!" exclaimed Beth running into the kitchen, "You can't be expecting company this kind of a day. The snow comes most to the top of Uncle Ed's big boots."

"Oh, my little friends are not afraid of snow," said her Aunt. "They come 'rain or shine,' in fact they are particularly glad to come when the snow is on the ground although they never wear boots." Then seeing the puzzled look on Beth's face she added, "Their coats and hoods are made of feathers."

"I know! I know!" exclaimed Beth, "they're the little birdies, aren't they, Auntie? But I thought the birds all went south in the winter, just except a few sparrows, perhaps."

"That is what a great many people think, dear," replied her Aunt, "and most of the birds do go, and yet there are some that stay behind each year and many birds, that might live through the winter if fed, perish for lack of food. You will be surprised when you see some of my visitors. When you have crumbed this bread and I have chopped this bit of suet, we will go and spread a table for them."

"Oh, let me chop the suet," cried Beth eagerly. "Does it have to be cooked?"

"No, I don't cook the crumbs and suet, but here is a little stewed canned corn which we will add to the bill of fare this morning, and you may break up this milk cracker; we will give them a good feast such a cold day."

Beth entered into the preparations with enthusiasm and a little later followed her Aunt upstairs carefully carrying the feast. Aunt Mary took a board out of the hall closet and let Beth arrange the food to suit herself. It was placed out on the snowy roof of the piazza. Then they sat down at a little distance to watch. It was not many minutes before a pretty woodpecker was hopping across the snow.

"Oh!" exclaimed Beth, almost under her breath, "A woodpecker in winter. Just see his little red cap! And here comes another! Why doesn't that one have a cap too, Auntie?"

"Why, that is the little wife" exclaimed Aunt Mary, "only the male bird has the red cap. This little couple come to see me very often."

"And what is that bird with a long bill and short tail, Auntie?"

"That is a nuthatch; just see him carry off that big piece of suet."

Beth was charmed with the little visitors and although her Aunt was called away, she sat and watched until the crumbs were gone and the last little bird had flown. Then she ran down to her Aunt full of questions.

"How did you know there were birds in winter when other people didn't? How do you know what kinds they are, and how do you know what to feed them?" she asked without stopping to take breath.

Aunt Mary laughed at the number of questions but was delighted to find how interested her little niece had already become, for she was a most enthusiastic bird lover. Then she told Beth many things about her study of birds.

"I never fed the birds until last winter," she said. "I was reading about the people of Norway and Sweden, and I learned that they have a very beautiful

custom of feeding the birds. When the ground is covered with snow they take bunches of grain and fasten them to posts or to the corners of barns and thus the little birds find food. Sometimes the birds travel long distances over the most desolate country to the sections where the kind people live who provide for their need when the ground is buried under the snow. Even the poor people manage to spare a little grain. When I read this I determined that I too, would look out for the little birdies and pleasant work I have found it."

Beth was delighted with all she heard and the happiest moments of her visit were spent in feeding the birds or in hearing her Aunt talk about them. She soon learned that while the woodpeckers and nuthatches loved suet and crumbs the chick-a-dees were fond of corn-meal mixed with red pepper, and all the birds were delighted with rice and hominy.

When the storm was over Aunt Mary took her out in the yard and showed her how she had a box fixed on a stump where she placed the food when the snow did not prevent; and of how one day a woodpecker had alighted on her shoulder when she was carrying out the food. Another day a nuthatch had come up on the piazza and almost to the kitchen door, he was in such a hurry for his breakfast.

As her visit drew to a close Beth felt almost sorrowful at the thought of leaving her little, feathered friends. But her Aunt consoled her with the assurance that she would surely find some birds to feed at home.

Not long after Beth reached home her Aunt was delighted to receive a letter which read:

Dear Aunt Mary:

You were right, there were birds waiting to be fed right here in Connecticut, only I shouldn't have known about them if I hadn't gone to New York State to visit you. I haven't any stumps to put boxes on for the birds' food, but I put a board out of the window for the bird's table.

The first birds that came were blue jays, and they looked so pretty on the snow. I have lots of dear, little snow birds and yesterday morning, guess what came! A dear meadow lark! He was exactly like the picture in your book. I don't seem to have any woodpeckers, but then you didn't have blue jays, so it is fair, you see.

I have found out that the blue jays rather have corn-bread than wheat, but the tree sparrows like the wheat most. You remember Polly, my parrot —Well, I tried giving the birds the eaten-out corn she left in her cage and they just love that.

I must tell you one more thing before I say good bye. I told my dearest little friend many of the things you told me and so she got all interested too, and so we've decided to get up a Bird Club, and all the little girls and boys who will promise to feed the birds can join it. Don't you think that will be nice? I'll write more about it next time. Good bye,

BETH.

P. S. Here is a little verse I made up. Do you like it?

To the birds we will be kind,
Crumbs they will be sure to find,
For we'll feed them day by day,
And we'll love them just alway.

B.

A few days later when Beth came home from school she found a package. It was directed in Aunt Mary's hand, and the little girl eagerly tore off the wrappings. Beth clapped her hands with delight when she found the package was made up of pretty cards; on each one Aunt Mary had painted two of the cutest little birds perched on a leafless branch, and underneath was Beth's own little verse in beautiful gold letters. There was also a place for a name to be signed.

"Oh! mamma," she exclaimed, "won't these be perfectly elegant for our club? And mamma, how much I would have missed, how much the birds would have missed if I hadn't made that visit to Aunt Mary's!"

GRACE T. THOMPSON.

MY HALF-BROTHER AND I

A few people know me by the name, *Colaptes auratus*, while a greater number would recognize me when you say, "Golden-winged Wood-pecker," but the name that I like best and the one that was given me by the boys and girls in localities where I live is "Yellow-hammer." According to the Indian legend, the Red-headed wood-pecker is my half-brother, so what applies to his manner of living also, in nearly all instances, coincides with mine. You will find that unless the winter season has been unusually severe, we did but little migrating; first for the reason that we prepare a food supply during the autumn months, consisting of acorns and soft-shelled nuts that we place in crevices in the tree trunks; second, that the homes in which we live afford a necessary protection against the wintry weather; and third, that we cannot make rapid flights as can most other birds.

On account of our short migrations, we are among the first birds to appear in the early spring, making the woods echo with our sounds produced by striking the bill against the dead limbs of the hardier trees, not searching for larvae, but as a call for a mate and to assist in preparing the bill for the coming summer work, also for the enjoyment we receive as it is our principal method of designating who we are.

During the winter months our food consisted mainly of acorns or dried berries. Through the months of April, May and June we live upon the larvae found beneath the bark of the trees or in their surface woody tissue. We have two ways of knowing where the worms are located, first by the openings in the bark where the mother insect deposited the eggs; secondly, by the sound of the larva as he makes his way through the wood. It is by the last method that we are able to obtain the major part of our food.

If you will notice closely, you will see that the openings in the trees that we make for our homes or nests are invariably on the east, west or north side, for if placed on the south side, the intense heat of the summer would be intolerable. We make these holes in the trees deep enough so that we can stand upright in case we are attacked by the weasel or some of the raptores as we often are. As a further protection from different enemies, the chips are removed from the base of the tree where they have fallen from the nest in its making. It is also noticeable that we do not make our homes near any limb of the tree, thus making it more inconvenient to be attacked.

With most other birds, the old saying, "the early bird catches the worm" holds true, but in our case, especially through the summer months, it does not, as we get the most of our food in the late afternoon. The insect upon which we prey the most is the "Katy-did," which we locate by hearing it sing, then waiting until the song is started again, when it is easily discerned and captured. We are able to procure at least a dozen in one afternoon, as well as catching many bugs that fly about in the early twilight.

As the late fall approaches we are kept busy gathering acorns for present use and storing some so that should we stay until winter, we will have a partial food supply.

EDGAR S. JONES.

FROM COL. CHI. ACAD. SCIENCES

BALDPATE DUCK.
(Anas americana).

THE BALDPATE DUCK

(*Anas americana.*)

The Baldpates or American Widgeons have an extensive range which covers North America, while they breed chiefly north of the United States, they also nest in the Northern States of the interior and casually southward to Texas. They are not known to nest on the Atlantic coast. They pass the winter in large numbers in the Southern States, and from there southward to northern South America and Cuba. During their migrations in the spring and fall, they frequent the rivers, marshes and lakes. In the fall they prolong their journey southward in order to feed upon the wild celery, sedges and wild rice. At such times they are much sought by sportsmen, for their flesh is excellent and fully equal to that of the canvasback. They are very fond of wild celery but not of diving for it. They have learned to associate with the diving ducks. This is well illustrated by their habits in the Chesapeake Bay region where Baldpates winter in large numbers. Neltje Blanchan has so well expressed this habit in her "Game Birds," that we quote her words. "But when living an undisturbed life, the Widgeons greatly prefer that other ducks, notably the canvasbacks, should do their diving for them. Around the Chesapeake, where great flocks of wild ducks congregate to feed on the wild celery, the Widgeons show a not disinterested sociability, for they kindly permit their friends to make the plunge down to the celery beds, loosen the tender roots, and bring a succulent dinner to the surface; then rob them immediately on their reappearance." But the Baldpates receive their punishment for using a stolen food. Their flesh assumes a fine flavor, and is considered far superior by many to that of the famous canvasback. In their summer homes, however, the Baldpates feed chiefly upon insects, worms and small shells, and their flesh is much less delicate than it is when they are feeding on the wild celery of the Chesapeake Bay. They also visit the rice fields of the south during the winter, and in some localities they appear in these fields in such large numbers that they are said to do much damage. During the breeding season, the Baldpates, unlike nearly all of the other ducks, seem to prefer the vicinity of rivers and open lakes, and not the marshes, and lakes which are more or less filled with grass. They also differ from most ducks in their choice of nesting sites. These are usually located some distance from water. Mr. Robert Kennicott reports that several of the nests which he found in the vicinity of the Yukon River were fully a half mile from the river. The nests are nearly always upon high, dry ground and are simply depressions in the mass of dried leaves, though they are well lined with down. They are usually found under trees, though they are not particularly concealed. When the eggs are left by the sitting bird they are well covered by her with the lining down. In his "Report upon the Natural History Collections Made in Alaska in the Years 1877-1881," Mr. E. W. Nelson gives an interesting note regarding the habits of the female Baldpate when brooding her young. He says: "I once came suddenly upon a female Widgeon with her brood of ten or a dozen little ducklings, in a small pond. As I approached, the parent uttered several low gutteral notes and suddenly fluttered across the water and fell heavily at my feet, so close that I could almost touch her with my gun. Meanwhile the young swam to the opposite side of the pond and began to scramble out into the grass. Willing to observe the old bird's maneuvers, I

continued to poke at her with the gun as she fluttered about my feet, but she always managed to elude my strokes until just as the last of her brood climbed out of the water, she slyly edged away and suddenly flew off to another pond some distance. I then ran as quickly as possible to the point where the ducks left the water, yet, though but a few moments had elapsed, the young had concealed themselves so thoroughly that, in spite of the fact that the grass was only three or four inches high and rather sparse, I spent half an hour in fruitless search." The young, before they are able to fly, seek grassy lakes, seeming to feel much safer in the shelter of such retreats. However, as soon as they are able to fly, they seek the river banks and other open places which are the favorite resorts of their adult relatives. Colonel N. S. Goss likens their notes to the sound of "a sort of *whew, whew, whew,* uttered while feeding and swimming." This he says "enables the hunter to locate them in the thickest growth of water plants; and when in the air the whistling noise made by their wings heralds their approach."

THE WILD DUCKS OF MARYLAND

When the adventurous Capt. John Smith, the founder of the first English colony in America, came in the year 1608, it was the Chesapeake, signifying in the Indian language, "mother of waters," that received the weary voyager. With his usual energy, this brave man explored all its tributaries, even a little river, some fifty miles long, whose sister river, uniting with it, form a part of the bay, some ten miles from the bay itself. This river, once a famous place for wild ducks, he called Willobyre, on a quaint and remarkably correct map. Byre, means in old English, "dwelling," and as grand old willows grow all along its banks, it may be that the name is for—"Willow dwelling," or "Where dwelleth the willows."

Verrozzano in a French ship in 1524, sailed up the coast, and seeing the great Chesapeake, believed it to be the Pacific ocean, but he did not venture to explore. Smith in his diary says, "Our barge was of about two tons, and had in it but twelve men to perform this discovery." One can picture the little boat feeling her uncertain way into unknown waters, by unexplored forests, passing lonely marshes, and silent shores. The blue waves danced in the sunshine; the stars shining down in the night were the only familiar objects; the wind sighed through the fragrant pines, and no doubt the brave hearts aboard sighed in return. Wherever the sailors looked, on sea, or land, no sign of human habitation met their anxious gaze. No white sailed canoe came flying like a winged creature to meet them; no white walled cottage shone out from the green shore line, denoting the warm hearth stone, and the pleasant home. Only wild beasts gave an occasional glimpse of the teeming animal life that swarmed in the forests; herds of deer glanced out of the woodlands, then vanished; wolves and bears prowled the shores for food; otters, muskrats and raccoons scampered into holes in the banks.

But the birds seemed to welcome them, the beautiful, friendly birds, and where they are, is beauty, and life, and joy. Gulls followed the ship, darting through the rigging, encircling about on untiring, and joyous wings; the great blue heron, the common heron, egret, bittern, plover, and snipe wading in the lowlands, looked on in innocent wonder; innumerable flocks of ducks scarcely turned aside; vast armies of reed birds, rails and blackbirds almost darkened the sky as they flew about.

This was about three hundred years ago, and of all this bountiful animal and bird life, there is only left in any num-

bers, the muskrats in the marshes, and the blackbirds among the flags. It seems as if most men, if they do not shoot an animal or bird for food or gain, shoot it to see it fall and die. The Willobyre is now the Gunpowder—lovely name for a pretty little river truly, because an Indian planted powder on its banks, hoping to raise the seed that exploded into fierce flames, and dreadful noise. So, passes away all things in this world of change. The song birds in the woods, the ducks on the river, the wading birds in the marshes have been almost annihilated. It is true the game laws try to protect them, but the wild ducks seem gone beyond any help. I can remember when they blackened the waters and made a noise like distant thunder when they arose. This river was once a famous resort for them. They came in immense flocks to feed upon the wild celery here. In November they flew southward to escape the freezing up of waters in their northern home.

There were the mallard, the canvassback, the redhead, the coot, the fisherman, the black duck, the water partridge, the sprig tails, and south-sea-southerlies. But, alas! the big gun fired by night into them when they were sleeping on the water, and other unlawful shooting has almost entirely destroyed them. Where thousands of happy ducks quacked, and frolicked, and splashed each other in their joyous lives, there is a solitary waste of lonely waters over which occasionally floats on wide pinions in majestic solitude, that beautiful fishing eagle, the osprey.

Ducks are considered to be stupid fowls, but a creature that sets a sentinel to watch for danger; that dives at the flash of a gun; that flies to refuge before any signs of a storm; that when fatally wounded, dives to the bottom and holds onto grass, dying there, is not as stupid as imagined. Their affection, and fidelity for each other is intense, the common duck laments in pathetic outcry, when one of their number is taken away; when the lost one is returned, the meeting is jubilantly vociferous of joy and relief.

The bridge across the Gunpowder is a mile long, the ducks fly across constantly, unmindful of the roar of constantly passing trains, or the lights at night, or perhaps they playfully race with the express; King Canvasback, at ninety miles an hour, can win any race.

When the gunners came, and fired at them, their keen eyes soon spied "the man behind the guns," and when they came to the bridge, up, up, up they would rise, until a cannon could not reach them. Once safely across, they dropped, to skim over the water in unharmed liberty.

The following story is even more remarkable. A gunner was in his blind, one winter morning waiting for them to come to their feeding place, which they had frequented the day before. In the night the river had frozen, not hard enough to bear a man, but too hard for any duck to break. Presently they came, but seemed to have no intention of alighting as they noticed the ice, but they circled about in bewilderment. Then they flew around, and around as does the pigeon before starting for home. But they had no intention of going away unsatisfied, for they were consulting together, and about to do, as wonderful a piece of strategy as ever man thought, or executed. They flew up higher, and higher, and after making a small bunch of themselves, dropped like a stone, all together upon the ice, broke a large place, and began quietly feeding. No one duck, or two could have broken the ice, but the combined weight of the whole party, the momentum and swiftness of the descent accomplished their wish.

"In union there is strength" was also the motto of the wise redhead ducks. Was this instinct, or reason?

HATTIE REYNOLDS.

THE PURPLE FINCH

(*Carpodacus purpureus.*)

The Purple Finch, or more properly speaking, a full-grown male Purple Finch is one of our most attractive birds. He looks much like an English sparrow that has been dipped into a purplish red dye, the stain taking best on the head. The color does not usually catch the eye so far as the bright hues of the cardinal or jay, but when the sun glints upon them just right, they flash out like a mixture of ruby and amethyst, and produce a really brilliant effect. The first of these birds which I ever saw, were perched on low weeds one winter day, and with the snow for a background and the rays of the setting sun for illuminating effects, they showed the creatures to the best possible advantage, and made our first meeting a thing to be always remembered with pleasure. The female and young look much like English sparrows, pure and simple.

The resemblance between the Purple Finch and English sparrow is not, indeed a matter of accident, for they are very closely related, this bird being the closest relative of the obnoxious emigrant we have. Really the bird of our sketch has no occasion to be proud of his relatives, for another member of his own genus, the house-finch of the western states, is as much a nuisance about dwellings as the English sparrow is with us.

The dwellers of our central states know the Purple Finch chiefly as an occasional migrant, passing through northward in spring or southward in the autumn. Farther south, as about in the latitude of Kentucky, they are known as winter residents, while farther north, at about the latitude of Michigan and beyond, they are summer residents, and breed. Like another close relative, the red cross-bill, which they resemble somewhat in general color, they are fond of nesting in evergreen trees. The nests are frequently well-built and compact, and contain, when fully furnished, four or five pale green, speckled eggs. During its nuptial season and sometimes during its migration the bird has a sweet warble, and it nearly always utters call-notes now and then by which one familiar with it may recognize it. The bird is chiefly a vegetarian, feeding mainly on weed seeds. At its winter home at Washington, I have observed it in small flocks feeding heartily on the tulip tree. It is also fond of slippery-elm buds, a taste which it shares with its disreputable European relative.

While the bird is on the whole not of great economic importance in a positively beneficial way, it is comparatively free from faults, and there is very little danger that it will ever become a nuisance, as it shows no particular tendency to collect and multiply about houses, and it does not display the pugnacity of the English sparrow.

H. Walton Clark.

I hear no more the robin's summer song
Through the gray network of the wintry woods:
Only the cawing crows that all day long
Clamor about the windy solitudes.
—Christopher P. Cranch, "December."

FROM COL. CHI. ACAD. SCIENCES.

131

PURPLE FINCH.
(Carpodacus purpureus).
¾ Life-size.

PLANT STUDIES

PART II, THE WORK OF FOLIAGE LEAVES

> The little birds sang as if it were
> The one day of summer in all the year,
> And the very leaves seemed to sing on the trees.
> —LOWELL, "The Vision of Sir Launfal."

In the middle of a hot, summer day, when we sit down under a shady tree to rest and eat our lunch, we feel especially grateful to nature for providing us with such a cool resting place; but, after all, we must not forget that Nature, though willing to share her bounties is first considering her own children. The leaves that protect us from the burning sun have very important work to do for the tree; so important, indeed, that without such work being done, the tree could not live. Before we consider this work in detail, let us examine a single leaf carefully.

A leaf usually consists of the flat, green, expanse which we call the blade; of the petiole, or little stem, by which it is attached to the twig or plant; and very often of two small leaflets, found at the base of the petiole, called stipules. You will notice, as you have often done before, the ribs and veins which trace the leaf. In the lily, these run parallel, while in the maple they form a network over the leaf which is said to be netted veined. These ribs and veins are much woodier than the rest of the blade, which is soft and pulpy in nature, and so they give firmness to the leaf. They are composed of hollow, woody, fibres, and not only give support to the leaves, but act as canals to carry the water and mineral substances which are needed by the leaf in the process of food manufacture.

This brings us to the most important work of leaves—food manufacture; for leaves are the workshop of the plant, and within their cells the raw material gathered from the soil and air is made into material that can be assimilated by the plant. If you find a very thick leaf you can strip off from it a thin layer, the epidermis, or outer covering of the leaf. Looked at through a compound microscope, there will be disclosed many little openings, each of which is protected by guard cells which change their shape from time to time so as to increase or decrease the size of the opening. These openings are called stomata; mouths, literally; their work is not fully known, though they are believed to be useful in both transpiration and respiration. At any rate, they permit direct interchange of air and light between the outside atmosphere and the inner cells of the leaf. This inner layer of the leaf, known as the mesophyll, is made up of cells that contain small green bodies, chlorophyll grains, that give the green color to plants. In the work of food manufacture, it has been found that carbon dioxide is taken up by the cells, the carbon used, and the oxygen given back to the air. For this reason growing plants about us contribute to our good health, since carbon dioxide is a poison rejected by us when we breathe, while we need plenty of oxygen. After the food is made by the leaves, they gradually send it out through the veins to the main branch of the plant, whence it is conveyed all over the structure.

A second work porformed by the leaves is called transpiration; by which is meant the elimination of the moisture not needed by the plant. One could call the process evaporation except that it is controlled by the living organism; in dry countries the moisture is conserved; on the other hand, where the plant obtains a great deal of water, much of it is given off. Transpiration is carried on by each part of the plant, but the main work is done by the leaves. The truth of the statement that leaves transpire is easily tested by placing a glass over a small growing plant; moisture will soon gather on the sides. If one can note the moisture given off by a small plant, consider the quantity of water lost each day by a forest. One can readily see that there would be sufficient to make an appreciable difference in the climate of the surrounding country. Even a meadow or a strip of lawn, a single tree, or a few plants allay the heat and make more habitable the place where they are.

The third work of the leaves is res-

piration or breathing; the taking in of oxygen and the giving off of carbon dioxide. However, the amount of poisonous material rejected by the plant is small, not sufficient to counter-balance the good that they do in purifying the air. In any work done by a living organism, oxygen is needed to supply the motive power, and plants, of course, are no exception to the rule. Respiration takes place day and night, but the other two processes, food manufacture and transpiration, only in the day time. One can see how important air and sunlight are to the plant, and how necessary the devices for securing both.

The petiole holds the leaf out from the stem, while the arrangement of the leaves themselves on the stem prevents as much as possible the interference of one with the other. Some leaves are arrayed in two flat rows on each side of the branch; others are spirally placed; others have longer petioles on the lower part of the plant than on the upper end, so overlap or extend beyond each other. Leaves protect themselves in various ways from extremes of heat and cold and from too much water. The mullein leaf is covered with downy hairs, the ivy is smooth, and the orange and lemon leaves waxed, so as to shed the water. During the heated part of the day leaves often droop or fold their leaves together, as does the oxalis, so that less moisture is lost by transpiration. Many plants at night assume a different position from that of the daytime, thus protecting themselves from chill. A great many other schemes for securing the best possible results are resorted to by leaves, some of which we may find out by closely watching their habits.

PART III, ROOTS

Oliver Wendell Holmes spoke of trees as tails waving in the air, while the real body of the plant, the roots, lived beneath the ground. It is true that roots often exceed in length that part of the plant which is above ground, and that they perform for the plant a very necessary work. Indeed, there are three pieces of work that the root has to do that are essential to the welfare of the plant, the first of which is to fix it in place.

One of the chief differences between plants and animals is that plants do not move about. They move: stems twine, climb, and bend toward the light, as we readily see, but they do not move from place to place. Some plants almost do away with this distinction when they bend down, take root, and form new plants, as in the case of the walking fern; yet, after all, it is never detached from the soil. In water plants where the plants are submerged, this work of attaching is the main work of the root, for all parts of the plant are adapted for absorption, another function of roots.

The primary root of a seedling, where it develops from the first stem, grows downward and commonly begins to branch. However, this first root sometimes gets the start of the branches and we have one distinct root, called a tap root. This is the case with the parsnip and radish, where the branches are insignificant. The oak has an immense tap root which fixes it so firmly that it can weather the fiercest storm. But oftener the main root is not distinct from the other branches.

In land plants the absorption of moisture from the earth and of salts in solution is of first importance to them. We have seen that a great deal of moisture is lost daily by the plant through the leaves. If there were not some way of replacing at least a part of this moisture, the plant would become flaccid and and wilted. This is the second work of roots; and they are well fitted to perform it. The first essential is as large a surface expansion as possible.

We seldom realize how much area is covered by roots. If we dig up a plant, we oftener break it off near the surface than get the whole root. Near the tip of the root fine hairs are produced, called root-hairs; these increase the expansion and aid greatly in absorption. These hairs adhere very closely to particles of earth and are able to extract

from them food materials.

The tip of the root is the growing point. Since it is very sensitive and of course liable to injury, it is protected by a root cap, so that it need not be hurt by stones and other obstacles that it moves about in its search for moisture. But one of the characteristics of the root tip is extreme irritability, as it is called; that is, sensitiveness to near objects. When approaching objects which might check its progress it is able to avoid them, either going around them or passing over or under them.

Some plants, unwilling to work for themselves, employ their roots to collect material already manufactured into food by other plants. These thieving ones are called parasites. Such a one is the dodder, which starts as an independent plant but no sooner does it get above ground than it fastens on some other plant which becomes its host. It then sends out rootlets which fasten themselves into the supporting plant and suck its sap, on which the dodder lives. The mistletoe is half a parasite, manufacturing some food and stealing the rest. Its seeds are commonly scattered by birds who deposit them in the trunks of trees. The roots of the seedling sink into the trunk and the growing plant lives very much as a branch of the tree. Another class of plants is represented by the Indian pipe which is the ghoul of plant society, for it feeds upon decayed vegetation. It is called a saprophyte.

In contrast to these unprincipled plants are those that lay away food for another year. Biennial plants do this, such as the turnip and carrot. The first year they spend in storing up nourishment in the root which becomes thickened. The second year they have a start, and are able to produce a plant with blossoms and seeds before the frost comes. Biennials, then, bloom the second year after planting; annuals bloom the first year, and afterwards die down altogether; perennials live on year after year as do trees and shrubs.

MARY LEE VAN HOOK.

BIRD LEGENDS IN RHYME

THE MOCKING BIRD

As we are listening to the birds around our home to-day,
We hear a carol from the tree that stands across the way.
A bird is singing sweet and clear, a song that seems to be
A bit of Heaven granted us—so rich in harmony.
While we stand spell bound, held by song, the voice we pause to hear,
Changes its music, and we know the Mockingbird is near.
Child of the Southland, loved by all, we welcome him once more,
And wonder what new songs complete his this year's repertoire.
No wonder that this songster dear, in that far Southern clime,
Is loved by all the colored folk, who hear him all the time!
Nor is it strange that cabin lore has many tales to tell,
Of how he mocks the other birds, and knows their songs so well.
Old Dinah's story runs like this;—Full many years ago,
The birds met in convention, their skill in song to show.
The owl was judge, and hooted forth the cruel, hard decree
That any bird who could'nt sing, a slave must ever be.
All tried their best, the lark sang first, and pure and clear the note
That came with ease and harmony from out his little throat.
"Good!" said the owl, "we rank you first in purity of tone,
If any bird can equal this, pray let his skill be shown
Then all in turn did try their best the lark's song to outdo,
But all who tried, though well they sang, were ranked as number two.
Until at last a plain gray bird came forward sweet and shy,
And opened wide his swelling throat, but knew 'twas vain to try—
For this same bird was tied-of-tongue, and well he knew a song

Could never pour from out his throat, nor rank to him belong.
Then "Hoot-to-hoot!" the judge exclaimed, "'tis shocking this to see,
A bird so hampered by his tongue, a slave he needs must be—
And to the lark, I do present our sad young friend in gray,
To be her slave, and do her work, that she may sing and play."
Sad was the life of that gray bird, but sweet the heart within;
He loved the lark, and kept her songs his own small head within.
And while he gathered worms for tea, or bugs for breakfast store,
He sang the songs o'er in his heart, and thought them o'er and o'er.
But one bright day the lark fell ill, when past her cozy nest
A robin flew; he'd wandered far; ripe cherries was his quest.
And in his beak he held a twig, with red fruit covered o'er,
'Twas then the lark called, "O friend, I thee implore
"Give me thy fruit, my throat is dry, I'll give to thee my slave
For your rich bite—for I am ill—perhaps my life 'twill save."
Then "Cheer-up, Cheer-up!" said robin bold, "the cherries are your own,
While I've your faithful slave I'm sure I'll not my fruit bemoan."
Then plain gray bird worked long and well, this master to obey;
He gathered grubs, fetched many sticks, and toiled the live long day.
But robin's song, "Cheer-up Cheer-up," so eased his mind of care
That work seemed light; he learned the song, and never knew despair.
Though hard his lot, with heart of song he felt his burden light,
His head was full of melody that cheered him day and night.
So faithful he, so sweet and kind, so true to duties plain,
That he was sold to jay-bird, then to the wren again.
The cuckoo bought him, then the crow, first one and then another;
He worked for each new master, 'till sold unto a brother.
While as he worked, he kept his heart free from the sin of pride,
And went on learning, 'till his head held all that it could hide.
And so one day kind Providence, though seeming most unkind—
Took things in hand, when sparrow-hawk his work to him resigned.
He did his best, though sparrow-hawk was very hard to please,
He beat him, and he pecked his head in every way, to tease.
Until at last he thought him dead, and left him there forlorn,
Not knowing that his cruel act, the slave's life would adorn.
With feeble cry the weak, gray bird, his bruises to endure,
Crept to a stream to quench his thirst, with water cold and pure.
And as it trickeled down his throat, his ever grateful heart,
To his Creator rose, to give the thanks it would impart.
When lo! a burst of melody, surprised his wondering ear;
'Twas such a song as none on earth before that day could hear.
And then it was revealed to him, he held the gift of song;
Old sparrow-hawk had loosed his tongue, nor could he e'er belong
To any bird, for he could sing. Oh happy was the day
That all the woodland echoed back, that first sweet roundelay!
But when the birds, sparrow and all, his worth did realize,
Each wished him for his own, all coveted the prize.
While sparrow-hawk cried "He is mine and I will have my own!"
The owl arose with dignity, his mandate to make known.
"My friends of feathers, may I state as I have done before
That one who sings belongs to none, he is a slave no more.
One who surpasses all his kind in patience, heart and skill,
Should be our king instead of slave, and we should do his will.
Henceforth to show our deep respect and love, all in a word,
We'll hold our tongues whene'er we hear, the voice of Mockingbird."

—Edith Drury Lemington.

FROM COL. CHI. ACAD. SCIENCES

129

LEAST BITTERN.
(Ardetta exilis).
⅔ Life-size.

THE LEAST BITTERN

(*Ardetta exilis.*

Among our water and marsh birds scarcely one is of greater interest than the saucy little Least Bittern. With his small, mottled body and big neck he looks at you from among a distant clump of cattails, as though asking what right you had to disturb him in his quiet and secluded nook. His constant companions are the red-winged blackbirds and the marsh wrens, and occasionally the long-legged rails. Indeed, so closely does this bird resemble the rail in size and general color, that one is easily deceived when it is seen from a distance, especially if it is in the act of climbing up the cattails as does the rail.

Like its larger relative, the American bittern, as well as other members of the heron order, this species spends much time walking slowly along in shallow water, in search of food, its head and neck being thrown forward at every step, appearing as though it was going to stop something with its long, sharp bill. The herons are notably thin in body, but this diminutive member of the order is so thin that it will easily pass through a space less than an inch and a half in width. The astonishment with which the young taxidermist or ornithologist views the very small skinned body of the herons in comparison with their appearance when alive, is an experience long remembered.

The food of the Least Bittern is varied, including mollusks, frogs, lizards and small shrews and mice; tadpoles are considered a dainty morsel. Insects are also said to form a part of the diet of this bird. The Least Bittern is said to be more nocturnal than diurnal in habit. Its flights during the day are short, low and generally undertaken only when frightened by some enemy. At night, especially at dusk, its flight is more conspicuous, is undertaken rather high above the marsh and resembles that of the herons, its long legs being stretched out behind it and its neck doubled back upon its back. Like the rail it endeavors to hide among the sedges and rushes when danger is near, and the color and shape of its body aids not a little in protecting it, by causing it to become inconspicuous among the dead and dried leaves and stalks of the previous year's growth of vegetation.

The Least Bittern builds its nest in secluded spots on the borders of ponds and lakes where the rushes, sedges and cattails form good places for concealment. The nest is flat and is composed of dead material gathered from the nearby reeds. The nest is generally built near the ground but it is not infrequently constructed at a height of three feet from the ground in a thick cluster of smilax and other briary plants, as mentioned by Audubon. In many localities the nest is built at from a few inches to a foot or more above the ground or water, and attached to the stems of cattails. Sedges and pickerel weed are also used in constructing the nest which is neither handsome nor durable. The eggs number from three to five to the set and measure an inch and a quarter by about two inches. They are elliptical in form and are white with a delicate tinge of green. The nesting season varies in different localities. Nests may be found with eggs in late May or early June. It is said that two broods are raised yearly as sets of eggs have been found as late as July or early August. The male is said to assist in incubating the eggs. The note of the Least Bittern is an unmusical *qua* not unlike the rest of the herons.

This diminutive creature makes up in spirit what it lacks in size. A wounded individual with a broken wing was captured sometime ago and it would thrust its long bill savagely at any one who came near or at anything that was placed near it, its bright little eyes blazing with anger. Even this small bird

was no mean antagonist, for with its sharp bill it was able to inflict a painful wound. It was truly wonderful to see with what strength the long, slender neck and bill was thrust at whatever came within reach. When given a reasonable amount of room they thrive well in captivity, and several specimens have been kept at different times in the zoological garden in Lincoln Park, Chicago.

The Least Bittern inhabits North America from British Provinces, Manitoba, Ontario,—southward. It winters from southern Florida southward and breeds throughout its range.

COLLINS THURBER.

AN AUNT JANE STORY

HISTORIC STONES

The children were gathered in the library one snowy morning, very intent over a newspaper, when Aunt Jane appeared at the door, work-basket in hand.

"Do come in," cried John, "we have some wonderful news for you. Would you believe it? The secret of the Sphinx has at last been solved."

"Indeed! I'm glad to hear it. The latest information I've had regarding the great stone image is several years old. It refers to the finding of the stone-cap with sacred asp on its front, once worn by the Sphinx as a helmet."

"You are not up to date, then," said Alice gleefully, "for we have just read that this mystery of the desert is a gigantic image of Ra-Harmachis, or the god of morning."

"There is, then, some significance in the position, for you remember, it faces the east."

"O Auntie!" exclaimed Edith, "do give us a talk about stones, for the Sphinx hewn out of solid rock suggests a subject for us."

"Please do?" joined in the rest of the group.

"Such a topic is of interest on account of its antiquity," Aunt Jane replied. "When Sir John Herschel was a boy he asked his father, William, what was the oldest of all things? The great astronomer is said to have picked up a stone and replied, 'Here, my child, is doubtless the oldest thing that I certainly know of.'"

"But, Aunt Jane, let this talk be about Historic Stones, please, as we have begun with the Sphinx, for I'm sure they could all tell wonderful tales if they had voices," said John.

"Some of them have been given a voice," she replied. "Think of the Rosetta stone in the British Museum, discovered in 1799. This stone has proved a valuable key to the interpretation of hieroglyphics."

"Do tell us about some more stones that had voices, or are historic?" Alice requested.

"The Moabite Stone has a curious history. Portions of it are preserved in the Louvre. It contains the oldest alphabetical writings now known, for it gives an account of a revolt of King Moab against Jehoram, King of Israel, 800 B. C."

"When I go to Paris I'll look it up in the Louvre," said Howard.

"I've already seen one historic stone," John eagerly exclaimed.

"Indeed!" cried the others, "where and when were you so favored?"

"Aunt Jane will remember the day she took me to see Lincoln's monument. A stone is kept there which is about three feet long by two and a half wide, that came from the wall of Servius Tullius. It was sent to Lincoln in 1865. It has this inscription: 'To Abraham Lincoln, for the second time President of the American Republic, Citizens of Rome present this stone from the wall of Servius Tullius by which the memory of each of these brave assertors of liberty may be associated. A. D. 1865.'"

"Bravo! John, your memory is better than mine, in this case, as I had forgotten about the very interesting stone

until now when your description recalled it to mind perfectly."

"Dear me!" cried Howard, "now it becomes our duty to 'read up' on Servius Tullius to keep John from getting too far ahead of us. But how about the Stone of Destiny, you must have seen it when you were in Westminster?"

"Yes, Jacob's Pillar is a dark colored stone shaded with red. It is some twenty-six inches long by sixteen inches wide and about eleven inches thick. The surface is defaced and scratched. Its legendary history is that it was preserved in the temple, taken to Egypt by Jeremiah, carried thence to Ireland by a princess, taken thence to Iona, and thence to Scotland at Scone. Here for four hundred and fifty years it remained, and Scottish kings were crowned upon it. Then it was carried to England by Edward First, and for five hundred years England's kings have been crowned upon it, as it lies under the coronation chair in Westminster. The inscription upon it seems prophetic, as Queen Victoria was descended from James of Scotland. It is this:

Where e'er is found this sacred stone
The Scottish race shall reign.

"Nell!" exclaimed Howard, "that is a stone with a lot of history in it, to be sure, but it isn't as large at least as our famous Plymouth Rock. But I'd like to know, Auntie, if all stones are made by nature or are there artificial stones?"

"It is thought that perhaps the largest artificial stone in the world is the one used as the base of Bartholdi's Statue of Liberty, in New York harbor. It is made of broken trap-rock, sand, and cement. As regards stones noted for size, it is estimated that one of the largest in the pyramids weighs eighty-eight tons, yet the stones are laid without mortar, so close that a pen knife cannot be inserted between them. Those visitors to earth from unknown space, the aerolites, are sometimes of immense size. One in Stockholm is said to weigh twenty-five tons. At the Smithsonian Institution in Washington there is one which weighs fourteen hundred pounds. Such stones are largely composed of iron."

"Auntie," interrupted Alice, "in old times was there not what was called the Astrologer's Stone?"

"Yes, it was fabled that the stone called the 'Devil's Looking-glass' could unveil the future, but it was merely a piece of coal with a polished surface. In the British Museum there is a rock-crystal once supposed to have a spirit imprisoned in it."

"I'm glad," said Howard, "that the age of superstition is past. I don't like uncanny things, but I would be pleased to know what science says about stones."

"That isn't our subject," interrupted John.

"Auntie, please go on all about Cromlechs, Stonehenge, Mystic Celtic Circles, and all that?"

"You will withdraw that request, I'm sure, for I see your Uncle driving up with a sleigh, doubtless to take you all for a ride, so I know you will be ready to end this talk with 'Illsa's Craig which is more curious than historic, as no one knows its story. It lies off the mainland of Ayrshire. When seen from the north it looks the shape of a pyramid larger than that of Cheops. A fellow traveler told me that its common name is Paddy's Mile Stone."

"Hurrah for Paddy's Mile Stone!" shouted the boys, as they rushed about for their wraps. "May our ride be many miles long with never a stone to upset our sleigh."

But as the girls kissed Aunt Jane good-bye Alice said, "Your talk makes me wish to become familiar with the stones in Nature's Museum, all those that have been sculptured by the ages into rare forms, or dyed in lovely colors, or filled with strange fossil remains."

"Study them, dear," Aunt Jane replied, "and thus become in a manner in league with the stones of the field."

BELLE PAXSON DRURY.

THE SAW-WHET OWL

(*Nyctala acadica.*)

The common name of this Owl is derived from the sound of its notes, which may be likened to the rasping sound produced when the teeth of a saw are sharpened by the use of a file. Surely this is not a pleasant sound to think of hearing, yet the voice of the Saw-whet is not so unpleasant when heard in the solitude of a forest and from a distance. Mr. Dawson who encountered two groups, one of four birds and the other of six, says of their voices: "The note heard in both cases bore only the most distant possible resemblance to the 'filing of a cross-cut saw,' which is the classical comparison. It was rather a rasping querulous *sa-a-a-a-ay*, repeated by old and young with precisely the same accent, and inaudible at any distance above a hundred feet." Mr. Audubon, however, heard these notes uttered one time when he was in a forest. He was unaware that it was the voice of a bird and thought that he must be near a saw-mill. While the voice of the Saw-whet may be frequently heard throughout the year, it is much more commonly heard during the months of March and April. During the mating season the Saw-whet Owls are lively and their voices may be heard in nearly all favorable localities. Their notes are easily imitated, and it is said that by carefully repeating their notes, the birds will not only be attracted but may even be decoyed within reach of one's hand.

This handsome little Owl is often considered rare in localities where it is quite abundant. This is due to its retiring and very nocturnal habits as well as to its small size. According to Major Bendire: "It is a constant resident throughout the greater portion of its range within the United States, only migrating from its more northern breeding grounds, and passing the winter season mainly in the Middle States, where it is met with at times in considerable numbers." These Owls are irregular wanderers, during the fall and winter months their presence or absence from certain localities being due to the abundance of food to their liking. They seldom move about or hunt during the daylight hours, but pass the time in dark retreats, sleeping so soundly that they may often be captured alive.

The Saw-whet Owls are truly beneficial birds and should receive human protection. It has been shown that their principal food consists of mice and other small rodents. Very rarely and only when their favorite rodent food is not sufficient, do they occasionally feed upon small birds. Even then they seem to prefer to feed upon the carcasses of quite large animals. Dr. A. K. Fisher says that they also feed to some extent upon insects of various kinds. He also says: "Thus it will be seen that while the diminutive size of the Saw-whet limits its power of usefulness, its mode of life renders it a useful adjunct to the farmer, and, small though it be, yet in districts where it abounds the number of mice it annually destroys must be very large." Dr. Fisher gives the following results of the examination of twenty-two stomachs, seventeen contained mice, one a bird, one an insect, and three were empty.

The Saw-whet Owls nest in hollow trees frequently using the abandoned excavations of woodpeckers and squirrels. They have been known to use nests in the open. One observer, quoted by Major Bendire, reports one pair which had used the nest of a night heron. They have also been known to use artificial nesting sites in the form of hollow limbs hung in forests for them. Usually the eggs are deposited on the debris which the birds found in the cavity selected by them. The pure white eggs vary in number from three to seven in a set, and it is probable that both sexes assist in the duties of incubation.

FROM COL. CHI. ACAD. SCIENCES

133

SAW-WHET OWL.
(Nyctala acadica).
⅔ Life-size.

OUR RESIDENT BIRDS

IN NORTHERN INDIANA

All birds are interesting at all times, but these winter days when the migratory season has passed, the resident birds become doubly so. Since the roses have blomed, the wheatfields grown green again, the cornfields gathered into Indian wigwams, few insects darting about, and the witch-hazel the sole flowering shrub, it is very pleasant to have some friends of the bird world still here. I am sure of a score or more till the blue-birds sings "cherut" or the robin carols "wake up," "wake up." Oh, it is so cheering to have some of them here always! I am not sure but I believe the resident birds are more friendly in winter than in summer. I do not mean what has aptly been termed "cupboard love," the kind of friendship that hunger forces on animals, but they always seem less timid when we come together in the woods or fields.

Probably the best known as well as the most conspicuous is the crow, the much maligned, censured crow. Happily he needs no introduction. Surely the most indifferent must know the crow. He will not let himself be kept in the background. No matter what kind of weather, he is sure to be seen somewhere. The sun cannot shine too hot or the wind blow too cold to daunt him. Even a rain or snow will not keep him at home, unless it be a sudden shower. He is an exceedingly interesting bird about whose characteristics volumes might be written. Last summer one day I was close to the woods along the side of an old fence when I noticed a peculiar gawky, dull colored, undersized crow trying to balance on the fence. Overhead two old ones were making a great clamor, I suppose shouting directions. I was puzzled at first but when I walked up closer plainly saw what had caused the commotion. It was a young one, and the two overhead, the parents, were trying to teach it to fly and otherwise act under dangerous circumstances. I made a rush and it flew to the ground on the other side of the fence. Over I clambered and went for him again but he dodged me. The third time I grabbed him when he looked at me in a babyish manner and opened his mouth. The explanation of this was plain, he wanted something to eat. When released, he flew to a bush near by and quietly watched me. After that, I saw him quite frequently and caught him with little trouble. As the season advanced he developed into a fine bird and I hope is one of the large flock that stays about here. In winter they are more sociable, coming about where the hogs are fed or where provender of any kind can be found. There is a large crow roost down the river and regularly every morning and evening as I tramped to my school, they would pass overhead, generally two or three together, extending as far as I could see in either direction. Lowell, in the "Vision of Sir Launfal" aptly describes his appearance on a January morning when he says:

> The crow from his shining feathers shed off the cold sun.

It is very interesting to watch the birds drilling in the autumn. Sometimes there will be a most vociferous cawing and flying about when suddenly a strong voice rises above the others and silence ensues. Movements of all kinds, to right, to left, forward, back, wheel, turn and in short all kinds of evolutions are gone through with. When winter comes they are generally seen in small flocks of from two to a half a dozen. They are a very shrewd and wily bird and worthy of the most careful study.

The very atmosphere about the blue-jay is charged with vim and vigor. He gives a clear blast of his bugle and stands attention. No matter how fiercely the wind blows or how the snow flies he is about. When the wind does ruffle his feathers he only braces himself anew

and shouts a defiance; but he is not averse to coming for crumbs when the snow lies deep on the ground. I always number him among the visitors at the crumb board. How handsome that blue coat looks snowy mornings—bright blue, clear white and some deep purple! It always gives me renewed courage to see his bold, fearless manner. He gives a tinge of color to the white, silent world.

In contrast to him is the cardinal grosbeak or red bird as he is most generally known. In his colorings the blue and white are changed to red and black. He gives color to the wintry scene also, but in a quieter way. There is more of grace and dignity in his movements, more silence and reserve. The woods and shrubbery are his haunts and I see him about the house but little, only occasionally, but I am almost certain to meet him if I take my ramble along the foot of the sandridge. Not much needs to be said, for every city, as well as country boy knows that whistle. He is a vigorous and pleasing factor in our woods.

Pleasant the neighborhood in which quail are abundant. It never lacks for a hearty, buoyant citizen that calls cheerily on the most disagreeable mornings. He likes a farmer who leaves a few shocks of corn unhusked where he may find both food and lodging.. In the morning, after a newly fallen snow, innumerable tracks will be about it showing where the covey worked to get a breakfast. Sometimes when other supplies fail, he will bring the family to the barnyard. An entire flock wintered under our barn several years ago. It was very pleasant to have such neighbors in mid-winter.

Much might be written about the sparrows that live here. The most common are the tree, the bush and the song sparrow. These three may be found in considerable numbers at any season of the year. Up along the ditch bank I am always certain of finding a flock. Here grow a great many flowers, golden-rod, aster, wild-sunflower, elecampane, and many different weeds. As the ground about here is not pastured much, the flowers and weeds mature their seeds, and it forms a favorite feeding-ground in winter. It is curious to note the number of tracks under a tall weed, off from which the seeds have been shattered. Very frequently the first bird voice of spring will be the song sparrow's. Sometimes I hear one some warm day in midwinter but never in late fall or December. It is interesting to notice which will come first, the blue bird from his southern home, or the song sparrow from the thicket. I think there are few sounds sweeter than the first piping strains of the song sparrow some crisp spring-like morning in late February.

Summer and winter are much alike to the gold-finch. He dons a dress suit of black and gold and sings again in a voice of sprightly sweetness. He billows gracefully from mul ein to thistle, and from alder to willow. He is not so easy to distinguish from other finches in winter as in summer; but a sudden dash of wings, a sw-e-e-t, as a plain sparrowy looking bird flits from one weed to another, tells of the gold-finch.

While writing of the ground birds I must not forget that fast friend of mine the shore-lark. I have seen him the loveliest days in June when the red clover blushes at the sun's smiles, and again in January along the public road when the wind made me almost gasp for breath and the mercury hovered at zero; yet he was just the same. Trim yet plump, with an independent but dignified mien as if he had the same right to be here as I had. He is one of the birds you can easily distinguish though his coat is inconspicuous, by the alert manner, habit of feeding along the road, and the two tufts of feathers which have gained for him the appellation horned lark.

The turtle or mourning dove, as it has properly been termed, is associated in my mind with warm weather, generally a still afternoon when the birds have become quiet and that sweet mournful "coo-coo" drifts off in the languid air. It always suggests pensive quiet when a person can drift on the subtle sea of imagination where the ordinary humdrum of existence is exchanged for

some dreamy land of fancy. He is not only here then, but he also can be here in very different weather. I well remember the first turtle dove I noticed in winter. A bright December day, snow on the ground, crisp air, a flock was perched on the fence by a hay-stack enjoying the bright sun light. It was a surprise to me but since then I have grown accustomed to them. Winter must silence them for I have never heard any sing at that season.

Of the waxwings, the cedar-bird is by far the most common. They do not nest about our house and the only time I am certain of them is in cherrytime. Then they are here in full force. At other times their movements are erratic, as far as I can tell. Just as likely as not some cold morning in January I hear a peculiar faint twittering noise and see a flock in cedar or pine. It may be they will be quite friendly for several days, then disappear until early June, in cherry time.

There are none that I like any better than the wood birds. By wood birds I mean woodpeckers, titmice, nuthatches, chickadees, and brown creepers.

The yellow hammer, flicker, or any of the half hundred names he is called, is much more common in summer and autumn but, nevertheless, always winters with us. He is a gay fellow though somewhat subdued in December. I have watched him working away industriously when the air was white with snow and genus "homo" felt a strong desire to be inside the house.

His cousin, the red-head, is more erratic in his sojourn but can always be relied upon if the supply of nuts is considerable. He will gaily "hitch" up or around a tree and work away vigorously at the tender meat of an acorn or beechnut. I know a wood of maple and beech that nearly always has some of these winter birds. They seem to prefer a diet of beech-nuts to that of anything else. In summer they are abundant every where, but in winter thy are not so common. The black and white woodpeckers, the hairy and downy, are the ones most commonly met with in winter. They frequent our yard and hammer away at the apple trees apparently indifferent to heat or cold. I frequently find them in company with chickadees and nuthatches. They are not shy but regard you philosophically as you stare at them through your glass. One reason I like them is that they are so tame, or rather so sure of being found at any time you look carefully.

I do not believe any one needs an introduction to the chickadee. Read what Emerson says of him. Possibly memory of school days, if you have passed that period, will come with song or story about the chickadee. He is one of the jolliest, most confiding little creatures I have ever had the pleasure of meeting. He is so tiny and yet so confident and fond of the orchard, sometimes coming close up to the window. Frequently he comes to the window-sill for crumbs in mid-winter and sings away as cheerily as in mid-summer.

Both the nuthatch and crested titmice, or brown creeper, are very friendly also. Some birds are indifferent to your presence, but these last mentioned always seem to me to really like human companionship. The nuthatch will stop running about over the tree-trunks to look carefully at you, sometimes even coming up quite close. The titmouse is not quite so sociable and regards you more critically The brown creeper is smaller and never seems to get away from the tree trunk where it passes its days.

The downy and hairy woodpeckers, the nuthatch, the chickadee and crested titmouse form a coterie by themselves that make up a very friendly company. In winter I am always sure of finding them, if I search carefully. Generally they may be found without any trouble but sometimes I have to hunt, always successfully, I might add.

The name shrike calls up bandit or ruffian. He perhaps well merits the reproach though I have never seen much of his work. A bird not very common about here, yet as likely to be seen one season as another.

The great horned owl is our largest bird of prey. Though numbered among our resident birds, he is local in distri-

bution. In summer especially, crows collect in flocks for the purpose of tormenting the great staring eyed bird. Mostly nocturnal in habits he only asks of them to be left alone in daylight. Where he frequents, a most startling "who-hoo-hoo-hoo-whoo-whoo" often breaks the monotony of night.

The barred owl is a common resident. This bird from its peculiar call is spoken of as the hoot owl. It is large, umber brown in color and transversely barred, whence the name. The sudden "who-who-who-who-who-who-who-r-r-e-you" shouted just overhead some dark night will in the language of Shakespeare "Make your hair rise up, like quills upon the fretful porcupine."

But by far the most numerous is the common little screech owl. A little fellow from six to ten inches long, with conspicuous ear tufts, the general color of which is sometimes gray and sometimes red. It is by far the most common owl about here. Nearly every season a brood is raised in the woods nearest the house. He is as near to being friendly as an owl can become. Were it not for the unearthly screech with which it gives vent to its feelings, it would be a desirable companion. As it is I must confess I have a liking for him. As a friend to the farmer he ranks high.

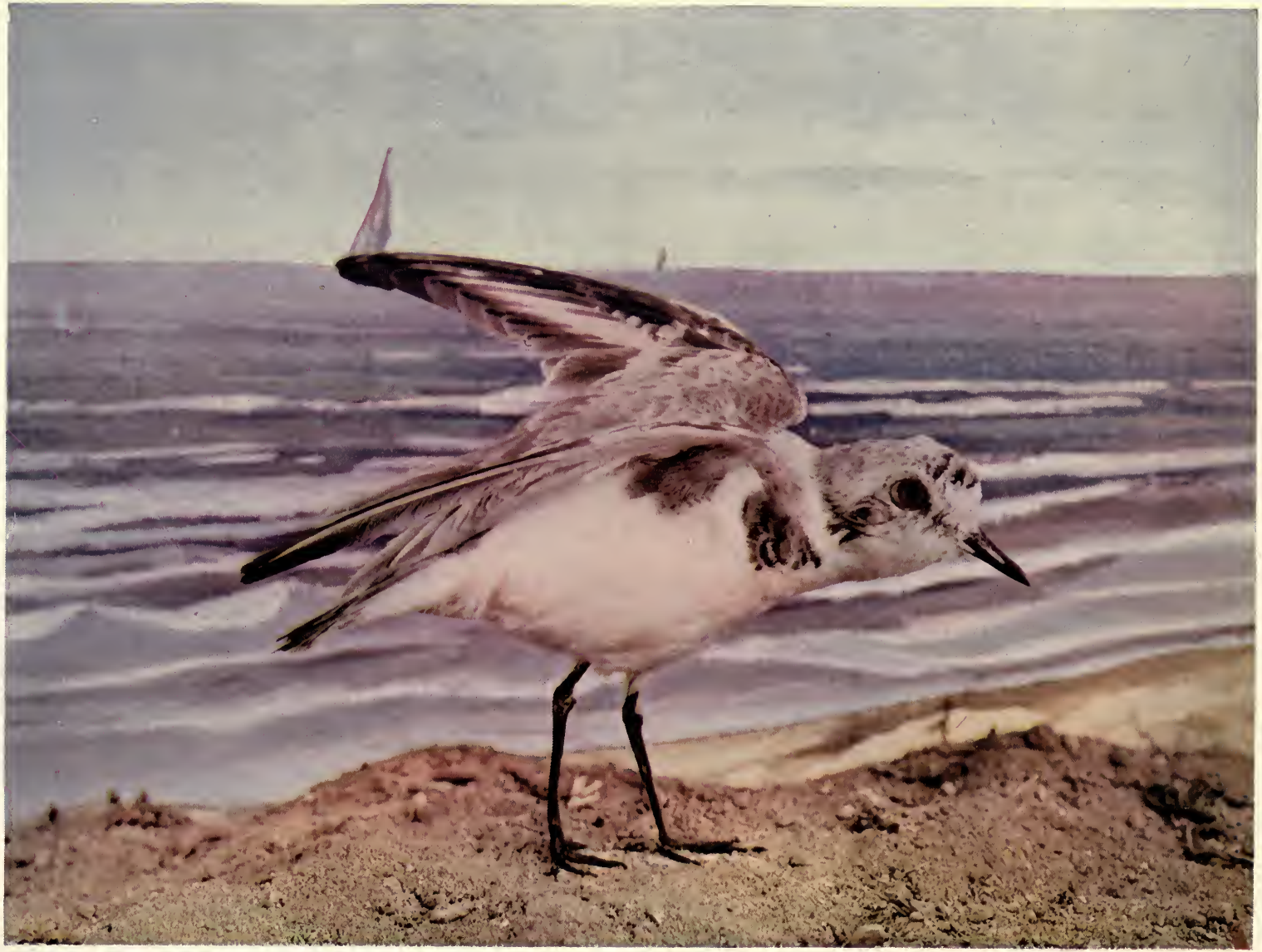
Among other resident owls might be mentioned the American barn owl, and the American long-eared and short-eared owls. The sparrow hawk is rather common, though none of the birds of prey are common in the sense in which robins or blue birds are common. It is rare that more than a pair will occupy a piece of timber or remain about one farm. He may be known by the rufous back, tail chestnut-rufous with black band across, grayish blue back with peculiar dark patches on the sides of the face. He is rather a small being from eight to twelve inches in length. Last winter one of them found out that corn-shocks were inhabited by mice and when I was hauling out fodder, kept a sharp lookout and frequently managed to get one. I have known him to swoop down within a few feet of me and pounce on a luckless victim. He kept this up all winter, and I believe raised a family the next summer, though I did not see the nest.

The red-tailed hawk stands second to the red-shouldered in point of numbers. It is often called the "hen-hawk" or "chicken-hawk." It is one of those large hawks that circle about in summer. Though occasionally one of them falls from grace and becomes a chicken-eater, the most of them live off of batrachians, smaller animals and reptiles.

The red-shouldered is more common than the red-tailed in the proportion of about five to one, and sometimes more. They are much alike in general appearance and action. They have nested in our woods for several years. A neighbor, in a spirit of misguided zeal, killed one of the old birds and a half-grown one three years ago. The remaining bird screamed about for several days but must have found a mate, for soon there was a pair again. Among other resident hawks are the cooper hawk, sharp-skinned hawk and marsh hawk.

The foregoing is a list of the resident birds that have come under my observation here at my home, near Logansport. Doubtless the list might be increased, for one person never sees all. All birds are friends, but those who can withstand the rigors of a northern Indiana winter certainly merit very high praise. In the days of flying frost and snow it is a great pleasure to come upon a flock of sparrows disporting in the edge of the thicket, to hear the quail calling softly over fields or drifted snow, to catch a sight of the cardinal grosbeak's flaming coat or the jay's blue and purple, or have your woodland tramp enlivened by the nuthatch's soft nasal "yank, yank" or the chickadee's merry lay.

WARREN T. HIGGINS.



FROM COL. CHI. ACAD. SCIENCES

SNOWY PLOVER.

THE SNOWY PLOVER

(*Ægialitis nivosa.*)

Though the range of this beautiful Plover is fairly extensive, it is much more common west of the Rocky Mountains. It is found eastward to Kansas and the western Gulf States. It is known to breed quite throughout this range, and it may also nest in Central America, and western South America. It winters from southern California and Louisana, southward on both coasts of Central America and on the western coast of South America, at least to Chili. It has also been found in western Cuba and Mr. C. B. Cory has recorded it from Long Island. Mr. N. S. Goss found the Snowy Plover breeding on the salt plains along the Cimarron River in the Indian Territory. In this territority, he saw young birds and several adults. He found the nest to be a "depression marked out in the sand, with no lining, and nothing near to shelter or hide it from view."

Mr. T. S. Van Dyke says the Snowy Plover is found on the coast of southern California, inland as far as the great Salt Lake. It is abundant on the ocean beaches, frequenting the high dry sand, and has many of the habits of the piping plover. It is generally silent, and the soft coloring of its plumage blends perfectly with the surroundings. Along the California shore this Plover remains through the winter and breeds during the month of May. The nest is a mere depression in the sand, and several pairs are often found nesting in a comparatively small area. The eggs of the Snowy Plover resemble very closely the color of the sand upon which they are laid and for this reason are not easily observed.

When hatched the young at once begin a search for food under the guidance of their parents. Their food consists of the various small insects and other minute forms of life that abound on the beaches. If surprised or pursued they quickly run away, and may finally settle upon the sand where they remain perfectly motionless, and because of their color, easily escape observation. In regard to this habit, Mrs. Bailey says that on the shores of Salt Lake, while the great white gulls disport themselves in the air and on the water, the plump little Snowy Plover is trotting along the beach gathering his food as he goes. If frightened, he drops into the deep footprints of a horse, and is lost to view, so well does his back match the gray surface. While leading their brood, the parent birds will feign injury when pursued and flutter along in an apparently crippled manner in order to attract attention to themselves while their young are escaping. Finally the parent bird, when the young has had sufficient time to escape, and hide, takes to wing and flies, in a roundabout manner back to the vicinity of her young. Mrs. Wheelock records the finding of a Snowy Plover's nest near San Diego, California, in the month of April. When discovered, it contained three eggs. When the nest was again visited three hours later two little ones bad broken the shells and were crouched in the nest looking like small gray stones. They were about the size of large walnuts and were very pretty creatures.

FRANK MORLEY WOODRUFF.

A TRUE SQUIRREL STORY

"There once was a squirrel whose name was Bun."—In a leaf-lined hollow in a great beech tree this little squirrel's life began. He had other squirrels for company, for the woods in which he lived were full of great trees that were old and gnarled, and broken and boled. The hollows in the trees were like great pockets and were just such places as squirrels liked to hide in.

There was another reason why squirrels liked this particular forest. That was because its trees bore nuts and cones in abundance, so that the squirrels' cupboards in the trees were never empty.

"Chick-a-ree-ree!—chir-r-r-r!" said the squirrels in one tree, and other squirrels in other trees shouted back a chorus of *"chick-a-rees!"* This was the language of Squirreltown. It seemed all alike to the ears of the Galpin family who had come to live in the edge of the forest,—in the edge of Squirreltown itself. If those human ears had been better trained in the lore of their little neighbors, their owners might have been as wise as Weather Bureaus, and have learned where the best nuts grew, what trees were hollow, and a great deal more that was worth while.

Now in this Galpin family there was one daughter who loved the woods almost as well as did the squirrels themselves. She loved to wander among the big trees and to listen to the songs that the pines were always singing, and to hear the secrets told by the whispering leaves. The birds sang to her, and the flowers dropped sweet odors upon her garments as she passed among them. Because she loved all, she was kind to all. The birds knew it and were not afraid of her. All the squirrels in Squirreltown were quick to find it out and *chick-a-reed* to her, though in a shy little fashion at first.

Gradually they grew to believe that she belonged to Squirreltown; so, instead of running away when they saw her coming, they would hide their piles of nuts in the leaves under her very eyes, and play tag with each other among the big trees without fear of her.

It was not all at once, but gradually that Ella Galpin won the confidence of the tenants of the woods, until they all grew to regard her very much as if she had been a long-eared rabbit or a nice little beech tree.

When the little people in fur who lived in Squirreltown discovered that she carried popcorn and beechnuts in her pockets they were more than willing to continue her acquaintance, They learned to come at her whistle, to eat from her hand, and to sit fearlessly upon her shoulder and crack their nuts.

Just where the forest ended a meadow began. Where the forest and the meadow met a traveling Burdock had settled a long time before. The Burdock's family had increased and its children and grand-children had settled all around it, until the place that had once been sweet with ferns and lilies and violets was now a real Burdocktown.

A great pine tree in the edge of the wood had long had the habit of throwing its cones down to the ground that its friends from Squirreltown might come and gather their seeds. But now, when the great pine shook its heavy branches and threw down its cones, they went hurtling straight into the midst of Burdocktown.

One market day, our squirrel whose name was Bun went scampering off to the pine tree for seeds that grew in its great brown cones, and before he knew it he was right in the center of Burdocktown. His indignation was unbounded when he found the broad leaves of the Burdocks covering his market place and he scolded and *chick-a-reed* a great deal. But the coarse Burdock people only bristled and spread themselves out the

more; and presently our squirrel found that they had fastened a cruel bur in the beautiful hair of his large bushy tail. Now a squirrel's tail is his pride and delight, and when our Bunny found the hair of his tail was tangled and matted instead of floating out upon the wind like a long graceful plume, he was very angry, as he had good reason to be; besides his pride being hurt, the hooked prongs of the bur irritated his tender skin. So he hied himself home as fast as he could and spent all the rest of the day trying to get the bur out of his beautiful bushy tail. But the longer he tried the more the hair became entangled. At length as the shades of evening began to glide among the trees, our little friend ceased his efforts, and scampered through the boughs of his old beech tree. *"Chick-a-ree"* he said with an attempt at making the best of things; and really his *"Chick-a-ree!"* this time, if freely translated, meant,—"What can't be cured must be endured!" and he ran to one of his cupboards in an old hollow stump for a supper of beechnuts.

From his tea-table on the stump he suddenly spied Ella Galpin—the squirrel's friend. *"Chick-a-ree-ree-ree!"* he called; and this time he meant, "Hello! I'm glad to see you!" and when he spied grains of popcorn in her hand, he left his tea-table and his cupboard with beechnuts in it,—glad to exchange nuts with their shells on, for popcorn that was ready in hand. As he ate the corn, he frisked less than usual, only stopping occasionally to chatter his *"chick-a-ree-ree-ree!"* and this time he must have been saying;—"This is kind of you! I am very hungry and I am really too weary to prepare my own supper. I have had serious trouble over in Burdocktown. You have no idea how irritating is this bur in my tail!"

The young lady appeared to understand. At all events, she saw the bur and at once attempted to relieve him. But as her fingers took hold of the bur and the squirrel felt that his tail was touched, with a shrill *"chick-a-ree!"* he bounded away. As you must know, squirrels are particularly sensitive about ever having their beautiful tails touched, and as he stood again on his old hollow stump and *"chick-a-ree-ed"* loudly, it was plain he was saying;—"How dared you to take such a liberty!"

In his excitement, he frisked his tail as he chattered, and lo! the wind combed it out and it floated up over his back like a beautiful airy plume once more, for the bur was gone. The young girl's fingers had held it firm as Bun leaped away. Happy in his discovered relief, he quickly scampered back to her hand and in his excitement he *chick-a-reed* faster than ever. It was as earsplitting as if a dozen squirrels were all saying "Thank you!" at once.

Mrs. A. S. Hardy.

A FINER SENSE

The poet sees with different eyes from ours:
He sees a hidden glory in the flowers;
He hears the stars chanting a song sublime;
The ocean waves to him are pulsing rhyme;
The wind in rhythmic measures fleets along;
Each ray of sunshine pours for him a song;
The forests breathe a harmony divine;
Each wilding herb of melody gives sign;
Thus, hearing, seeing, all fair things unite
In tribute to the poet's finer sight.

—M. D. Tolman.

THE BLACK SWAN

(*Cygnus atratus.*)

For centuries the swans have attracted the admiring attention of the human race. The beauty of their form, their gracefully arched and curved necks, their powerful flights, and the gracefulness of their aquatic habits have always led to expressions of admiration. They are all large birds and with the exception of the Australian species the plumage of the adult is entirely or mainly white. Among the ancients the possibility of a black swan was not thought of, and when the black species of Australia was first discovered "its existence seems to have impressed the popular mind with the notion of extreme divergence, not to say the contrariety, of the organic products of that country." It is interesting that we are able to name the exact date on which this bird was discovered. "The Dutch navigator, William de Vlaming, visiting the west coast of Zuidland (Southland) sent two of his boats on the sixth of January, 1697, to explore an estuary he had found. Their crews saw at first two and then more Black Swans, of which they caught four, taking two of them alive to Batavia." The facts ascertained were communicated to the Royal Society in October, 1698, and were printed in its *Philosophical Transactions.* Later, other investigators found that the range of the Black Swans included nearly the whole of Australia and that they were very abundant in many localities. They are said to be much less common now and may become extinct as a wild species. But because of their beauty and their attractive appearance they probably will be preserved as captives, but granted more or less freedom, in most civilized countries. Someone has said that it is quite possible that there are, at the present time, more Black Swans in captivity in other countries than exist in a free state in their native region.

The Black Swans are not as large as some of the other species but they are much less shy than most of their relatives. When flying at night, they utter a very musical note. "Old Bushman" writes that in Victoria the Black Swans were common "on all the larger swamps and lagoons, sometimes in good sized flocks, but generally in small companies, which I took to be old birds and birds of the year. Early in summer they retired to their breeding haunts, and we saw very little of them again till the swamps and water holes filled. They appear to breed in August and September. The nest is a large heap of rushes, and the female lays five to seven dirty white eggs, not so large as those of the mute swan." The mute swans are natives of Europe and some portions of Asia, and in winter they also enter northern Africa. It is said that in nature the nests of the Black Swans are often a mass of aquatic plants two or more feet in height and six or more feet in diameter. The period of incubation lasts about five or six weeks. In nature when danger is imminent, these Swans try to save themselves, whenever it is possible by swimming rather than by flying, for they are birds of heavy flight.

FROM COL. CHI. ACAD. SCIENCES

134

BLACK SWAN.
(Cygnus atratus).
¼ Life-size.

ADAPTATION IN BIRD ANATOMY

Adaptation is a principle that runs through all nature. There is no fact more prominent. It is nature's response to demand, her answer to necessity. The large muscle of the blacksmith; the calloused hand of the laborer and the coiled tendrils of the vine, are very familiar examples. But nowhere is the principle more conspicuous than in bird anatomy. Birds are so sensitively organized, and respond so readily to environment, that the finest shades of adaptation are exhibited. It is the purpose of this article to point out some of the most important examples of adaptation to be found in birds, and to show how a knowledge of these facts may help us to interpret bird life.

In the first place; birds fly, and hence have wings. Though some may choose to contend that they have wings and hence fly. However that may be, wings alone are not sufficient for flight. A little examination reveals the fact that the bones of birds are hollow through which warm air circulates, evidently to give the bird buoyancy and render flight more easy. An exception which is additional proof of the principle of adaptation is the more solid bones of the ostrich and domestic fowls, which do not fly. Furthermore, it is found that the feathers stand out on the body of the bird in such a way as to displace considerable air, which to no small degree enhances the bird's power of flight. By removing the feathers from the body of the bird, leaving the wings entire, flight becomes very awkward and difficult, and in some cases is practically destroyed.

The keel-like form of the body is especially adapted for flight, and the large wing muscles of the breast account for the untiring ease with which some exercise this power. Birds with remarkable power of flight have these wing muscles very highly developed; while in birds like the grebe, which fly but little these muscles are almost wanting; but being lusty swimmers they have large leg muscles instead.

Turning to other parts of the bird an abundance of material for our subject will be found. Just as we are enabled to read on the face of an individual quite accurately the story of his inner life, so is there expressed—if we will but read—in the modifications of the several parts of the bird, his habits, character and environment. If his birdship would conceal these secrets it is always necessary that he hide his head and feet, and even then his leg, or wing, or tail, may tell it all.

The feet of those birds that spend much of their time on the ground (the Robin, Lark, and domestic fowls for example) are very large, obviously for the reason that they are much used. On the other hand, the feet of the Chimney Swift, which are practically never used, for these birds do not perch except on the nest, are very small—in fact all but wanting. The Night-hawk, whose habits are very similar, has legs to small to support the body, so instead of perching crosswise of the limb as most birds do, rests the body on the limb parellel to it. This brings to our mind that oft repeated law of nature: "If you do not use you lose," which, however, is merely an expression of one side of this principle of adaptation.

It will be observed that those birds that perch a great deal have well developed claws, while the Kildeer, a bird that never perches, has no claws at all to speak of. The same is wanting in Grebes and other water birds. Birds of prey have strong, sharp claws; the reason is very evident.

The number, position, and relative size of the toes of birds is a very large and interesting study in itself. As a rule birds have four toes, three of which point forward, the other backward—all on a level. But there are many variations from this rule. The hind toe of

those birds that spend most of their time on the ground is generally short and raised from a quarter to a half inch above the level of the other three, this evidently to facilitate walking. In the Kildeer, Plover and some water birds this hind toe is absent. These birds do not perch and hence three toes serve their purpose as well as four. In England there is a Swift, with all four toes pointing forward. Nature, we will suppose, found it more expedient in this case to turn the hind toe forward than to remove it when it was no longer needed behind. No other bird has lived closer to the ground than the Ostrich, and so his foot has lost all semblance to a bird foot. Hoof would be a more appropriate term.

We may rightly conclude from the foregoing observations that the absence of claws and toes indicates the bird's progress in the journey of evolution from, or may be toward, the arboral life.

The Woodpeckers, Parrots, and other birds whose habit it is to cling to the trunks of trees, have two toes pointing forward and two backward. It will be seen that such an arrangement is the very best adapted for clinging. We need not read in books to know considerable of the life of any bird we may happen to see with toes so arranged.

In the Owls there are two toes forward, one backward, and one sidewise—a foot particularly adapted for seizing and holding small prey.

There are two distinct classes of water birds—namely, waders and swimmers, and how well each is adapted to his particular enviroment will readily be seen. The swimmers have short legs and webbed feet, while the waders have very long legs, but the web being unnecessary is accordingly absent. The American Coot and Florida Gallinule, birds half swimmers and half waders, have what are called lobed toes—a sort of imperfect web. Evidently these birds have been true swimmers and are becoming waders, or have been true waders and are becoming swimmers.

The Auks, Grebes and Loons are strictly water birds, that is, they do not fly from the water as do the ducks and geese, and so thoroughly are their short legs adapted to the swimming habit that they are practically helpless on land. The waddle of our domestic duck and goose is a mark of their lowly origin, and is a striking example of the ugliness of ill-adaptation.

I think I need not go further into this discussion to prove that the foot of the bird presents to the student some interesting problems, and that out of an almost infinite variety of modifications may be discovered some general truths.

Interesting as the foot of the bird may be, the bill is scarcely less interesting when viewed in the light of the principle of adaptation. Birds of prey have the hooked bill and it needs no keen observer to discover the appropriateness of such a bill. In the parrot, it will be observed this hook is unusually prominent, because it serves a two-fold purpose, this bird having the peculiar habit of climbing and supporting itself by means of the bill. In the wild state it is often found suspended by the bill from the branch of a tree, fast asleep.

The bill of the Woodpecker is very large and strong, nothing less would so well answer his purpose. He is sometimes called the carpenter among birds. His bill is, therefore, his hammer, his saw, his plane, his chisel, his bit.

The Finches, a family of seed eating birds, have short thick bills, and the ease with which they crack seeds and extract the kernel is sufficient proof of their splendid adaptation.

The appropriateness of the long slender bill of the Hummingbird is at once obvious. The long bill of the Snipe is equally important to him, for it enables him to search down in the grass for grubs and tender rootlets, with more safety to himself, since his eyes are thus at a height to do respectable guard duty. It might here be added that the pliable rubber-like structure of this bird's bill makes it more sensitive to detect the presence of food.

That most singular bill of the Red Crossbill is evidently the result of ages of twisting at the cones of the pine which furnish the principal part of its

food. It needs but to watch this bird gathering his supper of pine seeds to convince one of Nature's wise provision in what at first seems deformity. Verily "Things are not what they seem."

The very large, apparently incommodious bill of the Toucan is found to be nicely adapted to his purpose. These birds are remarkable for the habit of regurgitation, and the large bill answers as a sort of food reservoir, a second stomach as it were. The great length of the bill enables the bird to reach conveniently the fruit that dangles from the twigs on the higher branches of the trees, since they could not in consequence of their weight alight near the fruit—somewhat the same theory that accounts for the long neck of the Giraffe. The large bill of the Pelican also serves as a food reservoir.

I doubt if many people have looked at that long-legged, long-necked bird, the Flamingo, without having their wonder excited because of the singular shape of its bill. It seems to have met with some serious accident which bent its bill thus out of shape. But an acquaintance with the feeding habits of the bird removes all wonder from our mind for we discover here a remarkable adaptation. In taking its food the Flamingo reverses the ordinary position of its head, using the upper mandible to scoop up its food somewhat in the same way that the ditcher uses his hoe, but I wish to confine this discussion more particularly to our home birds.

The Nighthawk has no bill at all to speak of nor does it need one. With its wide gape, as it darts and soars about in the upper air, it soon gathers in its supper of gnats and flies. It is interesting to note in this connection that surrounding this bird's gape are numerous stiff bristles which stand out funnel-like evidently to direct its prey into the gape, and so facilitate food-getting.

But let us notice some other parts of the bird. Few people realize the important part that a bird's tail plays in the life of the bird. It is to the bird what the rudder is to the ship, and more. It is used to change the direction of flight. When the bird alights the tail is spread to let him down easily. When he is perched the tail answers as a sort of balance pole. And in different birds with its various modifications it answers a number of purposes. The Woodpecker props himself up on the trunk of a tree with his tail and we find the same nicely adapted for the purpose, the feathers being stiff and pointed. The Cormorant, a bird with a long body and with the legs very far below the middle of the body, in order to balance himself, stands almost erect and rests himself on his tail; hence his tail is like that of the Woodpecker.

Some tails are long and others are short, and some birds have no tail at all worth mentioning. This is particularly true of the Auks and Grebes—water birds that know none of the uses that tails are put to. Other things being equal the perching birds will have the most largely developed tails.

Few birds present so many prominent examples of adaptation as are found in the Woodpecker, for the reason that his habits are peculiar, various, and fixed. So it is not strange that his tongue should be found to be stiff and pointed—a tongue with which he is better able to procure on a dead treetop a nice supper of beetles and larvae.

The Sapsucker's tongue is covered with numerous hair-like projections, which are put out against the tree and serve as so many little troughs to lead the sap on to the tongue.

The principle of adaptation finds expression even in the eyes of birds. Those birds that are active in the lighter part of the day have small eyes. Birds of prey, however, have large eyes because they need keener sight.

The Owls, Nighthawk, and other birds of nocturnal habits, have large eyes—eyes with exceedingly large pupils—especially adapted for seeing in the dark. It is interesting to note further that these same birds have soft, fluffy feathers and very large wings, which give them an almost noiseless flight and enable them to come close to their prey without being heard. This is certainly a very kind provision of Nature, as these birds, even with their good eyes,

would not be able in the dark, to see their prey at a very great distance.

Speaking of the large wings of these birds, and their particular importance, reminds me that the wings of birds present almost as many modifications as do the feet or bill, each exemplifying this principle of adaptation.

The Apterix and the Ostrich present the merest rudiments of wings, their habits being such as never to call forth the exercise of these organs. Should these same habits continue the time is not far distant when these rudiments of wings would altogether disappear.

The Auks, unlike other water birds, use their wings to aid them in swimming, which accounts for the paddle-like stub of a wing which they possess.

The Grebes and Coots, water birds that fly but little, have very small wings, while birds with remarkable power of flight, like the Gulls, have large wings, as well as large wing muscles, which fact was pointed out earlier in this article.

Can it be that an explanation may be found in this principle of adaptation, for the fact that our common Turkey-buzzard has no feathers on his head? I think so. It is quite plausible at least to conclude that, inasmuch as these birds live on putrid flesh, the feathers about the head would become saturated with stench, and to prevent which, Nature has taken these feathers away, so that now these birds go about with but a minimum stench to tell of the scavenger's life which they lead.

Last but not the least important phase of this subject of which I shall speak is that which pertains to the coloring of birds. Here every variety and combination of color may be found, and since these colors harmonize as a rule with the bird's environment, we conclude all this would be a response of nature to the bird's demand for protection. I shall try to point out some of the more general facts to be learned in reference to these adaptations of color.

It will be observed that those birds that are found mostly on the ground—the Lark, Sparrows and Quail, for example—have the ground color, a sort of grayish-brown. Water birds are a slate-gray color. The throat and breast of the Herons are streaked to harmonize with the reeds among which they are wont to stand in wait for their food. Birds that frequent the treetops, for example, the warblers, are olive-green above and whitish—sometimes yellowish—beneath, the former harmonizing with the leaves and protecting the bird from hawks or other enemies above, and the white and yellow harmonizing with the summer sky and protecting him from enemies below. Creepers and Woodpeckers that frequent the trunks of trees have that combination of colors that harmonize with the lichen-covered bark. The color of the Sandpipers harmonizes with the sandy-pebbled beach, their home. And so each species of bird has its own peculiar adaptation.

Now I have treated this subject only in a very general way, for I have called attention only to the more conspicuous examples—those that may readily be seen by the ordinary observer. There are countless details or minor facts bearing upon the subject that might be added, but this is not supposed to be a scientific treatise, and so I shall not run the risk of being tedious by going into further discussion. I have tried to show that all these innumerable modifications of bird anatomy are due to character, habit, or environment, and that given any bird, by observing certain prominent characteristics, we are enabled to know many essential things about the life of that bird. The importance of these facts will be readily appreciated by those who would make any systematic study of birds; and it is hoped that what has been said will arouse a greater interest in our feathered friends. It is not a knowledge of bird anatomy merely that is recommended, for this is important only as it stimulates our observation and furthers our understanding of bird life, so that we may find genuine pleasure in the sight of birds and be moved by the beauty of their song.

W. O. Headlee.

FROM COL. CHI. ACAD. SCIENCES

LESSER PRAIRIE HEN.

THE LESSER PRAIRIE HEN

(*Tympanuchus pallidicinctus.*)

The Lesser Prairie Hen is an inhabitant of the southern United States. It has a limited range which probably extends from southern and western Texas northward through the Indian Territory to Kansas and westward of the eastern edge of the Great Plains. It is a prairie bird and seldom resorts to forest areas except during stormy periods.

The habits, especially during the nesting season, of the Lesser Prairie Hens are very similar to those of the well-known prairie hen or pinnated grouse. The nesting sites usually selected are on the ground in areas of thick prairie grass or at the base of bushes in areas which are devoid of tall grass. The nest is only a slight excavation scratched in the ground by the birds and lined with handy materials such as grasses and feathers. As is the case with the prairie hen, it is probable that many nests and their contents are destroyed by prairie fires in dry seasons, or by floods during wet seasons, as some of the nests are placed near the borders of marshes. The destruction of the nests of the Lesser Prairie Hen by fire and water is not nearly so great as is the case of its better known and more widely distributed relative, the common prairie hen or pinnated grouse. It has been estimated that the loss of eggs of the latter birds amounts to fifty per cent through destruction by fire and water alone.

The love-making of the male Lesser Prairie Hens, in the spring, is said to be very similar to that of the males of the common prairie hens. The season of courtship is in the early morning when the males gather in some open place and pass through a most interesting performance in the presence of the females which have gathered. The males have a patch of naked skin on each side of the neck. These patches of skin cover sacs which can be greatly enlarged by the birds blowing them full of air whenever they choose. In front of these areas there is a bunch of long feathers which, when the birds are excited, are thrown forward. The sacs and feathers are ornaments which are thoroughly displayed at the love feasts. There is much strutting and considerable noise, until finally the females begin to show some interest and pairing begins. The love feasts are usually repeated for several mornings before all the birds are mated. Nesting follows very soon after the birds are paired. The young are cared for by the female who is very devoted to them. They leave the nest very soon after they are hatched and their food consists of insects, chiefly grasshoppers, whenever they are abundant. Later in the season they feed upon cereals and small wild seeds and berries.

WE SEE AS WE ARE

In all of Nature, Life, and Art,
We see things vile or sweet beyond compare,
And hate or love each place or part
According as ourselves are foul or fair.

—Jac Lowell.

AT CALL OF MATE

Out and flying out to sea,
  Even now thy wings aweary,
Turn thee, lest the waters be
  Dreary still and dreary.

"Nay, my wings, my wings are strong,
Rest shall come at evensong."

Be thy quest whate'er it may,
  Wind and wave thy sure undoing,
These shall steal thy strength away,
  For the storm's a-brewing.

"Nay, my heart, my heart is warm,
I shall rise above the storm."

Out and out and out to sea,
  What this rock unkind and lonely?
Here nor home nor help for thee,
  Barren beaches only.

"Nay, thine eyes, thine eyes are blind,
For the riven rock is kind."

Comes a sea-call, hark, oh hark!
  What is this to thee-ward hieing?
As the twilight fades to dark,
  'Tis thy mate a-flying.

"Yea, my love, my love hath come,
This, my heart, hath found its home."

Surely on the shore afar
  Thou could'st hear no love a-calling,
Yet thy tired wings resting are,
  As the night is falling.

"Nay, until thyself hast heard,
Thou wilt doubt the Master Word."

—George H. Maitland.

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

THE STORMY PETREL

A thousand miles from land are we,
Tossing about on the roaring sea;
From billow to bounding billow cast,
Like fleecy snow on the stormy blast:
The sails are scatter'd abroad, like weeds,
The strong masts shake like quivering reeds,
The mighty cables, and iron chains,
The hull, which all earthly strength disdains,
They strain and they crack, and hearts like stone
Their natural hard, proud strength disown.

Up and down! Up and down!
From the base of the wave to the billow's crown,
And midst the flashing and feathery foam
The Stormy Petrel finds a home,—
A home, if such a place may be,
For her who lives on the wide, wide sea,
On the craggy ice, in the frozen air,
And only seeketh her rocky lair
To warm her young and to teach them spring
At once o'er the waves on their stormy wing.

O'er the Deep! O'er the Deep!
Where the whale, and the shark, and the sword-fish sleep,
Outflying the blast and the driving rain,
The Petrel telleth her tale—in vain;
For the mariner curseth the warning bird
Who bringeth him news of the storms unheard!
Ah! thus does the prophet of good or ill,
Meet hate from the creatures he serveth still:
Yet he ne'er falters:—So, Petrel! spring
Once more o'er the waves on thy stormy wing!

—BRYAN WALLER PROCTER *("Barry Cornwall").*

THE AMERICAN SPARROW HAWK

(*Falco sparverius.*)

The American Sparrow Hawk is probably one of the best known of all of the hawks for it is always busy hunting its prey, usually in open places. It is one of the smallest as well as one of the most beautiful of our hawks. Its economic value is also very great for it seems to prefer grasshoppers for food and it may be considered practically an insectivorous bird, excepting in those seasons and places where insects cannot be obtained. Where grasshoppers are abundant the Sparrow Hawks will frequently gather in rather small flocks and feeding constantly upon them they will destroy a very large number of these pests. Dr. A. K. Fisher, an authority on the economic value of birds, says: "Rarely do they touch any other form of food until, either by the advancing season or other natural causes, the grasshopper crop is so lessened that their hunger can not be appeased without undue exertion. Then other kinds of insects and other forms of life contribute to their fare; and beetles, spiders, mice, shrews, small snakes, lizards, or even birds may be required to bring up the balance." The grasshoppers certainly have no more persistent enemy, and fortunately for the agriculturist the Sparrow Hawks are always hungry and continuously gorge themselves. In 1879, Mr. H. W. Henshaw wrote: "The west side of Chewaucan Valley (Oregon) has suffered severely from a visitation of that scourge of the western farmer, the grasshoppers. Here in August the Sparrow Hawks had assembled in hundreds and were holding high carnival, and although in instances like the present their numbers proved wholly insufficient to cope against the vast myriads of these destructive insects, yet the work of the Sparrow Hawk is by no means so insignificant that it should not be remembered to his credit and earn him well merited protection." Dr. Fisher reports the examination of three hundred and twenty stomachs. Of these, one contained a game bird; fifty-three, other birds; eighty-nine, mice; twelve, other mammals; twelve, reptiles or batrachians; two hundred and fifteen, insects; twenty-nine, spiders; and twenty nine were empty. During the colder months the Sparrow Hawks capture and feed upon mice, other small mammals, and the smaller birds, for their insect food has practically disappeared. Most of the birds captured are individuals of those species which spend much of their time among the weeds and in the dry grass, seeking their food of seeds. The Sparrow Hawks feed so largely on field mice in some localities that they have been called Mouse Hawks. Dr. Fisher says: "In the spring, when new ground or meadow is broken by the plow, they often become very tame if not molested. They fly down, even alighting under the very horses for an instant in their endeavor to capture an unearthed mouse or insect."

The Sparrow Hawks hunt for their food both on the wing and while quietly perched. They will often fly across a field or meadow, now and then instantly stopping their swift flight and hovering with moving wings over a spot where they mistrust the presence of their prey, they may suddenly perceive it and drop to the ground. If successful, the object caught in their talons is carried to some perch and devoured. Their favorite place when hunting for prey from a perch, is a dead, branchless tree trunk, or a stub at the border of woods or preferably in the open field. Telegraph poles and their cross bars, especially in the western portion of their range, are favorite perches of these handsome Hawks. They may also perch upon the wires. From these points of observation, they closely watch the ground and when they see their prey, it may be a grasshopper or a mouse, they quickly fly down in

AMERICAN SPARROW HAWK.
(Falco sparverius).
⅔ Life-size.

pursuit and rarely fail to catch the object they are after. They seize grasshoppers with their talons, even when they are caught while the birds are flying.

The nesting habits of the Sparrow Hawks are very various and interesting. Major Bendire has said, "Like most of our Raptores the Sparrow Hawk, I believe, remains paired throughout life, at any rate they certainly appear to be already so on their return from their winter homes." The common nesting sites of these birds are holes in trees, these may be natural or those made and abandoned by the larger of woodpeckers. The cavities selected are not often lower than twenty feet above the ground and they are very often located near the tops of very tall trees. The western forms of the Sparrow Hawk have been known to use deserted nests of magpies. This may not seem strange, as Dr. Fisher has said, "for we might expect the entrance in the side of the canopied nest of the magpie, simulating an opening in the side of a tree, would attract the Hawk, especially in a locality where desirable hollows are scarce." Sparrow Hawks have also been known to occupy cavities in limestone and sandstone cliffs. They are also known to occupy the excavations made in banks by kingfishers. They have also been reported as occupying the open nests of crows and other birds but such instances are certainly rare. It is hardly proper to say that the Sparrow Hawks make a nest, for the eggs are usually laid on whatever rubbish the birds found at the bottom of the cavity selected. Some observers report, however, that they have been known to carry into the nesting cavity, at times, large quantities of dry leaves and grass. Major Bendire has said, "Even when persistently disturbed the Sparrow Hawk will return to the same nesting site from year to year. They are diligent layers, usually depositing a second set and occasionally a third should they lose the first." Mr. Dawson, in his "Birds of Ohio," has well expressed the habits of this interesting Hawk during the mating season. He says: "Always graceful, the Sparrow Hawk is seen to best advantage during the courting season, when the male reaffirms his fondness for his life-long mate by circling about her as she sits upon the tree-top; or he measures the height of his devotion by ascending to the clouds before her, and dashing himself at her feet again with shrill cries of *killy, killy, killy.*" These notes in some localities have caused the Sparrow Hawk to be called the Killy Hawk.

Three varieties of the Sparrow Hawk are recognized by many ornithologists. The range of these varieties, which are very much alike and have practically the same habits, extends over the United States from the Atlantic to the Pacific Ocean. The form we illustrate is found chiefly east of the Rocky Mountains and from the region of the Great Slave Lake southward to the northern portion of South America. It breeds from Florida and the coast of the Gulf of Mexico northward to the limits of its range.

We sincerely hope that all will remember that this handsome little Hawk deserves careful protection wherever it may be found. While it may occasionally devour a young chicken, its food as a whole consists of insects and other living forms which are opposed to our agricultural interests.

A BIRD'S-EYE-VIEW

There was trouble in the Ark. Dissatisfaction and discontent were rampant.

The Frog croaked because he was not furnished with stagnant water and bulrushes; the Hog was disgruntled because he had no wallow; the Crustacea were a crabbed set; the Fish were carping to a degree because the Arkite regulations forbade their getting out into the water; the Cat complained because it was so closely mewed; the Wolf was howling mad because his canine relatives showed a dogged determination to interfere with some of his prerogatives, and the Oyster was in a stew because it hadn't rained salt water.

These evidences of discontent, however, were of minor importance when compared with the turmoil, tumult and confusion existing in the aviary. The birds openly announced that they had a "crow to pick" with the *genus homo*, who had, so they said, without warrant or reason, assumed a superiority over all other animals. They said that they had been cooped up long enough by one whom they regarded as an inferior animal, and they purposed showing him up in his true light—this "bi-ped without feathers!"

"The main characteristics of an animal," said the Eagle, who seemed to be chief spokesman, "being the use of the various senses and the power of voluntary locomotion, it follows that the test of superiority is the most efficient use of the senses and of the locomotive functions.

"I have duly considered the subject," continued the Eagle, "and I have come to the unbiased conclusion that Man is very inferior in all that goes to make up a perfect animal; and, while it is not my desire to attempt to 'crow over' him in the least, the truth must be spoken. It is true that he has the use of his senses, that he sees, hears, feels, smells and tastes, but only in modified degree. He has the sense of sight, but to a very limited extent. He is inferior in that he has not the 'eagle-eye,' poor soul! Further considering the question under discussion," said the Eagle, evidently in high feather, "Man has not the exquisite touch of the Spider, and, with all of his boasted ingenuity, he cannot make a spider's web; his sense of hearing is not as perfect as that of many other animals and his auricular apparatus is inferior even to that of the groveling Mole, while as to taste Man may be said to be inferior to nearly all other animals, not having the sense sufficiently developed to distinguish between a poisonous and a harmless herb."

The Vulture said that Man's olfactories were very inferior and that if he had no better sense of smell than Man, he would simply starve.

The Owl hooted at Man's claim of superiority, creating the impression that to add any proofs to those already advanced would be like "carrying owls to Athens." He said that as Man had arrived at that degree of enlightenment which recognizes the Owl as a type of wisdom, and, as he very properly placed stuffed specimens of his owlship's deceased relatives in his study, from which to draw inspiration, he verily believed that what a real live owl would have to say upon the subject under discussion, would be accepted, by Man, at least, as conclusive.

"As has been well said by the Eagle," said the Bird sacred to Minerva, "by day Man has a very defective vision, and, I wish to add, by night he is as blind as a bat, while I see with marked distinctness. As to his senses," continued the Owl, "his inferiority is too evident to admit of discussion, and I am not 'going on a wild goose chase' when I maintain that he is equally inferior as a locomotive being. He is, when born, utterly helpless and so remains for many months. He does not learn to stand upon his feet for a long time, and accomplishes this, to him, wonderful feat, after much coaching and after experiencing many awkward falls,

and it is quite a 'feather in his cap' when he can actually take an unaided step without tumbling. He thus accomplishes, with much trouble and vexation of spirit, after months of effort, what the awkward calf performs with ease when but an hour old. If you compare him to the young Quail, which is running about everywhere in a few days after he bursts his shell, you will get some idea of what a poor, insignificant animal Man really is, and *what a goose he is* to claim any superiority over the other animals."

Just then her anserine majesty came waddling along, craning her neck and balancing herself on one foot, remarking, as she did so, that having overheard the mention of her name in a connection not altogether complimentary, she desired to enter a most solemn protest against comparisons to her most odious.

"If any one can view me," said the Goose in "spread eagle" style, "as I stand here upon one foot, a feathered monument upon a single pedestal, and not know that I am superior to awkward, gawky Man, who, with difficulty, learns to balance his awkward bulk upon both feet, then I say that such lack of discernment is indubitable proof of a loon pure and simple."

Whereupon the Loon flew into a rage and said that the Goose was "monkeying" with the wrong bird, and that she did not want her name used in any such connection, that she stood above reproach, and that she hoped that the assembled birds would not allow themselves to be "gulled" by the Goose into believing anything derogatory to her character.

This remark aroused the Gull who said that she wished to notify the Loon that she had been "dogging" her footsteps long enough and that she resented the insult to her name, and that she wanted it distinctly understood that she had never yet been known to "quail" before any living fowl. Thereupon, the little gallinaceous bird strutted out defiantly and said that she would teach the galoot of a gull what it was to quail, and that, although she was small, she would never "show the white feather" to any old web-foot.

Matters were getting warm, and ruffled feathers were much in evidence. In the midst of the accusations, and, just as the Swan was about to resent the allusion to "showing the white feather," the Loon characteristically used some harsh epithets and finally called the Goose a Lyre-Bird, adding that, unless she reformed, she need never expect to become a Bird of Paradise.

The Jackdaw suggested that it was a proper case for the consideration of the Parson Bird, but the Magpie said that he was doubtful as to the expediency of such a course, as he had never fully decided in his own mind whether the Parson was a *bird of prey*. The matter was finally disposed of by referring it to the Cardinal for adjustment.

The stately Ostrich next stalked in among the assemblage, and, remarking that he "plumed himself" upon his high position among animals, said that, taking a mere cursory view of the matter, he had to say that he came of a race that "scorneth the horse and his rider," and that as a runner Man was too insignificant to notice, and that whatever might be said of Man's superiority to other animals, he was surely inferior to the Cursores.

"Suppose," said the Duck, flapping her wings, "as Man does not seem to be much of an animal on land, that you try him in water. My ducklings could teach a well grown man the principles of swimming, if he had gumption enough to follow their directions, which, in truth, I seriously doubt."

The Rook, "ducking" his head to escape the effects of his joke, suggested that Man might be justified in refusing to follow the directions of a "quack."

'Well," said the Eagle, 'while it is evident that on land and water Man is a very inferior animal, when it comes to navigating the air, his claims of superiority border on the ridiculous—'all his swans are geese,' so to speak—since he cannot fly a foot if his life depended upon it—poor, wingless, featherless being!"

"As he is not superior as to the use of any of his senses nor in his power of locomotion," urged the Eagle, "wherein, pray, does he claim superiority?"

"I am informed," said the Rain-Bird, "that, while it is a fact that when he

wishes to pay himself a high compliment, he attributes to himself the possession of that high class of intelligence called 'horse sense,' he claims that he is a thinking animal, while the rest of created beings act by what he is pleased to call instinct, which he insists is inferior to reason; but, as instinct is the immediate gift of the Creator, the Divine energy acting in the creature, it is certainly more sure and unerring than Man's so called reason, which is nothing but a faculty of the mind which makes vain endeavors to get at the truth, which we know without an effort. Why, I venture to say," continued the Rain-Bird, "that Man is this very minute peering out of the window of the Ark guessing about to-morrow's weather, while the Petrel and I, as well as some of the rest of you birds, know that we shall have an unusual storm."

"I think," spoke up the Jackdaw, "that when Man says he is a thinking animal, he places himself upon the proper plane, for when he is engaged in his profoundest and deepest thought, he claims to be 'ruminating,' and we all know that the bird we call the Cow is the chief of all ruminating animals. Hence, when Man is engaged in the highest exercise of his so called reason, he is simply a sort of inferior cow."

"Well, well," mirthfully said the Laughing Jackass, 'it does seem that our featherless friend has no superior qualifications whatever."

"I think," the Parson Bird timidly ventured to say in a tone indicating intense pity for a being of such marked inferiority, "that Man claims that he is a moral being; that, although born in a state of total depravity, he educates and corrects his young in such a way as to make them perfect specimens of rectitude."

"This comes with a poor grace," broke in the Magpie, "from a being whose wickedness brought on this protracted wet spell, but in it I perceive that the wingless creature is nothing more nor less than a sort of imitative animal like his reputed ancestor, the monkey; for we all know that from time immemorial it has been the custom of the Bear to 'lick her cubs into shape,' and it is quite evident whence Man obtains his high moral ideas of correction."

At this juncture Noah proclaimed land ho! and, while *Homo Sapiens* was heaving to and getting ready to throw out the gang plank, the whole of the feathered tribe went out of the Ark "in flying colors," singing, chirping, cooing, caroling, warbling, yodeling and trilling, and, as the Bird of Jove rose in the air, he was heard to shout back at the "paragon of animals": "Why don't you fly out, old man?"

The taunt of the eagle was afterwards truthfully, but ineffectually, answered by the Latin poet:

"Sine pennis haud volare potest"

ALBERT W. GAINES.

THE WHITE BIRCH

A fall of gold leaves in the sunset light,
A myriad silver twinkling stars, the leaves
Of dainty White Birch trees appear at night
When softly rustled by a zephyr breeze.
Slender shafts of purest white uphold
A thousand tender tints of green at dawn,
When rosebuds dripping with the dew unfold
Their petals to the lark's exultant song.
The fit companion of Parisian lawns
The White Birch tree, true aristocracy
Seems to possess. No forest wildness warns
The vagrant deer to tread less daintily.
Indeed, beside the White Birch who could be
Aught but a child in chaste simplicity?

—FREDERICK E. BEEBE.

FROM COL. CHI. ACAD. SCIENCES

BLACK DUCK.

THE BLACK DUCK

(*Anas obscura.*)

The Black Duck is chiefly an eastern species though its range extends westward to the Mississippi Valley, and it is not rare in the northern portion of this Valley according to some observers. Its breeding range extends from the northern United States northward to the latitude of Labrador. While it is called the Black Duck a more proper name is Dusky Duck, for this name more truthfully represents its color. Its habits are quite similar to those of the mallard and for this reason it is quite frequently called the Black or Dusky Mallard, especially by sportsmen. This species is said to be the most abundant of all the fresh water ducks in the New England States. However, the Black Ducks do not seem to associate with each other in very large flocks. This is especially true in the western portion of their range where they are more often seen in pairs or in very small companies.

In his "Birds of New England," Mr. Edward A. Samuels gives an interesting account of their habits after the breeding season. He says: "Early in September, the Dusky Duck gathers in flocks of fifteen or twenty. It is now so difficult of approach that the experienced gunner seldom attempts to secure it by stalking it. The sportsman, knowing the localities most frequented by these flocks (generally meadows in which streams of water or small ponds are abundant) builds a bower near the water of the limbs of pines and other dense foliaged trees, in which he secrets himself at daybreak, armed and provided with three or four tame ducks. One of these ducks he anchors or moors out in the water, half a gunshot from the bower. The duck, soon becoming lonesome, begins to call, when, if there are any wild ducks in the neighborhood, they answer, and soon fly to meet the caller." The sportsman holds one of the other tame ducks in his hands and as soon as the wild ducks have approached quite near, he throws it towards the duck moored in the water, which cries all the more when she sees the one thrown flying towards her. The Dusky Ducks, after flying back and forth for a time, alight near her. "As soon as they alight, they gather together in a flock away from the decoy; and it is then that the sportsman pours in his first shot." It is only early in the morning or late in the afternoon that these ducks can be shot in this manner. It may be considered that in the east, where the mallard is not common, it is replaced by the Black Duck which frequents the inland streams, the lakes and ponds as well as the salt-creeks of the ocean coast. During the warmer seasons, and when possible in the winter, these Ducks feed upon vegetable materials such as the roots, foliage and seeds of water and marsh plants. It is also said that they will feed upon the farmer's corn. At other times they are known to eat minute mollusks and crustacea. This is especially true in the autumn and winter, when they frequent the salt marshes. When they feed upon the vegetable diet their flesh is exceedingly delicate and fully as delicious as that of any other duck. They are very shy and retiring during the day, "being at that time very seldom seen, except when surprised in their retreats or alarmed by the report of the gun, when they often arise from the marsh and disperse in every direction." They are only partially migratory, for usually they only pass far enough southward to find open water, or they may remain upon the sea coast if the weather is not too severe.

The nests of the Black Ducks are usually placed on the ground in grass or rushes in the vicinity of water courses, ponds or lakes. The nests are also built at times in meadows and swamps. They are rather large structures, built of grass and flexible plants and they are lined with feathers from the breast of the sitting

duck. It is also said that they have been known to nest in the hollows of trees, or upon a stump projecting above the water of a swamp. They have also been known to nest upon the branches of dwarfed spruces at a height of less than six feet above the ground. The eggs which are usually pale greenish or bluish white, vary from eight to twelve in number and closely resemble those of the Mallard. Though the Black Ducks mate early in the season, the nesting period begins the last of April and ends in the early days of June. Surely these Ducks, which are of great economic value, should receive our fullest protection and never be shot in the spring, for frequently they are brought to the cook when they contain well developed eggs. This is not only true of the excellent food bird of our illustration, but of other ducks as well. We hope that those of our readers who are sportsmen will remember this fact and help to protect these valuable birds by refraining to shoot them near the time of their mating and nesting season.

AN AUNT JANE STORY

CURIOUS TREES

"When we were walking in the forest this afternoon you spoke, Aunt Jane, of the old English trees you saw in Burnham wood. Were they oaks or beeches?"

"The most curiously shaped ones were beeches. I saw a very large beech, said to be eight hundred years old. It was hollow and an oak tree had grown up within it coming out at an opening a number of feet above the ground. Yet the branches of the beech, despite of the hollow trunk, were well covered with leaves so the upper part of the tree looked flourishing.

"The first glimpse of another immense beech reminded one of the form of an elephant and it was called the 'elephant beech.' "

"What a very queer tree, but, Auntie, I did not know trees ever lived to be so many hundreds of years old," said Edith.

"But they do," was the response. "The cypress and olive often live that long. The Oriental plane, the spruce and the lime, have been known to live more than one thousand years, while the oak, cedar, and yew have, respectively, lived from one to three thousand years."

"Who," cried John, "was wise enough to find out about the age of trees? I'd like to know."

"Botanical archæologists have what they consider an infallible test, but sometimes the data is furnished by historical record or tradition."

"Trees have a way of telling their own age, have they not, Auntie?" said Howard.

"Yes, for in many kinds of trees the increase in size takes place by an annual deposit of wood spread evenly on the surface of the preceding one, so that by counting the layers the age is determined."

"I once read," said Alice, "of some big trees in Africa in which houses were built by the natives for security against floods and enemies, and in Borneo some of the tree-houses are so sumptuous as to have platforms in front and ladders for ascent and descent."

"Hello! There are 'tree-dwellers' as well as 'cliff-dwellers,' then," cried John. "Do tell us something about trees with odd names or odd uses."

"Well, there is the 'sorrowful tree' found on an island near Bombay."

"How did it get such a name?" the children cried in one breath.

"Because it flourishes only at night. Not a flower is to be seen at sunset, but soon after it is covered with fragrant blossoms which close or fall off as soon as the sun rises."

"Now I think of it," said Howard.

"I know of an odd tree. Park discovered it in Africa and called it the 'butter tree' because it produced butter."

"Perhaps it is some relation to the 'milk tree' of South America."

"Tell us about it," all cried in a chorus.

"The fruit is the size of a small apple, but the milk is the great wonder. It is produced by making notches in the bark, from which a liquid exudes as thick as cream and with the same properties as glue."

" 'Milk' isn't a fair name, then, if it won't make butter," said Edith, "but I've heard of the 'cow tree' in Venezuela which gives a good milk of an agreeable smell and the people go at sunrise with large bowls to get the milk for breakfast."

"There is a 'manna tree' in Sicily which is tapped in August. The sap flows out and hardens. It has a sweet but nauseating taste," Aunt Jane continued.

"I think I'd like the 'pin cushion tree,' " cried Bird.

"Indeed! And what is that?" queried Howard.

"Oh! a sort of yucca palm that grows in southern United States and Mexico. The Indians cut it down, saw it into small sections a few inches long, round off the white pith inside, and sell them for pin cushions."

"I've heard of that," said Aunt Jane, "and that the pins and needles not only stick into the pith easily but the spongy substance has the virtue to keep them bright and clean.

"I presume the boys would care more for the whistling tree, however."

"Indeed we would, go on, Aunt Jane."

"It is found in the West Indian Islands and has a peculiar shaped leaf, and pods with a split, or open edge. The wind passing through these sends out the sound which gives the tree its peculiar name. When the trade winds blow a moaning, deep toned whistle is heard which, at night especially, has a weird effect. The whistling tree reminds me of 'echo tree' at Blenheim. It is one of a fine old grove of cedars where seventeen syllables can be heard by day and nineteen by night. Not far away is the old oak, twenty-seven feet around, called 'Alfred's oak,' and there is a tradition that Alfred the Great did really live here."

"It isn't surprising," said Alice, that 'echo tree' is a cedar, for the poets always like to write of what they call the 'vocal pines.' "

"Trees that can talk are very interesting, no doubt," said John, "especially to the poets who fancy they hear them, but just now I remember reading of a wonderful tree recently discovered in California. It is called—till classified—the 'chloroform tree' because its strange, tarantula-shaped flowers have the property of rendering anyone who handles them unconscious."

"Now if we only had a few blossoms," cried Bird, mischievously, "to put John to sleep so Auntie could go on with the story of her trees!"

"We have time for only one more, and that is the 'candle tree.' It is a beautiful Chinese tree whose nuts furnish a material with the properties of animal tallow. This is subjected to certain processes and then made into candles.

"It would be interesting to go on and consider the profitable cork forests of Spain which cover an area of 620,000 square miles, also to familiarize ourselves with the groves of big trees in California, but we will end our tree talk with the question—Is there a verse in the Bible which forbids forest destruction?"

"Indeed there is," cried Alice, "we read it in our Bible lesson recently. It is Deuteronomy xx, 19: 'When thou shalt besiege a city a long time thou shalt not destroy the trees thereof by forcing an ax against them, and thou shalt not cut them down, for the tree of the field is man's life.' "

BELLE PAXSON DRURY.

THE BLUE-GRAY GNATCATCHER

(*Polioptila cærulea.*)

One of the most interesting of the smaller migrating birds is the busy little Blue-gray Gnatcatcher. This tiny songster is constantly on the move, and is a veritable woodland acrobat. Its movements when flitting nervously about in a bush or tree are both interesting and amusing, as it jumps about the branches and suspends itself from the twigs, all the while spreading and folding its tail in a truly wonderful manner. As has been noted by different ornithologists, this feathered songster, in its suit of quaker gray, seems to combine the habits of warblers, flycatchers and titmice. Though restless to an intense degree, the Blue-gray Gnatcatcher is not shy and will allow the intruder to secure a good look at him, in fact, seeming to rather enjoy the publicity and to excel in his acrobatic feats on such occasions.

The common note of the Blue-gray Gnatcatcher resembles the words *tszee-tszee*. This call is interspersed by sounds which resemble the squeaks and other noises made by the catbird, and it has been likened to the call of that familiar bird. Its love song consists of a low sweet note which has been described by Dr. A. LeMoyne as follows: "*Twing-twing-twing-twing, ree-ree-ree-ree,* first half rising scale, latter descending, followed by the low jumble of warbles, which defies any representation."

The Blue-gray Gnatcatcher is a migratory bird breeding from the gulf coast of the United States northward to New York, Ontario, southern Michigan, and northern Illinois. It occurs as far west as eastern Nebraska and western Texas and occasional stragglers have been reported from Maine and Minnesota. It spends its winters in Florida, Guatemala and parts of the West Indies. They reach the northern limit of their breeding range about the middle or latter part of April, and nest building soon occupies their attention. This nest is a striking and beautiful piece of bird architecture, somewhat resembling that of the hummingbird and appearing much too large for the use of such a diminutive bird. It is placed on a limb, generally in saddle form or sometimes, in a fork of the tree, from ten to fifty feet above the ground. Though very large in external diameter it is small on the inside and is built strongly for the protection of the tiny eggs. It is so deep that when the female is sitting upon the eggs her tail and her head are pointed directly upward, a position which would appear to be anything but comfortable.

The chief beauty of the nest lies in the material of which it is constructed, which consists of the softest and daintiest substances which the forest affords—moss, the scales of buds and blossoms, fern fronds, hairs, fibres and spider's webs—the whole outside being thickly covered with dainty lichens which frequently give the nest a glistening effect. The inside of the nest is lined with fine grass, feathers and vegetable down. While building the nest the birds as a rule will not be disturbed by the presence of a human being, but keep right on working unmindful of his presence. Occasionally, however, a pair of birds will scold the intruder until he leaves the vicinity. The female appears to be the "superintendent of construction," trying the nest frequently as it progresses. In shaping and forming the nest the bill is used much as a potter uses his fingers in shaping the vessel of clay. Great pains is taken by these birds in the construction of their nest not only for its utility but for its ornamentation as well. The eggs are four or five in number and are greenish or bluish-white with fine spots of brown. They are almost round, being a trifle longer than wide, the length being about half an inch.

After the nesting season is over the birds become comparatively quiet and

FROM COL. A. W. CARTER

139

BLUE-GRAY GNATCATCHER.
(Polioptila cærulea)
⅔ Life-size.

late in August or early in September they leave for their winter home in the south.

The Blue-gray Gnatcatcher is a valuable insectivorous bird, destroying thousands of noxious insects. Some of these it captures on the wing in the manner of the flycatchers, and in doing this work it is fully as adept. This bird should be encouraged to build its nest in the vicinity of farms, and the farmer should protect both the bird and its nest and eggs. No one who has not enquired carefully into the matter can imagine of what incalculable value these little feathered songsters are to farmers and agriculturists. Let us, therefore, do our best to protect them.

COLLINS THURBER.

PICTURES IN CRYSTAL

Fine as mist the rain-drops fell,
The breeze was a dreamy murmur;
But ere the dawn, o'er hill and dell
Swept song of a cunning rover:

"Old earth lay dreaming of May, I know;
So I have a lesson taught her!
I've spun her a robe of crusted snow,
A necklace of purest water."

Ah, when the Sabbath sun came up,
King Frost on his steed was seated,
With palette hid in an acorn cup,
And his wond'rous work completed!

On mountain peak, with icy beard,
Old Winter, he notched his tally;
While we, surprised, from the casement peered,—
Transformed was our quiet valley!

Though opening buds on every tree,
Frost claimed as a royal duty,
And the Goddess of Spring wept sore to see
Her casket despoiled of beauty;

The fringe on the golden robin's nest
Seemed lace of the finest tissue,
And every cone on the larch's crest
A coin of the newest issue!

Each twig wore beads of mystic charm,
All counted by April's thrushes;
The brook flashed like bracelet on snowy arm,
Frilled deeply with silver rushes!

The smallest gem on green plant tost,
Shone like queen's bridal present:
Yet these pendants, spun at so much cost,
Were like dew-drops—evanescent!

—GEORGE BANCROFT GRIFFITH.

PLANT STUDIES

PART IV, STEMS

The budding twigs spread out their fan
To catch the breezy air;
And I must think, do all I can,
That there was pleasure there.

—WORDSWORTH.

The service ordinary stems do for plants is the production of leaves, roots, and the flowers which are most important to the plant, since they, in turn, produce the seeds. Stems are also the canals which carry the material made by the leaves into every part of the plant and bring up from the roots the nourishment gathered out of the earth.

The stems that we think most about live above ground. Many of them, when the winter comes, die down completely, and the particular plant of which they formed a part never appears again, though others like it grow the next year from the seed. Such plants are herbaceous, that is, live herbs, such as buttercups, anemones, columbines, and larkspurs. Other stems, less soft and delicate than those of herbs and able to live from year to year without dying when winter comes belong to shrubs and trees. The hardy lilac and syringa have woody stems, while those of the oak and ash are still tougher and stronger.

Stems are not all erect but hold themselves in different ways: The white clover creeps; peas, grapevines, and ivy climb; and the morning glory twines. To suit its particular purpose the plant modifies certain branches. Tendrils are slender branches which grow out from the stem until they reach something about which to cling, then twist spirally, so become shorter, and the vine is drawn nearer the support. The Virginia creeper has another plan by which it is enabled to climb a wall or cliff. The ends of the tendrils are flattened into disks which adhere so closely to the smooth surface that the vine is able to cling to it and so ascend.

Another kind of stem important to plants, besides those that grow above ground, is that which grows below it. These underground stems are not possessed by all plants, for we have already seen that many plants are entirely killed by cold weather. But some plants store up nourishment in a portion of the stem, either partly or wholly covered by earth, so that they are able to live year in and year out. A rootstock is a thickened stem which provides foods for its buds just as the thickened cotyledons did for the young embryo. The mint has a rootstock that creeps along underneath the ground, at intervals sending up stems to the air, which produce leaves and seeds and then in the fall die down. But the underground stem, the rootstock, lives on, ready to repeat the process of producing a new plant the following spring. Such plants are hard to get rid of, those that grow "by the root," as it is said; but we know it is by the stem they grow since only stems produce buds and leaves, or in the case of the rootstock, scales which correspond to leaves.

If one cuts down the usual weed and destroys the root, the plant may be killed completely. But cut through the stem of mint or calamus and you have two plants instead of one; for each part of the rootstock is able to produce roots and send up stems or leaves.

Some rootstocks are curiously marked. Solomon's seal is so called from the fact that it bears on its surface scars that resemble the impression of a seal. Each year at the end of the rootstock a bud is formed which in the spring develops into the plant above ground. In the fall this plant dies and breaks off from the rootstock leaving a scar. Again a bud is formed on the rootstock at the end of the year's growth, ready to develop the following spring. So at regular intervals

there are scars marking the growths of the stems in successive years. From time to time portions of the old rootstock dies.

The potato is an example of another kind of stem, the tuber. An old potato, one that has been stored in a dark cellar, will be covered with sprouts which are growing from the "eyes" of the potato. These "eyes" are really buds which appear in the axils of the scales, which correspond to leaves. If you cannot see the scale you will see the scar left by it. The potato, then, is certainly a stem, bearing leaves or rather scales, and buds. In the potato is the store of nourishment which feeds the growing buds. The old potato with long sprouts is shrunken and soft after having given up its supply to the young branches.

The Indian turnip and the crocus spring from corms. Corms are very short rootstocks, something like tubers in that the buds grow on the sides.

Bulbs have thickened scales in which food is stored. If you examine the bulb of a white lily you will see that the short stem with its arrangement of leaves is very like the bud of the horse-chestnut. Indeed, a bulb is a bud, with a very short stem and leaves so close together that they seem almost to spring from the same point.

PART V, BUDS

Plants and birds and humble creatures
Well accept her rule austere;
Titan-born, to hardy natures
Cold is genial and dear.

—EMERSON, "May-Day."

The charm of early Spring is partly one of contrast; after the silence comes the twittering and stir; the bleakness gives place to soft verdure; the world of nature so long asleep, awakes. Yet this contrast, the abrupt passing from one season to another, is not so marked to those who are wide awake the year around. When the snow is the deepest they listen for sounds that some of us only hear in the springtime, and their sharp glances see the things in winter that others think belong only to the warmer seasons. They know the birds that linger with us in winter; the little animals that track the snow in the course of their daily pursuits; and watch the progress of the trees and shrubs that live above ground, and that of the hardy perennials that cherish their stores of nourishment beneath the frozen earth.

The very fact that there are fewer signs of life in winter than at other seasons makes each new thing discovered the more precious and wonderful and gives then to our walks a charm and piquancy that we can feel at no other time. Winter-buds are a noticeable sign of life of trees in winter time. They are to be seen throughout the season but are best examined toward spring when they have begun to swell. Much that is interesting is to be observed about the buds; their position on the stem and the effect upon the development of the tree or shrub; the way the young leaves are packed into the bud, in a way economical of space and at the same time affording the leaves when unfolding sufficient light without too great an exposure to the scorching heat of the sun; also, the various means of protection from the weather and from visits of insects which might prove injurious.

Notice the position of the buds on the branch; they are borne on the sides, either alternately or opposite to each other—lateral buds, or on the end of the branch—terminal buds. The terminal buds are larger and stronger than the lateral buds, usually, and so have the advantage in growth. When the terminal buds have the lead, we have one or more distinct main branches with lateral branches growing from them. The pine is a good example of this kind of growth, where the terminal bud has predominated and there is the straight shaft with lateral branches. However, the terminal bud is often a flower bud, and the lateral buds have the advantage and the main branches are lost in the lateral one. This is the case with the horse-chestnut and the elm; indeed most of the shade trees are more or less deliquescent, which is the name applied to trees without the distinct cen-

tral branch. Sometimes two buds develop at the end of a branch, as in the case of the lilac, and then a continual forking results.

Just as all seedlings do not live or seeds develop, so all buds do not survive. In spite of protective measure taken, various enemies attack the buds; the weather kills many, insects destroy others, and the struggle for supremacy goes on among them as it does among all plant and animal neighbors. For there is often insufficient food for all, stored up in the branch, or one bud will get an earlier start than the other, and so have the advantage. One can readily see how the symmetry of a tree can be lost and why there is such variety of branching. The beautiful weeping effects of birches and willows, the delicate traceries of elm twigs, and the stately appearance of pine trees and palms are all the result of the position of buds on the stem and their success in development.

It is better to choose for observation large buds, those of the elm or of the horse-chestnut. The large scars on the stem are made by the old leaves. The buds are borne just above the scars, that is, in the axils of the leaves. The rings that appear at intervals on the stem are made by the bud scales. The growth in between the rings is that of the past spring and summer, so that by counting the rings one can get some idea of the age of the branch. If we keep in mind that the leaf bud is a miniature branch a short stem that bears a pair or several pairs of leaves so close together that they almost spring from the same point, we can easier understand its growth as it unfolds. When the bud opens, the short stem lengthens, the leaves thus become farther apart and are ready to expand. The growth is usually rapid, and is often complete in several weeks. Afterwards the tree begins to form the bud for the following year.

Winter buds are protected from the weather by the strong, brown scales which enclose them, and often by a coat of varnish which keeps out the water. If we carefully take off the scales, we can notice, if the bud is from an elm, the glue in which the scales are bathed and the strong aromatic odor; probably unwelcome insects are thus kept away. In the horse-chestnut the young leaves are enveloped in a woolly coat which keeps the buds warm as well as protects them from water. Many young leaves are covered with down that usually wears off as the leaves mature.

MARY LEE VAN HOOK.

GREEN LEAVES

After the whiteness of the wintry days
Of the ice-locked nights and the frosty haze,
As Nature revives from her frozen sleep,
Warmed by the sun rays,—the rivulets leap
Unfettered and free, and the south winds sing
In the wondering woods, where the feet of Spring,
Noiselessly tiptoes and dances along;
After the cold comes the laughter and song,
For the heart beats fast as the sky turns blue,
And we feel the gladness of life run through
Our sluggish veins with a swifter flight,
And our heart goes out to the mountain height
Where the trees are donning their green attire,
And the maples glow with a living fire.
After the ice and the snow and the cold,
How the pulses bound as the eyes behold
The Green Leaves flutter and thrill in the breeze,
From the slender tips of the laughing trees!

—CHARLES F. FUDGE.

FROM COL. CHI. ACAD. SCIENCES

138

WILSONS PETREL.
(Oceanites oceanicus).
⅔ Life-size.

THE WILSON'S PETREL

(*Oceanites oceanicus.*)

Mr. Chapman has well expressed a very interesting feature in the life of these Petrels which we quote: "It is generally known that some birds which nest in the northern parts of our continent, in the winter migrate as far south as Patagonia; but comparatively few are aware that during the summer we receive several visitors from the southern parts of the southern hemisphere. They are all included in the family *Procellariidæ,* and Wilson's Petrel is doubtless the most common. It breeds in the islands of the South Atlantic in February, and after the cares of the breeding season are over, migrates northward to pass the winter off our coasts." While in the North their home is upon the ocean and it is seldom that they are seen on the land except during tempestuous storms. They are commonly known to sea voyagers, who receive much pleasure while watching them from the vessel's decks, as Mother Carey's Chickens or Stormy Petrels. Their flight is graceful and beautiful and they will frequently follow a vessel for many miles, feeding upon the refuse or fragments of food which may be thrown overboard. They are very abundant off the eastern coast of the United States during the summer and their general range may be given as the Atlantic Ocean, both North and South, and the southern seas. They are known to breed quite extensively on Kerguelen Island southeast of Africa. Some observers tell us that they will feed upon insects which they catch while flying in a manner similar to swallows. Audubon speaks of their notes, which he says are more frequently emitted at night than by day, as resembling the sound of the syllables *kee-re-kee-kee.*

To those who have had the pleasure of seeing these birds flying over the briny deep, the lines of Barry Cornwall, regarding the Petrel, seem peculiarly appropriate:

O'er the Deep! O'er the Deep!
Where the whale, and the shark, and the sword-fish sleep,
Outflying the blast and the driving rain.

Mr. Wilson well described its habits when he wrote: "But the most singular peculiarity of this bird is its faculty of standing, and even running, on the surface of the water, which it performs with apparent facility. When any greasy matter is thrown overboard, these birds instantly collect around it, and face to windward, with their long wings expanded, and their webbed feet patting the water, which the lightness of their bodies and the action of the wind on their wings enable them to do with ease. In calm weather they perform the same manœuvre by keeping their wings just so much in action as to prevent their feet from sinking below the surface." Wilson's Petrels are small birds, yet they seem when flying, quite large. While the body is only a little larger than that of a sparrow, they have long wings which give them the appearance of being much larger than they are. Nevertheless they are birds of great strength and endurance. While they have webbed feet these Petrels swim but little. They will follow a steamer by flight all day, but as night approaches, they will drop upon the watery surface of the sea and rest through the dark hours. Surely their rest is well represented in the lines of Emma Willard:

Rocked in the cradle of the deep,
I lay me down in peace to sleep;
Secure I rest upon the wave,
For thou, O Lord, hast power to save.

While the flight of the Petrels is cheering and amusing to the passengers of a vessel, they are quite generally believed

by the sailors to be the harbingers of bad and stormy weather. Because of the superstition of these marine men Wilson's Petrels have been given the name of Devil's Birds, and it is because of the sailor's belief that they are messengers of the storm that they have received the name of Stormy Petrels. They are not noisy birds but during the day they will occasionally utter low notes which sound like the syllables *weet, weet,* or at times a low chirp which sounds like *pe-up.*

The nests of these birds are placed in the crevices of rock formations or possibly in piles of rock fragments. But a single white egg is laid. Sailors often advance the absurd belief that the Petrels never nest upon the land but carry the single egg of the set under their wings until it is hatched. The young are fed by a process called regurgitation, or the raising of the food given them by the parents from their stomachs. The Wilson's Petrels are innocent birds and do no harm. In fact, we may say that they perform a good service by eating the refuse food materials thrown from ships, yet they are said to be often shot both by sailors and passengers in order to break the monotony of many days at sea.

THE STORY OF THE ARBUTUS

It was a dark, cheerless day late in March, and the cold wind blowing caused every passer-by to hug his coat more closely about him and hurry on to shelter. Spring had smiled and the trusty robins had come, but to-day they huddled sadly in corners or hopped disconsolately over the lawns where the grass showed faintly green through a thin covering of snow. The rain fell slant-wise, partly freezing where it fell, and it was hard to believe that spring was really stirring in the midst of all this cold and gloom. But nature makes no mistakes and in spite of ice and snow and cloudy skies, there was an unmistakable message in the very air—a whiff from the wonderful store-house which was so soon to open up its treasures.

In a home where the firelight gleamed brightly through the window, three children pressed their faces against the panes, like birds impatient to break their cage. They, like the robins, had felt the sun grow warmer, and had caught a breath of the spring-time trembling so near. Now, the rain, as though mocking them, dashed fitfully against the glass, giving spiteful little clicks as bits of ice fell with the drops.

As the children stood there watching, a young woman came round the corner of the house on her way to the side door. Her shawl was very wet and the clay on her shoes showed that she had walked from the hills along the river. A warm brown hood was tied under her chin and she carried a basket on her arm. When the children's mother opened the door, a bright, cheerful face looked up at her and a pleasant voice asked, "Will you buy some Arbutus today, it is only five cents a bunch?" "Yes," replied the mother, "There is no flower so sweet and wild and woodsy," and soon each little nose was buried in a bunch of the fragrant pink blossoms. As the woman dried her wet clothes, the children's mother talked with her, and learned whence she came and why she sold the flowers. Later, when the young woman had gone, as the children sat round the crackling fire—little Frank safe snuggled on his mother's lap, the flowers in water on a table beside them—a story grew out of the delicate blossoms, and this is the story:

Half way up the side of one of the hills along the river, is a very poor little house, and in it lives a very poor little woman. When she first came to live in the house she was not as she is now—lame and bent and old. She could easily gather the sticks for her fire, could tend her small garden, and could walk to and from the town for her bread and meat. But as the winters went by, her hands

grew stiff and bent, and her limbs were almost too feeble to carry her about. She found it hard to stoop for the wood for her fire, and her fingers almost refused to knit the stockings that brought her food. Now at the foot of the hill ran a path where the little children went back and forth to school, and each cold morning the children looked up at the cottage and one would cry out, "I see the smoke from granny's chimney!" And if the old woman was at the door she would stand looking after them with her hand over her eyes, and, I suppose, fall to wondering at the many years since she ran as nimbly along the hills and along the riverside. When the late winds of March were blowing and the breath of the woods was sweet like spring, then the little old woman stood out in the sunshine and was glad the hard winter was over. Her store of sticks was gone, and she must go deep into the wood to gather bark to dye the wool she knit. But one night while the little children slept and the wind blew fiercely round the little brown house, the storm elves of the upper air met together and said each to the other, "It is not yet time for us to go; let us whiten the earth again and fill the sky with whirling flakes of snow." And it grew cold, cold, and the shoots came out no farther; the snow drifted in through the poor roof of the cottage, and the fire went out and the cold wind found the poor woman sick in bed with no child to love her and no friend to comfort her. Only the Arbutus with its trailing vines kept pushing about under the snow. The sweet blossoms and green leaves were getting ready for the sunshine which would surely come again.

After some days, when the children once more sought out their path in the snow, there was no blue smoke to greet them, and at night none could be seen; so they climbed the hill and found their old friend sick and alone and without food.

The children's hearts were touched by this sorrow, and their little feet clambered to the sheltering nooks and to the sunniest spots where the snow had already melted. Their quick young eyes soon spied the waxy green leaves and pink and white blossoms of the fragrant Arbutus, the first flower of the year. This their deft fingers tied in graceful clusters, and that night their tale of sorrow was told in many homes and their plan unfolded.

So the next day a woman walked to the town lying near and went from door to door selling the flowers the children had gathered, and her story found many a response in kind hearts and she carried back food and warmth for the poor woman.

The pink blossoms, too, brought their message to those who never see Nature's wildest, loveliest places, and made sweet appeal for the poor, and especially for the little old woman all alone on the hillside by the river.

JULIA ROOT STEPHENSON.

A SPRING MESSENGER

When I awoke in early morn,
I heard a robin sing,
And every note his sweet throat made,
Said "Spring! Spring! Spring!"

—J. FRANK RICHMAN.

THE IVORY-BILLED WOODPECKER

(*Campephilus principalis.*)

The ornithologist Wilson wrote very enthusiastically regarding the beautiful Ivory-billed Woodpecker. He said: "This majestic and formidable species, in strength and magnitude, stands at the head of the whole class of woodpeckers hitherto discovered. He may be called the king or chief of his tribe; and Nature seems to have designed him a distinguished characteristic in the superb carmine crest and bill of polished ivory with which she has ornamented him. His eye is brilliant and daring; and his whole frame so admirably adapted to his mode of life and method of procuring substance, as to impress on the mind of the examiner the most reverential ideas of the Creator." He is also a more dignified appearing bird than are many of the other species of woodpeckers. This bird is also called the White-billed Woodpecker and the White-billed Logcock. It is the largest of the woodpeckers of the United States. In disposition it is wild and wary and its range is now restricted practically to those states which border the Gulf of Mexico and those of the lower Mississippi, and even in this district it is quite local, for it makes its home in heavily wooded lowlands and in cypress swamps. It was formerly found as far north as Southern Indiana and Illinois, and in the South Atlantic States. It is generally believed that the Ivory-billed Woodpeckers have not materially decreased in numbers but that, as they are a wild and suspicious bird, they have retired before the advancing civilization to the naturally quiet and hardly accessible southern swamps where they can hardly be molested.

Major Bendire quotes the following instructive observations of Mr. E. A. McIlhenny: "In the cypress swamps adjacent to Avery's Island, Louisiana, these noble birds are still quite common, and here, in their favorite haunts, I have watched them for years. I believe they remain mated for life, for I have observed several pairs of them year in and year out, and can always find them near the spot where they have their nest or winter home, from which place they are hard to drive away, thereby showing a fondness for locality seldom seen in birds of this family." He also says that the nest is generally placed in a cypress or tupelo gum tree, and that the nesting cavity is excavated in the dead portion of the tree. He had never found a nest in wood in which there was sap, or in rotten wood. The female performs all the work of excavation. Mr. McIlhenny also found that but one brood is reared in a season, and that the young remain with the parents until the mating season of the following year. The young are fed and cared for by both parent birds. The nests are usually situated at least forty or fifty feet above the ground and the excavation may be twenty or more inches in depth and is usually quite a little larger at the bottom than at the top. The entrance hole is oval in shape rather than round, which is the shape of the entrance hole of the nesting cavities of other woodpeckers. As some of the excavations of these birds are three feet in depth, it does not seem strange that the female works from one to three weeks in preparing her home.

These Woodpeckers are very silent at all times so far as their voices are concerned. Especially is this true during the breeding season. The very shrill notes which they do utter at times are sounded while on their wing and are the notes of both sexes. They also call each other by rapping on the dry limb of a tree. They rap so loud and fast that the sound produced has been likened to the sound of the roll of a snare drum.

FROM COL. CHI. ACAD. SCIENCES

141

IVORY-BILLED WOODPECKER.
(Campephilus principalis).
⅓ Life-size.

The food of the Ivory-billed Woodpeckers consists of insects and their larvæ which are found in decaying wood. In the winter they will feed upon nuts and it is said will store acorns for use during this season. One observer says: "I have seen them destroy the nests of the gray squirrels to obtain the acorns and nuts they had put by for the winter. They would sit on the top of the nest and with a few strokes of their bill scatter it in every direction." The blows which one of these birds delivers when excavating a limb in searching for larvæ is simply terrific and has been described as sounding like the blows of a hammer upon the tree. Audubon tells us that they are very fond of wild grapes, and also eat blackberries and persimmons, but it is well known that they do not disturb standing corn or orchard fruits. They are certainly very useful birds as their food consists very largely of beetles, larvæ and the large grubs.

BIRD LEGENDS IN RHYME

ORIGIN OF BIRD SONG

An angel came wandering earthward one day,
And joyously singing she passed on her way.
So wondrously sweet was the song that was sung,
That the birds paused to listen, their little throats dumb.

No sound of earth's music ever could be,
So rich and so full of Heaven's own harmony;
But as soon as ever the last notes had ceased
Each little dumb throat and tongue was released,

And a chorus of song burst out on the air,
That made the woods vibrate with melody rare.
And each tiny bird sang—though never before—
While their songs had one meaning *"Adore Him, Adore;"*

The voice of the angel within them had stirred
The heart of each singer, and old earth has heard,
Ever since, from God's Songsters, their glad hymns of praise,
And they carol them forth on the darkest of days.

No songs are alike; each warm little breast,
Holds a different thought of the angel's behest.
But listen intently when bird songs are near,
For the song of an *angel* perchance you may hear.

—Edith Drury Lemington.

LIFE OF A JUVENILE OSTRICH

Two years ago I was born in southern California. The great Sierra Madre mountains looked over my birth place; those big black hills, a branch of the Sierra Nevadas, those immense mountains that shut in California, and divide the east of North America from the west, with its dry, sandy sun-scorched plains between the states of New Mexico and Colorado and the sea. Eighteen miles from the peaceful Pacific Ocean, at Pasadena, a small resort for tourists to California, I first saw the light. All of us, for there were fourteen sisters and brothers were laid in a large hole in the ground. I have heard since how this hole was made; my father took a notion one day that there ought to be more ostriches in the world so he began to scrape out the ground with his strong feet and soon made a hole about one foot deep and three feet wide; the second day he became tired of this work, not that he worked all day, for ostriches are wild birds and do not love work, but every now and then he would scrape out a little; but even of this he became tired and called my mother to help him. They scraped in turns and very soon had a hole in the dry California soil some two feet deep and four feet around; in that hole we were all born. Not all together, but one every other day. I did not see my brothers and sisters born, for we were all in eggs the size of cantaloupes. It took a month to lay us all in the nest—fifteen of us—one every other day. Mother turned us over every day several times, for the hot California sun shines every day and we would fry on one side if left too long and that is why she turned us over.

Two weeks after I had been laid I was carried away from the nest of my parents to a dark house heated by an oil-lamp, and there I remained, perfectly quiet, for four weeks longer. I grew quite fast and before the end of four weeks found my shell getting too small to hold me. There is always a space left in ostrich eggs by nature for little ostriches to breathe; but I grew into that space and soon found I must either burst the shell or smother. So, one day, I gave a great bob with my head against the side of the shell and a small piece about an inch square fell out. I then peeped out on the new world and found about three dozen large eggs just like mine lying close to each other, all kept nice and warm by the oil lamp. We were lying upon trays of zinc and as I looked upon the silent eggs, white and quiet, I thought it looked very much like a graveyard. But the nice warm air was pleasant, although I smelt a smell I never smelt before—that which is made by an oil lamp burning low, which all our readers know about. Soon I gave another turn and my shell fell into twenty pieces on the zinc tray. I was free. I was so weak and happy at the joy of getting out of my prison that I fell over and fainted. I was awakened by a man who reached his hand into the incubator, for that was the name of my home, and took me rather roughly away. He placed me in the sunshine on the grass and I soon found myself getting stronger and became more joyful than ever. I began to eat some little stones that were lying around, for nature has made it so that every little ostrich has to eat stones when he comes out of his shell to get his liver in good working order. After a good meal of very small stones I felt stronger than ever and soon began nibbling the green, young grass.

About this time a party of strangers came along and stared at us. There were five ladies and a man, and they had come from Missouri. The ladies made very strange remarks about me

and my friends in the grass, for I saw several little ostriches a few days older, around me; but they wandered about, while I had to sit down I was so weak. One of the ladies said:"Oh the dear little birdie, what a funny neck it has." Another said:"There must be something wrong with him, he is so weak." Another had a box fastened to her which she placed in front of us, and, as I afterwards found, took our pictures. I heard the keeper say "that little one was born this morning" so I knew I was a special object of interest to all, for the others had been born some other day and were not so weak. But I ate away and never minded those people from Missouri.

The second day many more people came staring around and all laughed at me; they said I made such funny motions when I walked or sat down; one man said I looked like a common drunkard—whatever that may mean; but resting and eating I pursued my way among the sweet, green grass and never minded the remarks of hosts of people who, I heard afterwards, paid two shillings each only to see ostriches. I once heard mother say—"a fool and his money are soon parted," so I then remembered that she was rich. But the time passed on and I grew in size amazingly; my readers would not believe unless they saw, how fast little ostriches grow; the truth is, they grow at the rate of twelve inches a month for the first six months. When we come into the world there is a pretty tiger stripe around our necks and we are covered with funny sharp bristles; in about two months these have all gone and part of our bodies are bare, while some is covered with very little grey feathers. So that in about six weeks I was not half as pretty and "cute" as I was the day I was born; so the public passed on without much notice of me. Once in a while a rude man would say "look at those walking bladders," or that we looked like half-picked chickens, but we heard this so often that none of us cared.

One day I felt so good I jumped over the fence and ran down the big sand-covered aisle of the ostrich farm. Here I met a dog that so frightened me that I fell down in a faint and a keeper picked me up and put me back in the long grass.

When I was three feet high and three months old, I was taken out of the green grass and placed in a bare pen covered with sand, with about fifty young ostriches, all of them older than myself; here we had no nice green grass, but three times a day a man came with a lot of chopped hay. We ate this as fast as we could, and had plenty of water to drink; now and then he fed us with sacks of common little oranges. The very young ostrich chicks do not drink water, for the grass is so damp that they do not need it. Here I remained for twenty-one months and then was removed to a much larger pen where a hundred ostriches of my size were walking about. I was now seven feet high—as large as a door—and able to take care of myself; in this pen we were fed with chopped beets, corn and plenty of dry grass as well as the skins of grapes after the juice has been pressed out to make wine. Here is where I am now and do nothing but walk about or play with my friends.

But my saddest time was about two months ago when a rude man came into the pen and put a stocking over my head; I was so frightened I dared not say a word; I trembled all over like a leaf and thought they were going to cut my head off and make me into a fry; but I have since learned that ostriches are never eaten; that the Jews don't allow it; and that the meat of an ostrich is as tough as sole-leather. This man pushed me along to where another man stood with a pair of shears; he cut off my longest feathers; not satisfied with that he pulled out a lot of little feathers, which were, of course, not much use to him. But it made me jump like a jack-rabbit every time he pulled one out. Who can tell my misery? It was a bad quarter of an hour for me and seemed like two hours. At last the stocking was taken from my eyes and I was free. Oh, happiness! Just then a rude boy climbed on my back and away I flew

into the large pen to rejoin my friends. This wretch still clung to my back and I was very much frightened; I rushed along by the fence and by the sides of trees trying vainly to scrape him off. I jumped from side to side and darted here and there, but he stayed on; at last I rushed into the middle of a crowd of my friends and bumped so strongly against a sister that the boy fell off. Of course we all ran away from the little beast.

I am told this kind of thing is to happen every four months the rest of my life. That is my only sorrow, otherwise I am pretty well fixed; I have plenty of food to eat, nice pools of water to bathe in and kill the little naughty fleas that always are fond of ostriches, and I have a very nice time with my friends in the large pen. Knowing that many thousands of people—perhaps not those who look at us every day—do not get three meals a day, we all feel very contented with our board—oranges, beets, hay and grape skins. When I read of my grandfathers and grandmothers in Africa being chased by wild animals and wild Arabs and British sportsmen, I feel very glad that I am a young Ostrich, a native son of California, living in a christian land and living well.

E. H. Rydall.

CALIFORNIA POPPIES

"Cups of gold," the Spaniard called them,
As he sought for treasures old,
He beheld their living splendor,
At his feet, like shining gold.

"Cloth of gold," the field they bloom in:
And the mantle Raleigh lay
In his Queen's path, gold-embroidered,
Never equalled their array!

"El Dorado! El Dorado!"
Cries the heart as we behold,
Rich with store of hidden treasure,
These uplifted cups of gold!

Winged minstrels of the summer,
Idle vagrants of a day.—
Share and welcome, foe and lover,
Nature turns no guest away!

—Ella F. Mosby.

AMERICAN COOT.

FROM COL. CHI. ACAD. SCIENCES

THE AMERICAN COOT

(*Fulica americana.*)

Some fine autumn morning, the observant dweller in the neighborhood of almost any one of the sequestered lakes common in our North Central States, or an inhabitant of the Chesapeake Bay region, looks out over the water, sees a black speck in the distance and says in a voice of satisfaction, "The Coots have come."

Morning after morning the black specks will be found to have increased in numbers until the shallower portions of the lake or bay are covered by black squadrons and flotillas of these birds. A flock of them busily engaged in diving and feeding, gabbling incessantly in garrulous sociable tones makes one think rather of domesticity than of wildness; in habits of feeding indeed they remind one somewhat of a flock of tame ducks.

The Coot is a welcome sight to the people about the lakes, partly for their own sakes, because they lend an air of sociability and life to the scene and add variety to the procession of passing days. They are greeted with pleasure, too, because their coming ushers in the autumn, and one will soon see flocks of ducks and geese, high in the air, and watch them circle and alight. Not so much is known about the migration of the Coot, as they appear silently, and in the night, and escape general observation.

The arrival of the Coot means also that the hunter will soon be along with his gun for a dinner of "Mud-hen" as they are usually designated, or "Crow Duck," as they are called along the Chesapeake. During the first few weeks of their stay, the birds find plenty of dainty tid-bits of succulent vegetation, and they are then very good eating. He who feasts on them at this time is likely to think of "Mud-hen" or "Crow Duck" with the accent on the last syllable. Later however, the food becomes scarcer, and the birds subsist more and more on the rank Chara or other similar growths of the lake bottom. The flavor then becomes rank and muddy, as does that of many ducks in similar circumstances, and he who feeds on Mud-hen or Crow Duck is pretty sure to think of their names with a change of accent. The Coot is not exactly noble game, as it does not require an especial amount of skill or dexterity in its capture, and the hunter who has bagged a few, does not go about displaying them as an evidence of his skill. When out in open water the birds have a good chance against a man in a row-boat; but under most conditions, shooting at Coots is about as exciting as blazing away at a tin can or bit of paper.

The Coot suffers indeed, from not being a specialist in any line. It can dive reasonably well either to feed, or if wounded, to escape an enemy, but it is not a professional in this art, as is the loon or grebe, and it never seeks refuge under water unless wounded and overtaken. Then it has to come up again soon, within range, and it might as well have saved the extra plunge.

It can swim with moderate speed, and a winged bird can sometimes escape in this manner, but those peculiarly lobed toes, which distinguish it from any of its close relatives, are made rather for wading in plashy places than for oars. So it is not nearly so expert a swimmer as are the ducks, and it can easily be rowed down.

The Coot can fly after a fashion, but is not particularly a bird of the air. Those short, rounded wings seem to have been made for an aid in running rather than for soaring, and indeed one of its close relatives, even so close as to belong to its own genus, probably became extinct because it could not fly. Whether

trying to swim, dive or fly, the bird is at a disadvantage. It appears to be a bird just on the way toward an aquatic life, but not yet settled enough to be safe against its enemies. One can tell a Coot from a duck as far as he can see it rise from the water, for it does not arise at once and directly, as would a duck, but ascends at a low slant, its frantically paddling feet still clawing the water and making ripples after the bird has been in flight for several rods. After flying awhile it manages to get its feet tucked back properly. Its flight is always low over the surface of the water, and it soon circles around and alights again on the water.

A few years ago a favorite method of procuring Coots among well-to-do pot-hunters was chasing them down in steam or naphtha launches and shooting into a flock. In many places this method is now prohibited by law and the birds are given more nearly a fair chance. They need it badly enough for the draining of the marshes and clearing up of the regions about the lakes are restricting its haunts year by year. When winter comes, tightening its grip day by day, the open pools of the lakes become more and more reduced in size, and the Coots gradually leave as silently and stealthily as they came. They seem reluctant to depart and a few remain as long as there is an open pool left. The last to leave are probably those that have been injured by bad shooting, or are weakened by starvation or otherwise unable to undertake the long journey southward.

The one thing the Coot can do is to run. They can get over slippery ice with surprising swiftness, and if they were to stay among the marshes with their relatives, the rails, they would be one of the most difficult of our birds to bag.

With the return of spring the Coot reappears from the south, but not in such great numbers as they do not now flock much but scatter widely to breed, and the greater number pass by unobserved, to the northward. A few, however, remain with us, and in some sheltered nook where the tall grass of the marsh comes down to the water's edge one can see now and then a solitary black speck swimming about, and hear at times, especially in the evening, a far-off lonely call, somewhat like that of the rail-crow. It is the Coot that here spends its halcyon days. Here it builds its nests among the sedges and reeds, sometimes on solid ground, but frequently the nest is floating and held from drifting by the anchoring stems of reeds, but allowed to rise and fall with the waves, and here the bird hatches its young.

H. Walton Clark.

THE THRESHOLD OF SPRING

Standing on the threshold of Spring though clad in wintry garb, we need only to look abroad to see how close we are to "the awakening." If we are versed in that lore which enabled Antony's Egyptian soothsayer to declare—

> In Nature's infinite book of secrecy,
> A little I can read,

we shall, of course, have learned to decipher the less obscure hieroglyphics on her page.

Shakespeare tells us in well-known words how the "daffodils that come before the swallow dares * * * take the winds of March with beauty,"—but here in Longfellow's county, what signs appear of the mustering of the forces of spring? They abound on every hand; the whole army of Flora is standing at attention, awaiting but the word of command to advance, and though March winds yet blow, we will not complain when they lay bare to the eye of the nature-loving investigator the glories of moss and lichen, those "mute slaves of the earth," as Mr. Ruskin writes, "to whom we owe perhaps thanks and tenderness the most profound of all we have to render for the leaf ministries."

The buds of trees show a more noticeable increase in size this month than previously, especially the elm, tag-alder, red maple, horse-chestnut and balm-of-Gilead. In sunny, sheltered places the "soft pussy willows are beginning to air their gray furs" and the lilacs commence to unpack their spring clothes.

"The skunk cabbage flower with hood like a friar,
Comes up from earth's cloister to view his old place."

"And in a sheltered garden-spot,—
The timid snowdrop struggles up,
And bravely swings its dainty cup—
'Why should I fear? The Spring is here.' "

A step further across the threshold and we shall reach the full affluence of the "leaf ministries," at present only in embryo. Meanwhile, that pleasure lying in anticipation is enhanced in many a way: mainly by the feathered denizens in the lanes and about the homesteads.

In the gloaming of a clear March day if we can fortunately look out on an orchard we shall see plenty of ruffed grouse and when they are busily settled to "budding" the careful opening of a door will not disturb them and we may hear them talk busily, much in the way of a flock of poultry.

On a clear morning, the form of a large bird in a neighboring apple tree leads us to think of the hairy woodpecker; but the glint of blue as it flashes along in the sun shows it to be a blue-jay. The cheery voice of the chickadee on the roof, the faint note of the tree sparrow hopping about the doorstep and the wren uttering "her sweet and mellow plaint at times" gives us a homey, contented feeling. Down the country road we spy a downy woodpecker merrily rapping on that dead oak, and away from the distance comes the unmistakable call, *"Peelt, peelt!"* of his cousin the hairy. Now we startle the juncos and white-throated sparrows in the hedge of meadow-sweet and wild clematis. The *"caw caw"* of the crow and the melancholy *che-a* of a small flock of siskins swooping overhead; the one, a harbinger of spring, the other, suggestive of cold, bleak winds remind us that "one crow does not make warm weather," if we may be permitted to alter slightly the old proverb.

On a still, cloudy day the "kimp, kimp" of birds flying low down pronounce them to be American crossbills, Sometimes we are fortunate enough to see alight in the yard a few of the white-winged species of crossbill either by themselves or with the American.

An outlook on the orchard on a warm, rainy day reveals the tiny red-breasted nuthatches spirally moving about on tree trunks, head downwards, searching for insects on the mossy bark layers, and the pine grosbeaks, our winter-robins, eating frozen apples on the trees and talking bird news all the while.

In a clump of sumacs, its head, neck, and breast hardly distinguishable from the red berries, but revealed by its black and white markings, I once had the rare pleasure of watching a red-headed woodpecker at his noon-tide lunch. The happiest March bird with whom I am acquainted is the snowflake and rightly has it been named, appearing most frequently in "squally" weather, usually in a flock of about a dozen. They seem to join in the "dance and whirl of the blinding storm" hardly settling down to feast on the yarrow and golden-rod seed stalks before scurrying away only to appear again and join in the revelry with the drifting flakes. So when "March with his hammers comes knocking at our doors," as the old Breton ballad has it, if we observe the seasons progress, we shall have no difficulty in discerning the beauty, the hope, and the promise interwoven even with the chilly east winds.

Lucina Haynes Lombard.

THE SILVER PHEASANT

(*Phasianus nycthemerus.*)

The attractive Silver or Penciled Pheasant is, perhaps, one of the best known of all the pheasants. It is a native of the wooded hills of China, especially in the southern portion. It is a native of a country of rich and beautiful verdure, noted alike for its flowers and birds. This bird was first described and given a name by Linnæus in the year 1766.

The Silver Pheasants present a most graceful appearance, and the colors and characteristics of their plumage are most beautiful as they pose or fly in nature. Unfortunately, though they may be domesticated and breed readily in aviaries, it is said that they cannot be confined with other species of pheasants, for they are of large size, of a pugnacious character and are armed with large and powerful spurs, and do not hesitate to attack the other species. A notable difference exists in the plumage of the two sexes. The plumage of the male is especially beautiful, that of its back and long tail being white, more or less marked with fine lines of a bluish black color. The feathers of its crest and under parts are rather deep blue in color. The sides of its head are marked by a bright scarlet bare skin and its legs are also more or less reddish in color. It is very fortunate that the female is not so brightly dressed. Her plumage of a dusky brown color makes it possible for her to more easily conceal herself and remain unnoticed. This is very important during the period of nesting, and caring for her young, for if her plumage was as bright as that of her mate she would expose her nest, her eggs and her young to other animals, both of the air and woods, who would enjoy a dainty feast at her expense.

In his "Monograph of the Phasianidæ," a beautifully illustrated work on the family of pheasants, Dr. Daniel Giraud Elliot says: "The red skin of the face and the wattles become very much enlarged in the spring, and are a rich crimson color. Indeed, in some instances, I have seen this skin extend so much above the head as to appear like a comb; and at a little distance the head seemed to be all aflame. This skin is not smooth, but thickly covered with small papillæ." Dr. Elliot also quotes an observer who says: "This bird is known to the Chinese as the *Pih Heen,* and it is one of those which are embroidered upon the heart- and back-badges of the official dresses of the civil mandarins, to denote the rank of the wearer."

Both the Silver Pheasant and its near relative the golden species have been introduced from China into the aviaries of Europe. They have also been introduced into the states of Washington and Oregon where they seem to have become acclimatized. Mr. William T. Hornaday believes that on account of the strong and hardy natures of both of these pheasants, there should be little difficulty in introducing them in any well wooded farming region east of the Mississippi River and south of the fortieth parallel. Unfortunately the Silver Pheasant lacks the amiable and gentle disposition of its golden relative yet they are graceful both in motion and in pose.

SILVER PHEASANT.

TREE LORE

Which one appeals to you the most? Have you thought of it? You have your favorite flower, your choice book, your especial friend—which then, of all these tender leaved beings with their hundred thousand whispering tongues, touches the deepest chord in your consciousness? The flood of pink and white blossoms from the fruit trees, the sweet odors from the oozing pines, the lofty jets of foliage of the elms, which Dr. Holmes says come nearer to having a soul than any other vegetable creature among us, which sets in vibration higher notes than any to which your inward sense has before responded? Trees have been loved and venerated for centuries. The curious myths and traditions that among many nations gravely ascribe the descent of man from trees are very fascinating reading. You remember in the "Odyssey" the disguised hero is asked to state his pedigree. "For," says his questioner, "belike you are not come of the oak, told of in old times, nor of the rock."

And in our school "Aeneid":

These woods were first the seat of sylvan powers,
Of nymphs and fauns and savage men who took
Their birth from trunks of trees and stubborn oaks.

The old Celts and Britons, worshipped the oak. "Jove's own tree" Virgil calls it. It shaded the Druid's sacred fire and has at all times been the emblem of grandeur, strength and duration. They are the patriarchs of their kind—in England to-day we are shown noble old oaks which were old in the time of William the Conqueror. The famous Charter Oak of Hartford, Conn., was believed to be several hundred years old. When the first settlers were clearing the land the Indians begged that it might be spared. "It has been the guide of our ancestors for centuries," said they, "as to the time of planting our corn; when the leaves are the size of a mouse's ears, then it is time to put the seed in the ground."

The Indians' request was granted and the tree, afterwards becoming the custodian of the lost charter, became famous for all time. "King Edward's Oak" in Central Park, New York, planted by the king many years ago when he visited us as the Prince of Wales, caused a good deal of comment over all the world when at the time of the recent illness of the king it too sickened to remain so until its convalescense was coincident with that of the human monarch.

When one looks through a long, double row of elms, he beholds " a temple not built with hands, fairer than any minister that ever grew in stone with all its clustered stems and fluttering capitals." A winter beauty too, when stripped like an athlete for its contest with the winds and storms of winter, it discloses the secret of its grace, its weakness or its strength, the sinewy vigor of the trunk is most evident and the fine spray of its delicate branches stands clear cut in exquisite tracery against the sky. One member of the elm family is mentioned as the "Lotus" of the ancients. Homer has Ulysses tell us of the lotus eaters who gave him of the lotus plant to taste—sweet food which whoever tasted once, wished not to see his native country more, nor give his friends the knowledge of his fate.

Even the Nature blind among us, must appreciate the grace and beauty of our beeches. Have you noticed them recently? The pearly white of their smaller branches and twigs fairly challenging the prime of their sturdier limbs. They have been the shining mark of lovers from earliest days:

On the smooth beechen rind the pensive dame
Carves in a thousand forms her Tancred's name.

Pliny tells us of a grove of beech trees not far from Rome, one of which was of such surpassing loveliness, that Passenius Crispus, a celebrated orator, was so fond of it, that he not only delighted to repose beneath its shade, but frequently poured wine on the roots and would often tenderly embrace it.

The popular belief among the farmers that a beech is never struck by lightning, has recently had scientific verification. The general conclusion now being that trees "poor in fat" like the oak, willow, maple, elm, ash oppose much less resistance to the electric current than trees "rich in fat" like the beech, chestnut, linden and birch. The mulberry was dedicated by the Greeks to Minerva, because it was considered the wisest of trees—wisest because of all cultivated trees it is the last to bud, cautiously waiting until the cold weather is past. You havn't forgotten when you sung:

As we go round the mulberry bush,
The mulberry bush, the mulberry bush,
As we go round the mulberry bush
So early in the morning.

Perhaps you didn't know at the time of your singing that it was Minerva's tree, but a folk-lore specialist tells me your children forefathers did. Shakespeare's mulberry, or its scions, delights the tourist who makes the Strathford pilgrimage, and in Christ Church college at Cambridge one still plucks delicious fruit from a mulberry planted by Milton. It is related in Samuel how David came out against his enemies from behind mulberry trees, and Ovid says the mulberry is the tree mentioned in the Pyramus and Thisbe story.

Because the sycamore so ably triumphs over the hard conditions of city life, we must admire it. In the New Testament story it is said Zaccheus climbed a sycamore tree that he might better see Jesus as he passed by. Sycamore is derived from two Greek words, one meaning fig, and the other mulberry. That sycamore was a fig tree, common enough by the wayside in Palestine, but not native in Europe. The interesting question is, how did the European tree get the name of the eastern tree. Simply through word transference. In the twelfth and thirteenth centuries when miracle plays were produced in all the churches of Europe, for the instruction of the people, one of the favorite scenes for acting was the flight into Egypt of Joseph and Mary. It was easily put upon the stage. One legend says that on their way they rested under a sycamore tree. But no sycamore grew in the countries where these plays were acted and so this European tree, our sycamore maple was chosen to take its place, because the leaves were somewhat like the Oriental tree. In the play it was called sycamore, and naturally the people began to call it sycamore, and such it has remained to this day.

Swedish legends tell us it was the birch tree that afforded the rod with which Christ was scourged, and there lingers in Scotland yet the belief that the aspen is the tree of whose wood the cross of our Savior was made and that it still shivers in remembrance of that fact.

Truth now laughs at fancy's lore, but we all love the pretty stories of our trees and will not believe the unkind ones.

Have these few thoughts awakened any lighter vibrations than those to which your inward sense has before responded? And supposing you were a believer in metempsy-chosis and were striving for a worthy place in tree Valhalla, into which glorious old monarch would you desire your soul to glide?

Many voices there are in Nature's choir, and none but were good to hear,
Had we mastered the laws of their music well, and could read their meaning clear;
But we who can feel at Nature's touch, cannot think as yet with her thoughts;
And I only know that the voice of each tree with a spell of its own is fraught.

EMILY F. BASS.

PANSY-FACES

Pansy-faces, Pansy-faces,
How your dear, caressing graces
Fill my heart with utter gladness!
Purple, yellow as the sunlight,
Pale as lavender or moonlight,
Each of you I love with madness!
Yet whene'er I see you
See I must,
Faces, other Pansy-faces
Long time gone to dust.

Pansy-faces, Pansy-faces,
On your velvet cheeks no traces
Show the signs of sad repining,
All is joy in fullest measure,
All is pure, ecstatic pleasure,
As ye smile up in your shining;
So where'er I see you,
See I then,
Faces, other Pansy-faces
Smile at me again.

Pansy-faces, Pansy-faces,
My fond, lingering love embraces
Your sweet, human, childlike natures!
For in mimic, dainty fashion,
In your purity and passion,
I behold fair childish features;
So where'er I see you,
Live anew,
Faces, other Pansy-faces
Beautiful, like you!

Pansy-faces, Pansy-faces,
From your green and lowly places,
Listening, I can hear you singing,
While around the spring rejoices,
And your gentle, murmurous voices
Sound like distant dawn-bells ringing:
So whene'er I hear you,
Then I know,
I shall see again my Pansy-faces
Of the long ago!

—Mrs. Merrill E. Gates.

THE RALLY OF THE CROWS

Ernest Thompson Seton tells us, "There is only one bird that terrifies the crow." While making a botanical excursion a few years ago it was my fortune to see what I believe to be one of the loudest and longest concerted demonstration of this terror.

It was toward evening and the thick shade of the forest had given such premonition of the early twilight as had settled all nature to rest; the cricket had not yet begun its evening chirp and the mosquito had not piped its first note; the sky above seemed as devoid of life as though the forest had been one deadly upas tree. As the soft light of the sun fell through the trees upon the carpet of leaves at my feet, I stopped, suddenly awed by this hush of nature: there seemed to be but one presence now, that of the Being who had created all, and who had swung into space the sun and planets, circling in their profound silence above and around me.

A loud cry of distress broke all this stillness in a moment. A solitary crow was flying wildly above one of the tall trees of the wood, telling as audibly as human speech could have done the anguish of its little heart. What it uttered was not merely a cry, it was a call for help, to which one bird—its mate perhaps—responded first, cleaving the air with rapid wing and striking the same harsh note which was meant to summon the clans. The response was not slow; from every direction black wings sped toward this tree, screaming in one uniform tone the danger and the need of an attack on some foe; distant neighbors, which had not heard the first call, were soon flying in straight lines toward the tree, above which hovered now a thick cloud of living, moving blackness.

They circled round, they shot upward, they darted downward, passing each other rapidly in every conceivable direction; in small circles and large; in perpendiculars and horizontals, making angles of every degree, but never colliding. This harmony, combined with such speed, in so small a space, seemed a miniature representation of the harmony of the spheres.

The united, uniform, grating note of this multitude was enough to "fill all the air with anguish," and we should certainly have expected the enemy to be driven out in terror. But no, on a bough just below, among the thick branches, sat an owl, which had been the cause of this commotion.

When it lighted there it had been blinking at a nest of unfledged crows; meditating on the dainty supper they would furnish it, and its nestlings, too, perhaps: but it no longer turned its large, firmly set, round eyes toward the nest; it had lost all appetite for young crows; another question than what it should have for supper had sprung into paramount importance. So it turned its wise little three-cornered head very slowly from side to side and deliberated.

To fly would be to expose its broad, sensitive body to a most vigorous assault from the angry horde. If it should leave its present shelter, its wide open eyes, unprotected by lids, would be blinded by the light, thus taking away from it the means of defense and leaving two shining marks for tooth and nail of the attacking party: every instinct of the depredator said, "Wait," for he knew that when darkness had settled over the twilight it would let light into the great eyes, while it would fast seal up those of the mother bird and her allies. As the crows did not cease their outcry while I remained in the woods, I fear the owl, vindicating its reputation for wisdom, finally resolved to "win like Fabius by delay."

The mother crow and her helpful, sympathizing neighbors deserved a victory, but I fear they did not gain one for our friend Ernest Thompson Seton tells us, "There is only one time when the crow is a fool, and that is at night." We know, too, that the owl picks the bones of its victims under cover of the darkness.

HARRIET S. OSMOND.

FROM COL. CHI. ACAD. SCIENCES

SCALED PARTRIDGE.

THE SCALED PARTRIDGE

(*Callipepla squamata.*)

One of the most interesting occasions to break the monotony of a long ride on a New Mexican or Arizonian desert region is to come in view of a covey of the beautiful Scaled Partridges, which are also known as the Blue or White Topknot Quails. As they are familiar with stray companies of antelopes, cows and horses, they pay little attention to the rider and allow him to approach within a few yards. A sudden dash at them will cause the birds to take a short flight to an arroyo or to a heavy growth of yucca or cactus after which they will depend upon their legs for further escaping from an apparent danger, and it is remarkable how fast they can run and the distance to which they retreat when pursued. It is indeed a beautiful and restful sight to watch these birds as they run Indian file in front of a rider. The soft shading of a bluish color, of a portion of their plumage, with the crescent shaped white markings, the pure white crest together with their fine bearing as they run before you appeals to one's sympathy. More than once I have refrained from shooting them although they were sadly needed for the food supply of the day. In Texas and Chihuahua, Mexico, I have rarely seen them in coveys of more than twenty-five and usually of not more than eight or ten individuals. At Teviston, Arizona, near Fort Bowie, however, I have seen coveys of over one hundred birds. When one of these coveys is disturbed, the birds will run away from the disturbing cause in several directions among the bushes or other vegetable growths and are very soon out of sight. Finally, when all is quiet again, they are soon reunited by the utterance of their call-notes. It is very seldom that they can be forced to rise in flight and so they must be procured by shooting them while running on the ground. They seldom, if ever, alight in bushes or trees.

The range of the Scaled Partridges is not very extensive. It extends from the tablelands of Mexico northward through central and western Texas into New Mexico, where it is quite well distributed and is fairly abundant, and southern Arizona where they are quite common in certain localities. Major Bendire quotes in his "Life Histories of North American Birds," the observations of Mr. Herbert Brown, who says: "I have seen this bird both far away from, and in the immediate vicinity of, water, on the open valleys and plains, and also in the rough foothills of the mountains." He also quotes the observations of Mr. E. W. Nelson, who says: "In many instances I have found them far from water, but they make regular visits to the watering places." In certain localities, Mr. Nelson found them frequenting the open plains, away from the water in the middle of the day, and in the vicinity of the water late in the afternoon. The writer observed the Scaled Partridges in Chihuahua, Mexico, in localities where the nearest water was nine miles away, and at Teviston, Arizona, where the nearest water was at least fifteen miles from where the birds were seen. They seem to avoid timbered areas and at least in Arizona they always seem to prefer the driest areas. Major Bendire also found this to be the case. He says: "I invariably found them back in the foothills and mesas from two to five miles distant from the river beds, which are generally dry for the greater part of the year." Such localities as Major Bendire speaks of, are a favorite habitat of various species of cacti, yuccas, dwarf sage bushes and a few other plants which can manage to exist in such barren areas. Such places he found to be the favorite home of the Scaled Partridges.

The nests of these Partridges, so far as known, are always placed on the

ground, generally under a yucca plant or a bush. They have been known to nest in corn and grain fields. The number of eggs in a set varies from eight to sixteen, though a larger number is sometimes found. The young are able to move about as soon as they are hatched, and the notes they utter are a simple but plain peep-peep. It is said that "the young are wary, and crouch in or under the smallest tufts of grass, while the parents remain in full sight." While the males assist in the care of the young, they do not assist in the duties of incubation.

FRANK MORLEY WOODRUFF.

THE MEDALLION OF THE SKY

Every one has talked of "the man in the moon" who, according to the song, is always "to be married next June," and every little child that has come into this world has been half frightened, half fascinated by the great potato face it sees in the sky. And so strong are our imaginations and so lasting our first perceptions that many of us fail utterly to see God's lamp as the beautiful cameo it really is.

Look at it properly, it contains the profile view of a woman's uplifted face; there is a queenly poise to the head, character in the rounded chin, and rare beauty in the dark hair and white throat of "the girl in the moon." When once she is seen, the villanous man in a frock coat and the potato-faced ogre that disturbed our childish sleep will have vanished for ever.

"We must look for the beautiful or we find it not," said the wise Emerson.

LEE MCCRAE.

THE CAPTIVE

Fluttering 'gainst thy prison bars,
O captive thing?
Alas, its smaller circle mars
Thy erstwhile spring.

Thy comrades, sweeping by in joyous throng,
Whirl out of sight,
Their mellow voices drunk with song
Of pure delight.

But silent in thy gilded prison there,
With drooping wing,
Thou art too spiritless to share
Their caroling.

Fly out, O prisoner of Hope,
To realms unclaimed;
Thy God meant thee for wider scope—
To sing untamed.

— JOHN JORDAN DOUGLASS.

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

THE SEA

The sea! the sea! the open sea!
The blue, the fresh, the ever free!
Without a mark, without a bound,
It runneth the earth's wide region round;
It plays with the clouds; it mocks the skies;
Or like a cradled creature lies.

I'm on the sea! I'm on the sea!
I am where I would ever be;
With the blue above, and the blue below,
And silence wheresoe'er I go;
If a storm should come and awake the deep,
What matter? *I* shall ride and sleep.

I love, O, how I love to ride
On the fierce, foaming, bursting tide,
When every mad wave drowns the moon
Or whistles aloft his tempest tune,
And tells how goeth the world below,
And why the sou'west blasts do blow.

I never was on the dull, tame shore,
But I lov'd the great sea more and more,
And backwards flew to her billowy breast,
Like a bird that seeketh its mother's nest;
And a mother she was, and is, to me;
For I was born on the open sea!

The waves were white, and red the morn,
In the noisy hour when I was born;
And the whale it whistled, the porpoise roll'd,
And the dolphins bared their backs of gold;
And never was heard such an outcry wild
As welcom'd to life the ocean-child!

I've liv'd since then, in calm and strife,
Full fifty summers, a sailor's life,
With wealth to spend and a power to range,
But never have sought nor sighed for change;
And Death, whenever he comes to me,
Shall come on the wild, unbounded sea!

—BRYAN WALLER PROCTER
(*"Barry Cornwall."*)

THE DICKCISSEL

(*Spiza americana.*)

As a rule, the members of the large sparrow family are rather plain in their dressing, but the subject of this sketch is an exception, particularly the male bird with its yellow trimmings, its black patch on the throat, and the white markings on the under part of its body. The female bird, unlike the gentle sex in the human family, is less richly dressed, the bright colors being more subdued and the black throat spot reduced to spots and streaks. In the vicinity of northern Illinois and Indiana the Dickcissel arrives late in April or early in May and the cheerful song of the male may be heard from sunrise to sunset. His most favorite position is on the extreme top of a bush or tree, where he stands as erect as a statue, with his head raised in the air, his wings drooping and his whole body fairly quivering with the intensity of his feelings, he pours forth his loud, metallic song. This song has suggested the name for the bird, for it sounds like the words *see, see, dick, dickcissel, cissel.* Dr. Eliot Coues interprets the note as *"look! look! see me here! see!"* and Mr. A. W. Butler likens the sound to that of dropping six silver dollars from one hand to the other—*clenk, clenk, clenk-clenk-clenk.* The female has a note, but it is much subdued.

The mating of this sparrow sometimes takes place before they reach their breeding grounds, and nest building begins at once. A variety of sites are chosen by the different individuals. Some prefer to nest in bushes at heights varying from one to six feet from the ground, while others choose a field, frequently a clover field, where the grass is thick and affords them both protection and the necessary building material. The nest is composed of leaves, roots, weeds and grass and is nicely lined with hair and grass. The eggs are three to five in number, are pale blue in color and measure four-fifths by three-fifths of an inch. The nest measures about five inches in external diameter and is generally two inches in depth inside. Like many of the nests of the sparrows it is rather bulky in shape and loose in structure.

As the Dickcissel breeds throughout its United States range, it selects a variety of localities for its nesting site, and these may be widely separated. It is difficult to imagine the same species of bird nesting in the cultivated fields of Ohio, Indiana and Illinois and on the half barren plains of Texas. It prefers settled portions of the country, where it may build its nest in a hay field, a garden, or in an orchard. Those birds choosing the western part of the country nest on the prairies, where the tall grass affords concealment.

This bird bears several different names. To the farmer boy it is known as Little Field Lark and Little Meadow Lark, the latter name given to it, no doubt, on account of its black throat and the yellow markings on its breast which render it similar in color to the meadow lark. The name Black-throated Bunting is given to it on account of the black patch on its throat, but it is not well known under this name, except to ornithologists.

The geographic range of the Dickcissel is very wide, extending from Northern South America, northward to Massachusetts, Ontario, Michigan, Minnesota and North Dakota. East of the Alleghany Mountains it is said to be rare. It breeds throughout its United States range and winters south of the United States. The Mississippi Valley forms the chief avenue of its migration, as it does for many other species of migratory birds, and it may be found in very large numbers in this region during the month of April. Its advance reminds

DICKCISSEL.
(Spiza americana).
⅔ Life-size.

one of an army of soldiers marching toward a given point, and leaving here and there a detachment, for as it migrates bands of varying numbers leave the main body and establish nesting places along the way.

As with others of the sparrow family, the Dickcissel is a very valuable destroyer of noxious insects; especially is it the enemy of the dreaded canker worm, and according to Professor S. A. Forbes, eight out of eleven birds were found to have eaten these caterpillars, and this larva furnished about seventy per cent of the bird's diet. They also eat grasshoppers and other insects frequenting the vicinity of meadows, besides some seeds. This is another species which the farmer and agriculturist will do well to protect.

COLLINS THURBER.

A CHILD OF THE FOREST

It was early in the spring, before the giant cotton-woods on the river bank had put forth their glittering leaves to the sun, when Billy first made his appearance on the lonely Arkansas plantation. He was the gentlest of little fawns, with a pair of the loveliest sad brown eyes that ever looked up wistfully in search of a friendly face, and a pale drab, velvety coat all pied with dapplings of silvery white. A neighbor of ours having killed the mother in some hunting expedition, had captured the little one and presented it to my oldest sister, then a young lady, and from the time of his arrival to that of his tragic death, about two years later, Billy diversified with lively incident the monotonous plantation days.

Shy and shrinking at first, he was much fondled and spoiled, a bed was made for him in the house and he was fed on milk and other experimental delicacies, until he learned to eat most things that we did, with a decided and sometimes inconvenient preference for cake.

Affectionate as a pet lamb, but full of a wild, strange intelligence, as he grew older, he became very familiar with members of the family, as willful as a petted child and as frisky as a kitten. His keen senses alert to things which our dull human eyes and ears and noses had not the least perception of, his wild nature breaking out through his domesticated habits in a thousand fantastic pranks and gambols, his love for us never failing to the day of his death, he was altogether a sensitive, high-strung, and noble creature.

The first night that he was put outside to sleep on the long, vine-covered porch, he kept us awake by his low, unhappy whimperings, and by tapping persistently on the window with his foot. But he soon grew used to the change and slept very peacefully except when some unusual influence disturbed him.

Rain always seemed to fill him with a wild elemental delight. For hours before the coming of a storm, he was stirred by a strange expectant restlessness. He would come into the house and stretch himself out dog-like on the floor, but in a few minutes he would be up again, pace softly to the door, and looking out with ears erect and eyes dilated, stand braced in a posture of intense alertness—every sense apparently open to influences of which we were unaware. Then he would come quietly back and lie down again, but only to start up once more and pace up and down the long white porch, all the while full of suspense and tense excitement. When at last the storm came, he was in his element. He would rush out into the rain, tear round and round the house, up and down and about in the maddest abandonment of delight—to come in after he had finished his frolic and perhaps jump straight into the middle of the first inviting feather bed that offered itself, leaving prints of his wet sides and muddy feet all over the clean white spread.

. The coming of a stranger, too, affected him, and with a sensitiveness far more delicate than our human feeling, he seemed to know of the approaching presence long before anyone else.

One calm night, Billy showed signs of disturbance. He was unable to lie still in his place on the porch. We heard him starting up, moving about, or walking all night long. In the morning the sheriff appeared. He was tracking down a negro prisoner who had broken jail in a neighboring town, and after a short search the man was found hiding in a cornfield not far from the house. Billy had been aware all night of the strange presence lurking near.

The deer's affection made him easily alarmed if he saw any signs of departure in the family. My grandmother, an active, wiry little woman often rode over on horseback from her own place, some six miles away. One day on grandmother's starting for home, my sister decided to ride with her for a little way. When Billy saw her setting out he was greatly disturbed. He ran alongside her horse whimpering and moaning as if his heart would break and was only pacified when she turned back toward the house.

In the winter, Billy slept in the house in an unused room, and his favorite position in the evening was in front of the great wood fire in the old fashioned fireplace in the room where the family were gathered. Here he had the persistent companionship of a big black cat, who, though reserved and unsocial toward the rest of the world, had taken a remarkable fancy to Billy. She followed him around the house like a small, black shadow, shared his meals with him, and when he lay down, placed herself beside him, often lolling against him or resting her head on his neck. Her greatest delight was to have him lick her head, which he sometimes did, when she would purr with supreme content. Sometimes her persistent demands seemed to weary him and he would push her away or get up and change his place, but usually he was very patient and they were the best of friends, so much so that after his death a strange wildness seized her; she avoided the house and we caught sight of her only once in a while, when she looked like a crazy thing.

After a little while Billy had lost his pretty spots and the last vestige of his shyness with them. He used to range at will over the plantation and no telling how many miles beyond. In the morning after his breakfast, he would make a dash for the fence, clear it at a bound and disappear over the fields in a run. How many miles he traveled in these jaunts no one knew. He would be gone until nearly noon, our dinner hour, when looking out we were sure to see Billy approaching over the fields, his graceful figure vibrant with action, springing, bounding on as hard as he could come. The keenness of his scent, which was marvelous, or some instinct, must have prompted his return at that time, for he never failed to appear, except once, when he was gone for a day and a night.

One of these expeditions nearly proved fatal to poor Billy. Some negroes from a neighboring place were passing through with a pack of hunting dogs at their heels and the dogs gave chase to the deer who instinctively turned toward home for safety, and after a long flight, with his pursuers close upon him, managed to outrun them. But in jumping the fence, his strength must have failed, for he did not clear it as usual, but catching his hind legs in some way, hung head downward, filling the air with his cries. Rushing out we loosed our pet from his uncomfortable position, and poor, frightened Billy made trembling for the house, as if he were only too glad to reach that haven. It is remarkable, considering his extended wanderings, that no harm ever came to him.

One morning my mother had been baking cake, Billy's favorite delicacy. But Billy had gone—was miles away by that time, and it was too early to be expecting him back. She had just brought the cake, smelling deliciously, out of the kitchen and was stooping down to put it in the big "ice chest," as we called it, which was at one end of the long open hall that ran through the center of the house, when bounding up the steps and into the hall came Billy. Before

she could move he bore down upon her, and by exerting all her strength she just did manage to fight him off, shove the cake in and close the door. The smell of that savory compound, wafted to Billy's sensitive nostrils miles away, had brought him home in a hurry to claim his share.

The larger he grew the more liberties he took and his playfulness or his willfulness led to the breaking of many bowls and pitchers and other crockery. He had a strong will and what he wanted he must have or there was war. He acquired the art of standing on his hind legs to reach for anything that he wanted and of pawing with his forefeet till he brought it down. Very often in this process he dragged the cloth off table or dresser or washstand, bringing down with it whatever was on top. It was funny to see him rest his forefeet on the table, and, if he could not get what he wanted from one side, walk around the table supported in this way until he could reach the desired article. A great pastime of his, but one very annoying to black Katherine, the washwoman, was—when the freshly washed clothes were fluttering on the lines as if in airy challenge—to make sallies upon them, reared upon his hind legs and batting at them with his forefeet, leaving black prints which meant another washing.

He made a habit, too, of coming up softly behind one—he always moved with swift, light daintiness and spring—and planting his forefeet on one's shoulders with a startling lunge, particularly if he suspected that one had anything good in one's hand. When one looked around with a start of surprise one's eyes encountered the grave orbs of Billy fixed on one with a mild intentness. It was useless to deny him them. That wild strength of his made him dangerous. He did not understand, of course, that he was likely to hurt one—but even a playful blow from his foot might be severe. To see him come up to one as he had a trick of doing, and laying his head upon one's arm, look up into one's face with the divine, pathetic trustfulness of his great, brown eyes, to see him put up his head to have it rubbed, walking or standing beside one in his strong yet slender grace—one would have imagined him to be the gentlest of creatures, and so he was at heart, but there was in him also that wild strain, born of the woods, which he could not help.

I was the only child in the family and the only person who was foolish enough to take liberties with Billy. One day I pressed a wet rag on Billy's back, bearing down very hard upon it, "just to see what he would do." He very promptly showed me by rearing up and knocking me down. What else he would have done I do not know, for I was quickly rescued. But I bore for many months the crescent-shaped imprint of his foot upon my forehead. The negroes on the plantation were very prone to take liberties with him, and made the most of any opportunity to tease him—thus aggravating the wild nature that was developing. He had his revenge on them whenever he could, and sometimes a rough one, though fortunately never serious. But complaints were murmured, and the problem of Billy as he grew older and larger and stronger began to be a serious one. That last spring, the tender, sprouting green of the young corn appealed strongly to Billy's primitive tastes, and in spite of ample provisions at home, he made a delicious repast of it, cropping it off close before it had a fair chance to grow. The young potato slips, set out with so much care, went the same way. There had never been any restrictions placed upon him, and he evidently took these things frankly as his natural right, but it became apparent that the crops were likely to suffer severely from his innocent depredations. Matters came to a climax, however, when a colored girl passing through the yard unwisely stopped to tease the deer, and he, resenting this or not understanding it, tore her dress to shreds and might possibly have killed her, had not her screams brought help. Then consultation was held upon the case and Billy's fate was sealed.

Poor Billy—he must have known. Contrary to custom, he failed to go for

his usual morning run across the fields. He seemed unwilling to leave the house, filled with uneasy sadness. He tried to content himself in his usual posture on the floor, but finding no rest, changed his position again and again, and finally moving restlessly to the door, he looked out uncertainly, as if the familiar places called to him, and he longed, yet feared, to go. Then he came back, paced around a little and lay down again, repeating this process many times. At last as if his mind were made up, he rose again from his uneasy resting place, stole quietly up to my sister where she sat sewing by the window, and laying his head in the old affectionate way upon her arm, looked up into her face with pitiful intentness, a long, sorrowful, appealing look, that seemed trying to express unutterable things, then turned and left the house—went out reluctantly to his fate, which lurked in the lifted gun of Henry Williams, one of the colored men on the place. That look was Billy's last farewell.

ETHEL ALLEN MURPHY.

UNINVITED GUESTS

From far and near have come to me accounts, or specimens, of "a great, green worm, with little white eggs on its back." The misconception seems so general that an explanation of the phenomenon may not be amiss.

The "great, green worm" is one of the sphinx caterpillars, the larvae of one of the so-called hawk-moths or humming bird moths. The moth may often be seen at twilight or early morning over petunias or other deep-throated flowers, and from its strong flight and hovering motion is easily mistaken in the uncertain light for a humming bird, whence its common name.

The eggs are laid on woodbine or grapevine where the caterpillars feed till full grown, and then go into the ground to transform, passing the winter in the pupa stage.

But often when the caterpillar is partly grown a tiny, blackish insect comes flying about it and stings it repeatedly, depositing an egg with every sting, while the caterpillar jerks its head to and fro in the effort to drive away its little tormentor. From the eggs laid, minute worms are hatched which burrow into the substance of the caterpillar, feeding on its tissues until about a fourth of an inch long, when they work their way out through its skin (a process I have watched through a microscope), and spin the little white cocoons which, standing on end on its back, are so often mistaken for eggs. After about three days these cocoons open by a lid at the top and out comes a swarm of pert little Microgaster flies ready to attack the nearest sphinx caterpillar, and so help to hold in check a species which might otherwise strip and destroy our vines. For the caterpillar, though a voracious feeder, finds itself so weakened by providing nourishment for its uninvited guests, that it usually shrivels and dies without forming a pupa, or at least dies in that stage without becoming a perfect insect.

EMELIE A. SALISBURY.

FROM COL. CHI. ACAD. SCIENCES

OVEN-BIRD.

THE OVEN-BIRD

(*Seiurus aurocapillus.*)

It was during my spring-morning walks along the east side of Wooded Island, Jackson Park, Chicago, that I became acquainted with the Oven-bird. It was the latter part of April, and various warblers had been on hand for some time; the leaves had not yet come out, so there was no foliage to obscure the view or give concealment to the feathered folk.

There was not much about the bird to attract attention; a trim, olive-green bird, somewhat like an undersized thrush, walking along in a peculiar stately fashion, beside the pathways that threaded here and there among the bushes. As the bird walked along it kept tilting its tail in a jerking way, as if to balance itself, and now and then it scratched among the leaves in a business-like fashion.

Getting acquainted was not however, so easy a matter as one might suppose; for about the same time and along in the same copses, the Oven-bird's close relative, the water-thrush appeared, and at the distance they usually kept from me, they looked so much alike, that it seemed as though they were bound to rehearse a Comedy of Errors, not for the benefit, but for the discomfiture of every bird-student that came that way. It was by comparing the skins of two less lucky representatives of the two species, and noting especially the markings on the head—the old-gold crown of the Oven-bird bordered on each side by black stripes, contrasted with the white stripe over the eye of the water-thrush—that it became possible to distinguish them. The birds once known apart, it was possible to study more closely the peculiarities in the actions of each. Later in the season, the water-thrush mounted the bushes and sang a ringing song, a habit in which the Oven-bird never indulged at that place.

In the deep moist woodlands where the Oven-bird makes his home, however, he is by no means silent, and his excited calling *"teacher—teacher—teacher"* attracts attention for a considerable distance. Not every bird that calls *"teacher, teacher,"* is an Oven-bird, however, some of his relatives among the yellow-throats, have much the same call, so measured and even that one who has once associated the calls with the birds is not likely to get them confused.

It is in the thick, damp woodland that the Oven-bird builds its nest on the ground among the leaves. The home is made of whatever soft material the bird finds handy—fibers, leaves, and the like—and it is frequently roofed over by a dome which reminds one of a Dutch oven—a circumstance which gives the bird one of his common names. In the nest are laid three to five somewhat speckled white eggs. It is said that the cow-bird likes to deposit its eggs here.

The Oven-bird keeps too remote from the ordinary walks of men to be well known by people in general, and probably the only way he affects our lives or interests is by destroying insects which might injure forests. In the deep solitude of his woodland life, the bird is unmolested by man; and the only way the operations of mankind affect the bird's life is indirectly, by the clearing and pasturing of forests.

H. Walton Clark.

THE JACK RABBITS

In the early spring two babies looking like small balls of soft gray fur hopped about a field where a farmer had begun the labor of seedtime. They were very young, having first seen the world but a few days before, inexperienced and timid but curious. They ventured near the farmer tilting their long ears forward, bulging out their bright eyes and rapidly moving their nostrils. What curious creature was this? He made a rapid movement toward them trying to pick one up. They dodged, and laying their long ears far back on their shoulders, each made his maiden run in a different direction.

One hid and became the smallest possible ball of gray with a fast beating heart, but otherwise as motionless as the sod that aided his concealment. The other, the farmer pursued with unrelentless energy. In vain he dodged and doubled; a coat descended upon him at the right moment and the farmer, breathless but triumphant, bore him away to make his future home with a large family of noisy children.

He rapidly became accustomed to his changed manner of living, drank milk from a saucer after carefully examining it on all sides, sorted out his favorite vegetation from the bunches of green the children brought him and lay hidden in some safe corner during the day.

At evening, his natural time for frolic, he would come out and romp with the children, seeming to enjoy being chased about the room, hopping under or leaping over the furniture, or hiding in unthought of nooks and jumping out suddenly. It was certainly not because he feared them for often if one gave up the chase and sat down he would bound to her lap, softly lick her hands or turning round and round a great many times, scratch her dress rapidly with his fore paws and bite it savagely with his sharp little teeth, as though making a nest in the wild grass, then nestle down as with the strongest intention of staying all night, but perhaps springing up to begin an elaborate toilet very much like that of a cat.

He rebelled against being caged at night and as he grew and became strong, would sometimes strike such a blow with his hind legs that the girls lacked the courage to pursue the contest and called upon their elders.

A spoiled and petted darling, he led a life of luxury and mischief, eating many things which his ancestors never dreamed such as pastry of all kinds, cheese, preserves and wall paper—a great delicacy, gnawing holes in clothes and nibbling the house plants when he thought himself unobserved by the much tried housewife from whose hand he sometimes received chastisement. At such times he uttered a piteous cry very much like that of a human baby and crept to his darkest corner to bound out and repeat his act of mischief as soon as her back was turned.

Thus he grew to be a large and beautiful jack rabbit and as autumn approached, the fur next his skin took on a whitish look showing that by winter his coat would be as colorless as the snow.

From the first, the dog was his avowed enemy. Whenever he appeared in sight, the rabbit bounded to some one's protecting arms. One day when romping in the yard he strayed too far from his protectors and the children, seeing the dog and realizing his danger, uttered the cries that precipitated it. The dog, taking it to be a command, gave chase and shook their pet to death before their horror stricken faces.

That evening they buried him in a box lined with autumn leaves, and wet with many childish tears.

The other rabbit was claimed by his parents after his mate was carried away. Being fortunate enough to be in charge of those who better understood the re-

quirements of rabbithood he grew to far excel the latter in strength and speed and could be outrun by nothing upon the prairie. Dogs were his delight. When first he heard their excited barks he would rear himself upright on his strong hind legs and view his approaching enemy with great curiosity; then bound lightly away, but not so swiftly as to discourage his pursuer, and after a run of two or three miles be as fresh as ever, while the dog panted with exhaustion and was forced to give up in despair. Even the swift-footed coyote was left breathless and defeated in the chase. By winter his coat was perfectly white except the tips of his long, graceful ears, which were as black as jet and often a moonlight evening betrayed his presence to the infuriated farmer upon whose fruit trees and bushes he subsisted, as a desolate waste of snow covered the prairie grasses; these failing, there is little vegetation that the Jack rabbit cannot use as food.

In vain the farmer set his traps or followed on his trail. In vain the shots rang out in the chill night air, for the rabbit fled unharmed to return and leave his footprints even at the farmer's very door.

Toward spring he chose a mate and when there was tender grass to nibble and the half ruined fruit trees held aloft their bleached arms seemingly in despair at being unable to respond to the call of spring; two babies, as small and timid as those of the preceding season, nestled beneath a tuft of coarse grass on the bank of a steep ravine.

One evening while foraging with his mate they saw two dogs the like of which they had never seen before. They did not bark while pursuing the chase, but stretching out their long, slender, gray bodies gained on the champion of the prairie at every bound. It was a wild chase, soon reaching a bloody termination. His mate had safely rounded a small hill but curiosity is the Jack rabbit's dominant characteristic and she reared her tall form upright on the summit. Her curiosity was quickly satisfied and her blood stained the spring time grasses, while a sportsman called his hounds and rode away.

That night a cold rain fell drearily removing the stains of slaughter and chilling the starving, frightened babies that pressed their wet fur against a cold gray stone on the banks of the steep ravine.

HATTIE WASHBURN.

THE ORIOLE

A will-o'-the-wisp of a summer day!
A very strange thing, you will surely say,
For will-o'-the-wisps are of summer nights,
And daylight would harbor no such sprites.
But I have seen it the summer long,
Flitting or darting the leaves among;
Up 'mid the elm leaves' cool retreat,
High in the arch of the village street;
And there where the oak leaves rustle and sigh,
Soft, as if spirits were passing by.
One day in autumn a red glow crept
Wherever this wavering torch had swept,
And the will-o'-the-wisp had gone whence it came,
But the maples and sumachs were all aflame.

—CHARLES E. JENNEY.

THE NESTING HABITS OF SOME BIRDS

In the study of bird life there is nothing more interesting or instructive than the consideration, by careful observations, of their mating and nesting habits. The only persons, however, who will be successful in this study, are those who have learned to be quiet and patient and never make sudden or nervous motions or use their voices when near an occupied nest. Then, too, "the birds' true homes are in the green fields, the hedges, and the woodlands of the country, and the bird-student is fortunate whose lines are cast in such pleasant places throughout the entire year." In such localities, if the student is patient and careful in his observations he cannot fail to learn much not only regarding the habits of birds, but also of the elements of nature which may be found in the vicinity of their homes. But we must not forget that some of the birds do not utterly neglect their city friends and may build their nests in the trees of gardens, roadsides and orchards. In the well chosen words of Mr. Dugmore such a study should be conducted in such a manner as to obtain a "closer glimpse of the birds in their roles as heads of a family; to study their wonderfully adapted nests and beautiful eggs as manifestations of that bird nature which is so charmingly varied and so endlessly interesting." But we should never forget while pursuing this study that we are in the presence of parent birds and their homes. We should be patient, quiet and unobtrusive so that we may in no way annoy the birds which are so sensitive and easily disturbed during the period of nesting and raising their young.

As our illustration shows the eggs of ten different birds it would be well for us to consider their nesting habits.

One of the most common, most familiar and most widely distributed of our shore birds is the Spotted Sandpiper (*Actitis macularia*). While it frequents the shores of our streams, it may be quite frequently seen in dry places and wooded slopes. So peculiar are some of its habits that it has been given a number of popular names, such as Teeter-tail, Sand Lark, Tip-up, and because of its notes, it is sometimes called Peet-weet. It frequents the banks of streams throughout North America as far northward as Hudson Bay, and its winters southward through Central America to Brazil. Its breeding range is nearly the same as its range in North America. Its nest is simply a depression in the soil and may or may not be lined with dry grass or moss. The nesting site is usually quite near to water, though at times it is not. The four eggs lie in the nest with the small ends together.

The Bartramian Sandpiper (*Bartramia longicauda*), an illustration of which also occurs in this magazine, has an extensive nesting range. It is much less aquatic than are most of the sandpipers and seems to prefer meadows, pastures and higher land for its nesting sites. Even old fields and open prairies are often selected. The nest is a mere depression in the ground which is lined with a small quantity of dry grass. The four or five creamy-buff or clay-colored eggs are spotted with a darker or lighter shade of brown, chiefly toward the larger end.

The Marbled Godwit (*Limosa fedoa*) is, with one exception, the largest of the shore birds, and it is commonly called the Marlin. Its range covers temperate North America, and it breeds in the interior, chiefly from Iowa and Nebraska northward to the Saskatchawan region. These birds exhibit a deep devotion to their companions, and when one of their number has been wounded seem unwilling to leave the spot, and for a time forget their fear of the hunter and his weapon. Their nests, while usually near water, are not always so placed, for in certain localities they have been found upon rather dry prairies. The nests are

EGGS.
Life-size.

1. Spotted Sandpiper. 2. Bartramian Sandpiper. 3. Marbled Godwit. 4. King Rail. 5. American Coot. 6. Least Tern. 7. Sooty Tern. 8. Common Murre. 9. Black Tern. 10. Herring Gull.

upon the ground and are simply grass-lined depressions. The three or four eggs in a set are clay-colored or brownish ashy in general color and are spotted, blotched, and scrawled with a brownish color.

The King Rail or Marsh Hen frequents the fresh-water marshes of the eastern United States. Both for nesting and feeding it prefers a marsh which is covered with a luxuriant growth of sedges. Its breeding range extends northward as far as Connecticut and Wisconsin, and occasionally it may nest as far northward as Ontario. The nests are lined with grasses and may be on the ground of marshes, or they may be built in a tussock of grass in very wet places. The number of eggs in a set varies from seven to twelve.

The American Coot or Mud-hen (*Fulica americana*) has a wide range, covering North America from Greenland and Alaska southward to the West Indies and Central America. The Coots nest locally quite throughout their range, though during the nesting season they are comparatively rare on the Atlantic coast. The nests of these interesting birds are built of reeds and grasses in fresh-water marshes. They are usually made of dry reed stalks, so broken as to form platforms which are from a few inches to a foot or more above the water. It is said that the nests are frequently located over water which is from two to four feet in depth. Floating nests are sometimes constructed, which are very similar to those of the grebes, but they are more firmly anchored and more carefully protected from moisture on the upper side. The number of eggs in a set varies from eight to fifteen, and they are finely speckled with chocolate or black.

The Terns nest in colonies, and usually their nests are placed upon the ground, though the Black Terns sometimes build their nests on masses of floating vegetation in sloughs.

The Least Tern (*Sterna antillarum*) nests nearly, though locally throughout the range which extends from Northern South America northward to Minnesota and New England, and casually to Labrador. The nests of this beautiful bird are on the sand or gravel of a beach, and the two to four eggs in the set are so similar in their color to their surroundings that they are not easily detected. As the eggs are exposed to the sun during the day, the Least Tern rarely covers them during the day time. In this habit it is like other species of terns.

The Sooty Tern (*Sterna fuliginosa*) inhabits the tropical and subtropical regions. In the Americas its range extends from Chili northward to Western Mexico and onward to North Carolina. Occasionally it has been observed as far north as the state of Maine. These Terns are known to breed, though rarely, as far north as North Carolina. Mr. Chapman says: "It breeds in colonies in little-frequented islands in the West Indies, and may be seen fishing in flocks, which hover low over the water." The eggs are laid in a depression in the sand of an open sea beach. Occasionally the nest is in the thick herbage bordering the sandy beach.

The Black Tern (*Hydrochelidon nigra surinamensis*) has a long range, extending from Brazil northward to Alaska and the fur countries, and it breeds from the middle United States, west of the Alleghanies, northward. The nests of this Tern consist of somewhat closely woven reeds and grasses placed on the ground in grassy marshes, upon floating masses of vegetation or supported by broken-down reeds. The pale brownish or grayish-olive eggs are usually two or three to the set, though occasionally four have been found.

The Common Murres (*Uria troile*) are gregarious, especially during the breeding season, when they will sit upon their eggs upon a rocky ledge in a row, the birds almost touching each other and living in perfect harmony. No nest is built, the single egg being often laid on the bare rock. It is said that the mother seldom leaves her egg, and she is fed by the male. In North America the Common Murre breeds from Nova Scotia northward on the coast and islands of the North Atlantic. Mr. Oliver Davie says: "The eggs are so numerous as to have commercial value, and they

are noted for their great variation in ground color and markings. They vary from white to bluish or dark emerald-green, in ground color; occasionally unmarked specimens are found, but they are usually handsomely spotted, blotched, lined in various patterns of lilac, brown and black over the surface." While the flesh of the adult birds is tough and has an unpleasant flavor, the eggs are considered a delicate food.

The Herring Gulls (*Larus argentatus smithsonianus*) breed from Maine the Great Lakes and Minnesota northward. They nest quite abundantly about the St. Lawrence River mouth, in Nova Scotia, Newfoundland and Labrador. Their nests are naturally built upon the ground or on rocky ledges bordering the ocean, but these birds have been so annoyed and robbed by fishermen, who formerly gathered their eggs by the basketful, that they have shown their wisdom by changing their habits and nesting in trees. These tree nests are quite bulky and well constructed in the tops of evergreen trees, often at a height of fifty or more feet above the ground. The two or three eggs of a set are quite variable in color. They vary from yellowish and grayish olive-brown to a bluish-white, and are spotted, blotched and at times scrawled, with various shades of brown.

PLANT STUDIES

PART VI, FLOWERS

I have come from the spring-woods,
From the fragrant solitudes
Listen what the Poplar tree
And the murmuring waters counselled me.
—EMERSON.

The seed is the work of the flower, and all the beautiful parts of the flower, incidentally so pleasing to man, are an aid in its perfection. If you look at a flower closely you will see that it is made up of a number of whorls or circles. Choose a complete flower, that is, one that has all of these parts, and pull off the outer whorl, which is the calyx. It consists of sepals usually colored green, though they may be of other colors. The next whorl is the corolla, the most conspicuous part of most flowers. The separate parts here are the petals. Next the stamens, which consist of the filaments, with the anthers at the top. Often there are no filaments and the anthers are said to be sessile, that is, directly attached to some other part of the flower, without filaments. The last whorl is the pistil, made up of the ovary or seed pod and the style on which is the stigma, a little knob, usually.

But not all flowers have all of these parts by any means, and, as a matter of fact, only the stamens and pistils are essential for the perfection of the seed. However, in some way or another, all parts of the flower are of use. The brightly colored envelopes and the sweet fragrance serve to attract the insects, the little visitors so welcome to flowers, for pollen is needed for the completion of seeds, and the insects aid in its distribution. The wind is another agent, but not nearly so careful and exact as the insects, and consequently not so desirable.

But you can't get "something for nothing" in this world, and the flowers know it, so they hide in their cups nectar and honey as a reward. The insects have found this out and go from flower to flower to collect the feast, but leave behind them the pay—pollen, which has stuck to wings and legs on the visit to

the previous flower. This pollen falls on the stigma and finally finds its way to the seed.

There are so many things to be learned about flowers that there is no end to it all, but by looking and guessing we can find out a great deal. There are two fine ways of making a beginning at surprising some of the secrets of flowers. The first is to make an herbarium, or plant collection. If properly done and cared for, this collection may become a source of pleasure and information for years.

Begin early in the spring, for the early flowers are more interesting, besides being easier to press. You should have a good trowel or knife to dig up the plants, for each specimen must include the root or a section of it. The press consists of blotting paper with weights, which may be books. But the delicate plants should not have too much pressure at first. Add to the weights from day to day, changing the blotting paper if it becomes damp, until the plants are thoroughly dry. Then they must be transferred to white sheets, of uniform size, and fixed to them with bits of sticking plaster or a small amount of glue. A written description of the plant with its name, common and scientific, the locality in which it was found and the date should be included with the specimen. If you have board covers for your herbarium you will find it much more satisfactory in keeping it from year to year.

Another way of collecting plants is to make a garden. Select a corner of the yard that is unlikely to be disturbed and call it your own. Every spring go to the woods and bring back Jack-in-the-pulpit, spring beauties, anemones, bluets —in fact, all the wild flowers you can find, roots and all, and plant them in your garden. If you plant them after the sun has gone down, and water them carefully, they will probably keep on growing, as if they had not been disturbed. Some of them will come up again the next year, especially those from bulbs and rootstocks. But even if they should not bloom the second year the experiment is worth trying, since in the meantime you have found out a great deal about their habits.

PART VII, PLANTS THAT DO NOT FLOWER

Here are cool mosses deep,
And through the moss the ivies creep.
—TENNYSON.

Plants that reproduce themselves by means of seeds are perhaps the most familiar to most people; but many plants have no flowers and consequently no seeds, yet are reproduced year by year. It is these we shall consider.

Ferns have no flowers, yet are remarkable for their beauty and variety. In the forest reserves of the West in our own country the ferns are as tall, or even much taller, than the tallest men, and in the tropics the tree ferns are as high as forty feet. There they look like palm trees, though in structure they are not at all like palms. Ferns are often very small, as small almost as the least of the mosses. They are sometimes coarse, as the common brake fern; sometimes most delicate, as the maiden hair.

The leaves of the fern are as truly leaves as those of the flowering plants, though they are usually called fronds. But the early botanists thought one of the uses to which fern leaves are put so remarkable that they could not bear to call them leaves. You have often noticed, no doubt, on the back of fern leaves, either along the margin in regular rows, or scattered all over the leaf, brown spots. These spots are the spores, They are usually protected in some way, either enclosed in a case or covered by a fold of the leaf itself. The maiden hair turns back a tiny part of its leaf, while the whole edge of Pteris, or the brake fern, curls over to cover the spores.

Spores are much simpler in structure than seeds. A seed contains a complete plant in miniatures, the embryo, while a spore is a cell with no hint of the future plant about it. When a spore falls on the damp ground a small heart-shaped

plant develops, which is not the fern plant at all, but a structure called the protonema. From a bud produced by the protonema the true fern plant finally appears, which in its turn bears the spores; and so the cycle is complete.

Mosses are as varied in size as the ferns, though as a usual thing they are not so beautiful. The long, grey mosses of the southern states are odd in their appearance and in their way, of course. The green, thick moss of the forests is wonderfully beautiful. Mosses, like the ferns, have no seeds. They usually send up a little cup on a stem that holds the spores. It is covered by a cap or lid that flies open when the spores are ripe, and allows them to escape. These cups are often a bright red when the spores are ready to be scattered and can easily be found on common little moss plants. The moss plant has true leaves, though they are sessile, that is, with no petiole.

Another class of seedless plants which children commonly love is the *Equisetum,* horse-tail or scouring rushes. They have no real leaves, but scales that cling closely in a united tube to the stem of the plant. Horse-tail rushes are hollow with jointed stems which are easily pulled apart. At the nodes, where the joints occur, in some species, branches grow straight out from the side, formed in much the same way as the original shoot. The spore cases are borne at the top in a collection shaped something like a cone. On the outside the cases are shield shaped; on the inside they are divided into two sacs in which the spores are carried. Each spore is closely wrapped by four thread-like hairs, which cling to it when the spore is wet, but when dry or ripe, spring apart and help to dislodge the spore from the case to the ground, where it can grow.

Fungi are plants without chlorophyll and so cannot manufacture food for themselves. They are either parasites and consume living bodies, or saprophytes and feed on decaying matter. Wheat rust and mildew are parasitic on growing plants, while many of the moulds are saprophytic. Mushrooms, toadstools and puff balls are well-known examples of fungi. The spores of fungi, when they find lodgment on the ground or in the tissues of plants, produce thread-like structures called hyphæ; the whole body is known as the mycelium. It is commonly hidden from view beneath the ground or in the tissue of a plant, the host of the fungus. The part to be seen is the structure that bears the spores. In the mushroom it has the appearance of a small umbrella underneath which, in folds or gills, are produced the spores. Puff balls are hollow, filled with millions of spores, finer than the finest particles of dust.

MARY LEE VAN HOOK.

A FAITHFUL KENTUCKY CARDINAL

In Unity, Kentucky, near the home of Robert Butler, a Kentucky Cardinal and his mate began housekeeping in a honeysuckle. All went well with the happy pair, until one day a snake crept into the nest and devoured the mother bird and nestlings. The unhappy husband, forlorn in his grief, spied a red tassel hanging from a curtain pole in the window of Mr. Butler's home. This tassel resembled the female red bird in size and shape. With increasing devotion the beautiful but unhappy husband made dozens of trips a day to this window, going through all the motions of feeding the imprisoned mate. After tapping upon the window-pane with his bill for some time, he dropped the morsel upon the sill where a heap of food already collected by the bird could always be found and flew away after another choice bit. The devotion of the bird was extremely pathetic.

FANNIE A. CAROTHERS.

FROM COL. CHI. ACAD. SCIENCES

AMERICAN THREE-TOED WOODPECKER.
(Picoides americanus).
⅝ Life-size.

THE AMERICAN THREE-TOED WOODPECKER

(*Picoides americanus.*)

The range of the American Three-toed Woodpecker, which is also called the Banded Three-toed Woodpecker, covers northern North America from the northern portion of the United States, northward to the Arctic regions. Within the United States, with a very few exceptions, it has been observed only east of the Rocky Mountains, and it is much rarer in the western than in the eastern portion of this part of its range. While it has been known to breed, but only in small numbers in Maine, the White Mountains in New Hampshire, and in the Adirondack Mountains in New York, it is principally only a winter visitant within our borders. It has been the experience of nearly all observers who have been able to study the habits of this Woodpecker that they are usually solitary, excepting during the breeding season and when followed by their young, and it is seldom that two individuals are found near each other. The bird is said to frequent all spruce and fir forests from Lake Superior northward to the northern limit of trees.

The nests of these Woodpeckers are usually excavated in dead trees, usually in rather deep forests. Dr. Merriam found numerous nests in the Adirondacks in June, 1883. Most of these were in flooded timber and varied in height above the water from five to twelve feet. He found them in spruce, tamarack, pine, balsam and cedar trees. Major Bendire says: "Nidification, even in the most northern parts of its range, seems to commence about the same time as it does in the Adirondacks, long before the ice and snow disappear. The usual number of eggs laid appears to be four, and both sexes assist in incubation." The eggs are usually found lying on the decayed remains of the tree at the bottom of the excavation. The pure white eggs are ovate in form and the shell is not very glossy. In the Bulletin of the Nuttall Ornithological Club published in 1878, Dr. Merriam gives a very interesting account of finding an occupied nest of this Woodpecker in the Adirondack region of New York state. He says: "We had just crossed the boundary line between Lewis and Herkimer Counties (New York), when Mr. Bagg called my attention to a 'fresh hole' about eight feet from the ground, in a spruce tree near by. On approaching the tree, a yellow crown appeared in the hole, showing that the male bird was 'at home.' To prevent his escape I jumped toward the tree and introduced three fingers, which were immediately punctured in a manner so distasteful to their proprietor as to necessitate an immediate withdrawal and exchange for the muzzle of my friend's gun. A handkerchief was next crowded into the hole, and was instantly riddled and driven out by a few blows from his terrible bill." Dr. Merriam finally secured the male bird and examined the nest. With instruments he sawed a block from the face of the nest and obtained uninjured the four nearly fresh eggs which it contained. The opening of the nest was about eight feet above the ground and was about one and one-half inches in diameter, and the cavity was about ten inches deep.

In its habits, this Three-toed Woodpecker quite resembles our common hairy Woodpecker, except that its food is chiefly gathered from the decaying trees of the cone bearing family. It is said to spend much time upon the pines and spruces in search of food, which consists chiefly of wood-boring insects and their larvæ.

THE OLD CHURCH AND THE CATERPILLAR

I was spending Sunday in an old New York town, which boasts, among other ancient landmarks, a church built a hundred and fifty years ago. This, my friend wished me to see, and as we walked down the grass-grown village road, I spied on a young slippery-elm by the church gate some badly eaten leaves, and stopped to investigate.

I think my dear Elizabeth was disappointed, because I showed so little enthusiasm over the grey old building, but the fact was, I had located and captured the individual who had feasted upon the slippery-elm leaves, and I wanted her to see and understand how beautiful a creature it was. But it is not the easiest thing in the world to interest one's friends in one's hobbies. Elizabeth is an authority on old buildings and old furniture, but I care most for the myriad forms of insect life which every where abound, and we each think the other just a wee bit foolish, because that other can not view life through the same spectacles as those which we wear. Then again, people in general have a cultivated (not an inherited) dislike for caterpillars, and it is most difficult to convince them that creeping things are, as a rule, both harmless and entertaining. Elizabeth, however, was very kind and loaned me her jelly mould as a temporary home for my Violet-tip caterpillar, and really tried to admire his spiny body which she examined through a reading glass.

The larvæ of the Angle-wings, the family to which the Violet-tip belongs, have heads that in profile resemble the head of a cat, and the likeness is intensified because of the earlike tufts. The body of the caterpillar is well defended by dull red, yellow, and black spines while its skin is finely lined with the same colors.

I knew the creeping days of my insect were about over, for he measured two inches in length and to all appearances was a fine, healthy specimen. Monday evening, he was obliged to ride to New York City in the compartment occupied by a family of Io caterpillars, and I was worried lest the Ios should realize the presence of an alien and by using their stinging bristles upon him, resent the intrusion. He appeared none the worse for the journey when I removed him to an old fruit can, and on Tuesday afternoon, I was delighted to find a chrysalis dangling from the lid of the jar, while a cast-off caterpillar skin lay below.

Now if Elizabeth could have seen this irregular brown shell, with its double row of gold buttons, I am quite certain she would have acknowledged that its lines and curves were as artistic and beautiful as those of any Sheriton chair in her fine old parlor. The colonel, the reporter, and even the little colored maid where I board, pronounced it a charming piece of realistic nature work, or words to that effect differently rendered. A week later to a day, there was an empty chrysalis with its trap door lifted; on the bottom of the can a drop of red liquid such as is secreted when an angle-wing butterfly is born; and on my window-screen the butterfly waited. He had tawny yellow, brown and violet wings; when these were waved, I could catch a glimpse of the lavender border above, while the silver semi-colons gleamed beneath.

New York is a big city, but it has its parks, so I trust that my Violet-tip found his mate among the green trees, and that she laid some eggs upon the elm and hop vine, where they hatched into little spiny caterpillars, and that someone who reads this history will find them or others of their kind, and care to watch the strange and wonderful changes called metamorphoses, through which this insect, the Violet-tip, passes.

I wrote and told Elizabeth about the chrysalis and the butterfly, and promised that next summer I would spend half a day in the old church and learn of its historical past, its crumbling present, and its possible future, for truly we should be somewhat interested in what interests our friends, even when their interest is of things dead and buried.

ELLEN ROBERTSON-MILLER.

THE CHAMELEON

A friend of ours, an English naturalist, tells us that he has lately had excellent opportunities for observing the changes of color and modes of taking food in the Chameleon. The one in his possession measured ten inches in length, of which the tail was four and a half inches. Its eyes were black and lively, and the pupil deeply seated in a hole scarcely larger than would be made with a pin.

The movement of each eye was independent of the opposite, and they were rarely directed at one object, except when the creature was intent on seizing its prey. The movements were very slow and deliberate, especially when on the ground. Its color was subject to continual change, but if a creature that rarely retains the same hue for ten minutes together, can be said to possess one which may be termed its own, it was *dusky brown,* or almost black, nearly approaching to the darkest soot.

The light was of more importance than the heat, and when basking in the sun, even the mouth was open to receive the influence. A dingy black was its common color when thus enjoying itself. Both sides did not always adopt the same colors; for while the one towards the light was sometimes a dark brown, the other side would perhaps be light yellow, with white spots. On one occasion when the stick on which it rested was touched gently, without waking it, it became instantly covered all over with minute brown spots. On another, when the color was altogether yellow a book was held so as to cast a shade on the anterior part of the body, while a candle was held within four inches of the hindmost portion; and then presently the illuminated part changed to a light brown, while the shaded portion remained as before, and when the screen was removed, the exact limit of the shade was visible.

The general belief in its faculty to live without food or drink, and to subsist wholly upon air, was proved to be incorrect. It required water about once in a fortnight, and was very fond of flies. It not only took all that came in its way, but would seize them as fast as children would bring them, and even became so familiar with the act as to take them repeatedly from the hand. It was thus easy to measure the distance to which it was able to dart its tongue in seizing its prey, which was found to be six inches, or rather more than the length of its body. The fly would adhere to the tongue by means of a tenacious mucous with which it was covered. On the approach of cold weather, its activity was greatly lessened, and it slept the greater portion of the time. The sunshine would always reanimate it; but artificial heat produced little effect. Its color was varied, and when at last found dead, the general hue of its surface was dark brown.

Each foot of this strange animal is practically a pair of pincers, and it is the most thoroughly arboreal creature in existence. Its tongue, to which we have referred, has a cup-like depression of the tip, and this member which is as it were the center of the Chameleon's organization, is in its movement the very essence of its existence. Without it the animal's life would be impossible, while the very slowness and deliberation of its other movements are a gain, since they enable the Chameleon to advance upon its prey within shooting distance without alarming it.

The Chameleon is also remarkable for the great size of its lungs; and according to some writers its change of color is derived by varying the degree of aëration, by which it throws at pleasure a greater or less quantity of blood to the surface of the body. There are six or more distinct species of this animal, the bodies of all of whom are naked, and the skin cold to the touch.

It is a native of Asia and Africa, but has also been found in the hotter parts of Europe and America.

GEORGE BANCROFT GRIFFITH.

THE BARTRAMIAN SANDPIPER

(*Bartramia longicauda.*)

The Bartramian Sandpipers are very appropriately called the Upland Field or Grass Plovers, for they are much more at home in dry meadows, pastures, and the open plains and prairies, than they are near the shores of bodies of water. Though they are true Sandpipers, their habits are more like those of the plovers, for they do not probe for their food but gather it from the surface of or above the ground. They feed extensively upon insects, especially grasshoppers, and of these they devour enormous numbers. They also feed to some extent upon wild seeds and fruits. The nature of their food makes the Upland Plovers worthy of the protection of man. Upon the prairies and in the meadows where they nest, these birds must destroy millions of grasshoppers and other insects. After the breeding season has passed, they soon become plump, and when broiled, their flesh is very delicious. So closely do the colors of their plumage resemble those of dried grass that upon the prairies which they inhabit, it is frequently difficult to distinguish them. Mr. Chapman has well said: "One may ride over a prairie upon which, at first glance, not a Plover is visible, and find, after careful scrutiny, that dozens of birds are scattered about him feeding."

The Bartramian Sandpiper is a bird of beautiful flight which is rapid and regular. But this is not its only means of protection, for it is also a rapid runner and always seems to know how to hide in the grass. The plumage of its back quite perfectly resembles that of dried grass in color. Its liquid notes have a decided purity of tone. The notes form a mellow whistle that may be heard at a considerable distance. Mr. Langille has described its notes in a most interesting manner. He says: *Quip-ip-ip-ip, quip-ip-ip-ip,* spiritedly and rapidly uttered, may represent the ordinary alarm note of this species; but when it alights on the ground, on the fence, or even in a tree, stretching or rather holding its wings straight up for a few moments, it utters a prolonged and peculiar note, sounding like *chr-r-r-r-r-ee-e-e-e-e-e-oo-o-o-o-o-oo,* the syllable *ee* being strongly on the upward slide, and the syllable *oo* in a marked falling inflection. This prolonged, mournful, mellow whistle, 'more like whistling of the wind than a bird's voice,' may be heard even in the night, and is one of the most weird and never-to-be-forgotten sounds in nature." Nesting birds also utter, when suddenly disturbed, a very discordant scream which can not well be expressed in letters or syllables.

The Bartramian Sandpipers nest quite throughout their North American range where they are chiefly found, during the summer season, chiefly east of the Rocky Mountains and as far north as Nova Scotia and Alaska. In the winter, however, they migrate southward even as far as Brazil and Peru. They are much more abundant, at the present time, in the western portion of their range. They were formerly very common in the eastern states, especially in New England. There, however, they have been so tirelessly hunted by men who think of nothing but their own desires, that they have been nearly exterminated or driven to less frequented fields in the west. They are now much more abundant in the great plains and areas watered by the Missouri and other streams of the Mississippi region. They are usually seen in small companies or brood groups, rather than in gregarious swarms as are some of the other sandpipers. They are like the plovers, when in their feeding grounds, silent, very watchful and quite shy when they witness the approach of man. How-

FROM COL. CHI. ACAD. SCIENCES

147

BARTRAMIAN SANDPIPER.
(Bartramia longicauda).
⅔ Life-size.

ever, they do not seem to fear horses and cattle and are often hunted from the backs of horses or in wagons. "Delicious as a broiled plover is, there is no true sportsman who will hesitate to admit that the graceful, slender, beautifully marked, sweet voiced bird is not vastly more enjoyable in life."

The nest of the Bartramian Sandpiper is a depression in the ground which is nearly always slightly lined with dried grass. While it is said that these birds are quite difficult to approach when they first arrive in the spring, that during the breeding season they become much more bold and will hover over an intruder or follow him through the grass, at a distance of a few yards, until he has been escorted from their domain.

THE COMING OF SPRING

A few more days, and lo,
The southern winds will blow,
And from the southlands bring,
Swift messengers of spring.

The sun-god, smiling down,
On wilderness and town,
With golden arrows drawn,
To eventide from dawn,

Quickens the sleeping earth;
And see, a slow rebirth,
Thrilleth the heart of things—
The miracle of springs!

Who first with watchful eyes,
Will see and recognize,
On yonder elm tree's crest,
The robin's ruddy breast?

Whose glances first discern,
New life in tree and fern?
The willow-buds, athirst
For falling rain-drops, burst?

Where now the white snow drifts
Along the mountain rifts,
The sleeping flowers will don
Their summer plumes anon.

Who finds the first rare prize
That on the hillslope lies,
Sweet spirit of the shower,
The shy arbutus flower?

Who bringeth from the woods,
Where Flora's dainty broods
Run wild from tree to tree,
The first anemone?

A few days more, and then
Hillside, and field and fen,
Touched by the magic wand,
In wizard Sylva's hand,

From winter's snowy tomb,
Will break in life and bloom,
Breathing a fragrant prayer
Of incense on the air.

Once more will come the call,
From bird and waterfall,
The songs that, rich and wild,
Gladden the man and child.

Once more upon the breeze,
With flower, and grass, and trees,
Will hang the faint perfume,
Of violets in bloom.

—CHARLES F. FUDGE.

AN AUNT JANE STORY

SOME COMMON TREES

"Here are some flower and tree catalogues just arrived," said Howard, as he entered the library. "I know looking over them will make you fairly wild, Aunt Jane, to begin planting something, but as the snow is still flying we shall keep you a prisoner here until you tell us something regarding the common trees about us."

"That is just the idea," cried John. "Only yesterday I was wishing that we had more evergreens in our yard, for I like to get acquainted with trees that stay green all the year."

"Why don't you plant some trees yourself?" queried Alice. "A shrewd old Scotchman says: 'Plant a tree, Jack, and it will ay be growing while you sleep, Jack.'"

"Be seated at the table," said Aunt Jane, "and we will take down Miss Rogers' tree book so we can look at the pictures as we talk. We will begin with the coniferous family, such as pines, firs, spruces, larches, cedars, all of which are desirable on account of their cheerfulness in winter."

"I think 'coniferous' means cone-bearing," Edith explained, in answer to a whispered question by Madge.

"Only one of them," continued Aunt Jane, "the Scotch larch, loses its foliage The pines have the distinction of ancient pedigree; as they were on the earth long prior to many other trees, their line of long descent begins with some of the earliest land plants."

"Isn't it a pity," interrupted Edith, "that so many handsome pine forests in some of the northern states have been destroyed?"

"Indeed it is to be regretted that there has been such ruthless destruction in the past. The white pine is still abundant, and has been a tree of the greatest utility. It is more than a timber tree, for, when properly grown, it is well adapted to ornamental purposes. In summer it has two years' foliage, in winter only that of the preceding summer."

"How odd!" cried Madge. "I like its pretty cones, and its leaves are a little fragrant."

"I do not think," said John, "that our white pine is a success as an ornamental tree, for the sleet storm once broke off all the limbs on the north side."

"But," cried Alice, "the tree is still a thing of beauty, for we planted a wild rose that covers the bare side; it climbs up twenty feet or more."

"Ah, that's making the most of a bad bargain," said John, "just what you girls did to the hemlock fir—planted a cheerful vine against it because it looked too somber as it grew old."

"Auntie, where is the native home of the cedars?" Alice inquired.

"The true cedars belong to Asia. The American cedars are not especially desirable on the lawn because the foliage turns to a dull brown; still it is well to have a few for the sake of the birds who find in them shelter and warmth."

"But we haven't anything half so beautiful as our fifty sugar trees," said Alice. "The maples have such soft, green foliage, such pretty greenish-yellow flowers and winged seeds. Then in autumn the exquisite coloring of the foliage is not surpassed by any other tree. Even after the leaves are fallen on the grass they glow like colors on a painter's palette."

"All true," said John, "but it takes so long for a maple to mature. I'm glad our grandfather planted ours."

"There may be some objection to the uniformity of outline of the maple," said Aunt Jane, "but it unusually free from insects and diseases."

"Then think," said Alice, "of the beauty of its lights and shadows."

"But I think most," cried John, "of

the sweetness of its sap and the excellence of its sirup and sugar. I saw an estimate that maples produce at least one-fifth as much sugar as cane produces, and it is much more valuable per pound."

"I'll tell you the tree for me," interrupted Howard. "It's our old persimmon."

"It is a fine tree belonging to the ebony family," Aunt Jane responded. "You know its scientific name is *Diospyros,* which means *Dios*—Jupiter, *Pyros*—fruit—fruit of Jupiter.

"And that fitly describes the golden beauties which look like grandmother's old-fashioned reticule, all drawn up with strings and a little ruffle around the top. The large, glossy leaves are polished. The flowers—pale orange color—and not conspicuous, are male and female, the former having the stamens arranged in pairs, and the anthers opening by slits. In the female flowers only traces of the stamen, and the ovary with one ovule in each of the eight cells surmounted by four styles, hairy at the base. In our common persimmon the calyx lobes increase in size as the fruit ripens."

"I've noticed," said Howard, "that if the fruit matures and ripens before frost it is superior to that which requires frost to remove the stringency, for frost does not improve a really ripe persimmon."

"Let's have papaws now," cried John.

"No; give me some chestnuts," said Madge.

"I'll take apricots," declared Alice.

"You must all go to bed and dream about trees," said Aunt Jane.

BELLE PAXSON DRURY.

BIRD LEGENDS IN RHYME

THE ROBIN

Come, little one, to the window seat,
A jolly old friend is here.
He has just come back from his warm retreat—
Now listen: "Cheer up—cheer, cheer."

"The best of the birdies!" I hear you say?
Yes, little one, 'tis true.
He sings in our hearts while he sings out there,
Though the skies be dark or blue.

There's a legend old as ever was read,
But better though oft it is told,
How the little brown bird got its breast so red
Along with its heart of gold.

On that saddest day of the long, long years,
When the dear Christ bled and died—
Our little brown friend saw the falling tears,
And flew to the Saviour's side.

In his tiny beak some drops he brought,
To cool that parching brow,
Then brushed his breast 'gainst the one he sought,
And he wears the blood stains now.

O tender heart; O bird so kind,
We will love thee to the end!
And the legend, though true or false we find,
We are still your long-time friend.

—EDITH DRURY LEMINGTON.

UNEXPECTED GUESTS

Although I had always been in the habit of entertaining unexpected guests, it was not strange, perhaps, that I was somewhat taken by surprise one morning last fall, by the arrival of twenty or thirty visitors of whose intentions I had received no announcement. To say that they were entire strangers would scarcely be true for I felt quite certain that I had met some of them before, but I had no speaking acquaintance with them, and so could not avoid a certain feeling of confusion at first. It soon wore off, however, and in a short time I learned to take great pleasure in the companionship of my uninvited guests.

I think the greatest enjoyment lay along the line of discrimination, owing to the fact that my visitors were members of two distinct families and were, therefore, continually exhibiting characteristics quite dissimilar. Perhaps I have neglected to tell you that my visitors belonged to that favored race who are equally at home on earth or in air, whom the poet calls

Beautiful creatures of freedom and light.

I had never seen bluebirds and yellow warblers flock together before, and so found great enjoyment in watching them.

Of the former, Mr. Burroughs says: "When nature made the bluebird she wished to propitiate both the sky and the earth, so she gave him the color of the one on his back and the hue of the other on his breast, and ordained that his appearance in spring should denote that the strife and war between these two elements was at an end. He is the peace harbinger; in him the celestial and terrestrial strike hands and are fast friends.

Not only this, but he is also one of the last to bid us farewell when the "melodies of summer decline." His one note at this time is in direct contrast to the joyous song with which he greets the summer, but it is almost incessant.

As visitors I think I found the bluebird more sociable than the warbler, but I must confess to a greater interest in the latter, not because he was prettier or daintier, but, being less familiar, there was always the probability of discovering some new trait.

A woodbine which climbed about my windows seemed to be a favorite seat of action for my guests. And action it was indeed. It is almost safe to say that not one member of either family was still for a moment during the whole week's stay. From vine to roof, from roof to branch flitting continually back and forth, with an occasional excursion across the yard to the gnarled old apple tree. The object of all this activity seemed to be the very laudable one of breakfast, dinner and supper, and although so very practical, every motion was grace itself.

Indeed, what could be more interesting? Bits of color flitting to and fro, giving first a glimpse of sky and then a flash of sunshine. The myrtle warbler is very chary of his gold, however, displaying it only as he rises to fly, but even this glint is worth watching for, and I am not certain that I did not spend more time in that way than in any other, during their whole stay. This little warbler is quite soberly dressed, with this one exception, and an appreciative observer is liable at any moment to be rewarded by one of these golden surprises.

I have never known whether my guests had decided before they came just how long a visit they should make me, or whether their sudden departure was the result of a sudden fancy. At all events the unwelcome time came when they should go their way, leaving me the enjoyment of a pleasant memory.

SUSIE E. KENNEDY.

NIGHTINGALE.
(Motacilla luscinia).
⅘ Life-size.

THE NIGHTINGALE

(*Motacilla luscinia.*)

Nightingale is a word derived from the Anglo-Saxon word Nihtegale, which, literally translated, means "singer of the night." In the ancient Latin times this bird was spoken of as "A voice, and nothing else." Pliny gave an interesting account of the Nightingale in his "Natural History," which, translated from the Latin, reads as follows: "The song of the Nightingale is to be heard, without intermission, for fifteen days and nights, continuously, when the foliage is thickening, as it bursts from the bud; a bird which deserves our admiration in no slight degree. First of all, what a powerful voice in so small a body! Its note, how long, and how well sustained! And then, too, it is the only bird the notes of which are modulated in accordance with the strict rules of musical science." The song is uttered only by the male bird, though many poets, while writing of the bird, have credited the song to the female. The beautiful song of the Nightingale seems indescribable and has never been satisfactorily expressed in syllables. This song is uttered during the mating season and ceases practically at the appearance of the brood. Its notes then become much less musical and sound more like a croak. It is probably a note of alarm and anxiety for the young. "No greater contrast can be imagined, and no instance can be cited which more completely points out the purpose which song fulfils in the economy of the bird, for if the Nightingale's nest at this early time be destroyed or its contents removed, the cock speedily recovers his voice and his favorite haunts again resound to his bewitching strains. For then his mate is content again to undergo the wearisome round of nest-building and incubation."

The nests of the Nightingales are peculiar and of a rather uncommon structure. They are built upon or near the ground. The outer wall of a nest is mainly constructed with a very large number of dry leaves, which are so placed together that the plane of all the leaves is nearly vertical. The nest cavity, or hollow, is deep and shaped like a cup and is carefully lined with a neat layer of roots which are finely fibrous, and sometimes a few feathers. While this nest is beautiful and ingeniously constructed its parts are so loosely held together that, even though it is supported laterally by the plant stems among which it is nearly always built, it is often easily injured by a slight touch. The number of eggs in a set varies from four to six, and they are deeply olive in color. Adult Nightingales do not endure captivity and usually die within three or four weeks. It is said, however, that if the young birds are taken when they are nearly ready to fly from the nest, "they can, with proper care, be reared by hand, and this is the only justifiable mode of proceding for those who wish to keep this fine songster in confinement, as, if the birds survive their first moult, they may live for some years in a cage, and the cocks will in due time exercise their full vocal powers."

The Nightingales feed largely upon caterpillars and other larvæ. Their principal food is said to be the caterpillars of the night moths, and it is also probable that they eat some of the beetles which are active in the night. As these insects feed chiefly during the night time, they must be hunted by the birds during the dark hours, for the insects retire during the daylight hours.

The Nightingales are well known visitors to the eastern, midland and western counties of England, though they are not residents at any time in Ireland, and by the best observers are not believed to ever visit Scotland. They also frequent,

in large numbers, Spain, Portugal, and they are commonly found in Austria and Upper Hungary, and occasionally they are found in Persia. They winter in northern Africa in Nubia, Abyssinia, and in Algeria, where they have also been reported as breeding. They have also been reported as a winter visitant to Arabia.

As the Nightingales disappear from their northern homes at the end of summer, their inspiring songs must be greatly missed in their absence.

A FARMYARD AERONAUT

In the farmyard a brood of early March chickens were toddling about on unsteady little yellow legs and after the fashion of other babies, finding the world full of strange things, bright and beautiful, about which they chirped loudly both to themselves and one another. And after the fashion of other mothers, Mrs. Leghorn was audibly certain that no other brood was to be compared with this of hers. So there was much noise and stir, and the wire enclosure was filled with prattle and admonishments, with baby experiments and maternal pride, all of which gave much delight to the farmer's two little children, who were constantly on the watch.

Outside and wandering aloof from this evidence of domestic contentment, was a disconsolate white goose—the only web-foot of the yard. She had been brought there in her goslinghood as a curiosity and diversion for the farmer's children, and at the sight of the little Leghorns, there was awakened in her a kind of instinctive remembrance of the brood from which she had come the spring preceding. But she hid her own inner envy under a noisy show of superiority, as she made sidewise haste to the little brook near by, outside the pale and possibility of hendom. In the brief premature heat that a mild March had brought that day, the water seemed tempting.

Suddenly a faint, strange sound seemed to come from the upper air, which to her had hitherto been an unthought-of tract—entirely outside the interest of a domestic barn-fowl. Then a growing restlessness, a vague compound of fear and of a superanimal mystery took possession of her.

Honk, honk! The calls resolved themselves into distinct, nearing summons.

The farmer and his wife came hastening out, exclaiming, "A flock of wild geese!" They watched with heads thrown back a couple of lines that formed a V with each other and moved quickly onward and nearer with a zigzag motion, expanding and contracting as they went. It was like a long, loose-linked chain, heavily clanking as it moved—Honk, honk!

The tame white creature upon the grass felt new stirrings—a wild spirit of adventure, and the need of response to these harsh, though to her doubtless musical, and certainly imperative calls that came indeed from the very skies. Before the astonished eyes of the onlookers, in too wild a sense of new freedom to know what was happening to her she rose, fluttering, sank, rose, up, up, in a strange successful flight, and followed, lagging, gaining—midmost the flapping chain, one of its own moving links, from which came back once more the grating triumphant outcry—honk, honk!

It was November, and the noisy hens and roosters had forgotten their chickenhood. Although in the interval the children themselves had not grown perceptibly larger. The white goose was missed more than ever now that the chickens in their older clumsiness had lost interest in the eyes of the children, to whom the white web-foot would still have remained a novelty. But Indian summer was all

but past, and the world outside would become a place of little intercourse with the hen-yard, and far less freedom generally—to be ventured upon only under the protection, tyrannical if necessary, of mittens and mufflers, unpleasant rubbers, and tightly buttoned coats. Yet the present day was still like summer, and to the children its charm was neither marred nor enhanced by the anticipation of a blustering tomorrow.

It was much like the day that the goose went, the farmer reflected. That time had been kept fresh in his memory by his own frequent recounting of it to his only half-credulous neighbors. But what had brought it to his mind at that moment? He struck an attitude of listening, though hardly conscious that a sound had demanded his attention. "Honk, honk!" A long, dense, sharply angling line of bird-life spread high and dark against the sun—a much larger flock than that opposite-moving March caravan had been. When almost directly overhead, a number were seen to separate themselves from the others, and to drop slowly toward the earth, one shining white among, he counted carefully, eleven smaller dark ones.

Hastily bidding the wondering children to keep perfectly still he hurried to the barn, coming back immediately with a pan of corn and grain. Cautiously he approached the flock which had by now settled upon the grass, the small, dark goslings grouping themselves fearfully about their mother.

When so near the flock that they seemed on the point of taking alarm and rising again into the air he carefully let fall a handful of corn upon the grass. There resulted a rush from the white web-foot as she recognized her old-time delicacies, an imperative "quack" to the goslings who obediently crowded about, and were not slow to scramble for these strange new confections, once they were tasted and found so good. Presently all the kernels were gone, and an eager craning of necks ensued. Then stepping backward the farmer dropped another handful, a few kernels with each backward step. And so on, amid much snatching and friendly quarreling among the goslings, and their mother as well, whose appetites had been sharpened by their long flight. Nearer and nearer the farmer came to the enclosure—now netted over the top as well as on the sides. Meanwhile the flapping chain and its outcries faded into the distance until hardly distinguishable. The farmer was now within the enclosure. The corn fell in a more plentiful shower, and the brood poured upon it, unconscious that the door had swung upon them and they were prisoners. Then came, with the realization, a wild flapping of wings, as the farmer caught up one of them for close examination.

But the wire network resisted all their nervous flights, and the white goose quacked in reproval of their unnecessary alarm, for she knew the farmyard corn was better than the pickings of the forest. Nor was she disturbed, though it was not altogether easy to reassure her wild little brood, when the children danced delightedly about them, without the wire enclosure.

ISABELLE HOWE FISKE.

ANEMONE

Yes, fairer than the wild rose sweet,
  Daisy or buttercup I know,
Is the wind-flower's petals sweet
  In the wood where'er we go.
A very queen of early spring;
  And I will ever think of thee
As the fairest of God's flowers
  My lovely, pure Anemone.

—C. H. WOODWARD.

THE ROSEATE SPOONBILL

(*Aiaja ajaja.*)

In the words of Audubon "the Roseate Spoonbill is to be met with, for the most part, along the marshy or muddy borders of estuaries, the mouths of rivers, on sea islands, or keys partially overgrown with bushes, and still more abundantly along the shores of the salt-water bayous so common within a mile or two of the shore. There it can reside and breed, with almost complete security, in the midst of an abundance of food." I find that these words, quoted from the "Water Birds of North America," very truthfully describe the home of this bird. Its range extends from the southern Atlantic and Gulf States southward to the Falkland Islands and Patagonia. Its range at one time, many years ago, extended northward in the Mississippi Valley to southern Illinois.

When I first saw these Spoonbills it almost seemed as if Nature had made some mistake in the creation of this grotesque combination of an almost repulsive looking head and the exquisite shading of crimson and pink of the plumage on its graceful body. In studying the Spoonbill in life, as it wades in the shallow pools in the bayous and salt marshes, one is surprised at the wonderful dexterity with which it uses its light spoon-shaped bill. It is a persistent and rapid worker, moving its bill from side to side on the surface of the muddy bottom for small mollusks and sea weeds. It is amusing to see the Spoonbills at times walking one behind the other, and often the one in front is pushed ahead causing it to go through sundry antics, and occasionally the maneuvers end in a fight. The antics of these birds are so interesting that I am afraid that my engagement in watching them has often caused me to neglect work in other lines of nature study.

The lonely bayous between Brazos, Texas, and Matagorda Bay are excellent places to observe the habits of this and many other species of birds. If one is so fortunate as to find a locality where the birds have not been molested, a light blind may be erected within a few feet of the water's edge and all of the waders may be decoyed to close range. The numerous bayous along the Gulf coast widen out inland forming large lakes which are left bare, or nearly so, by the out-going tide. One of the most beautiful sights I ever witnessed, while in my blind, was a time when I had a large flock of white-faced glossy ibises, wood ibises, snowy herons and Roseate Spoonbills all within fifty yards from me. The combination was dazzling. The Spoonbills and the glossy ibises would sail in and away at an easy angle, while the wood ibises would circle and sail until almost out of sight.

The Spoonbills are always gregarious at all seasons in coveys of a half dozen or more. "At the approach of the breeding season these small flocks collect together, forming immense collections, after the manner of the ibis, and resort to their former breeding-places, to which they almost invariably return. In flight the Spoonbills resemble the herons with easy flappings of the wings. Their necks are thrown forward to their full length and their legs are stretched out behind. They seem to depend on the herons, with which they associate, for warning of any approaching danger, for the herons are very vigilant and watchful.

The three to five white eggs which are spotted with shades of olive-brown are laid in a nest which is a mere platform of sticks built in bushes, chiefly the mangrove, or in small trees.

FRANK MORLEY WOODRUFF.

FROM COL. CHI. ACAD. SCIENCES

149

ROSEATE SPOONBILL.
(Ajaja ajaja).
½ Life-size.

A LITTLE-KNOWN SINGER

Among the many birds that act as advance guard for the returning sun there are few common species less widely known than the two kinglets, the golden and the ruby-crowned. This general ignorance does not spring from any difficulty in finding the birds, for during the spring migration these two are widely and plentifully distributed throughout the Mississippi Valley from the Appalachians to the great river itself.

Of the two, the ruby-crowned is the easier to find; I have seen at one time as many as six of these sprightly mites in one haw tree not more than twenty feet high, and twenty or more of them in the course of an hour's walk in a certain little valley in Woodford County, Illinois. In the fall and winter it is usually hard to get a good view of the bit of red which is the species label on *Regulus calendula.* I remember working every day for a week in his winter quarters in central Mississippi before I got a good look at the half concealed crown patch. In the spring, however, when his thoughts are turning to the same subject as the young man's, he is much more generous of his charms; perhaps it is the near approach of the mating and nesting season that warms up his little heart, or it may be that he believes in the efficacy of bright colors to catch the female eye.

The frequent glimpses of this tell-tale tuft of ruby are not the least among the mid-April treats, but the music of his happy mating-time marks a red-letter day in the long calendar of spring surprises. I will not go into any comparison of the color and the song of this bird, for I realize how treacherous is the quagmire into which a man steps when he deliberately sets himself to compare two things so different in their appeal to one's sensibilities.

The song of *Regulus calendula* is deserving of more attention than the public, even the bird-loving public, has hitherto bestowed upon it; indeed I cannot remember seeing a single person, not an ornithologist, who confessed that he had ever noticed the song of this bird until his attention was called to it and the singer pointed out to him. While I am on the subject of confessions I might as well make my own; I consider myself a good observer, but I never heard the song in question till four or five years ago. One fine March morning I went down into a bird-haunted ravine and seated myself on a log to gather inspiration for my day's labors, listening to the chorus of residents and migrants—March in Mississippi is as far advanced as May in the latitude of Central Illinois or Ohio; up from the cane-brakes and magnolia groves came a medley; a brown thrasher, two cardinals, some whistling white throats, a song sparrow, and the prince of southern singers, the mocking bird; then suddenly there fell on my ear, sounding faint and far away, one of the sweetest, tenderest little songs I have ever heard. The bubble and enthusiasm of the Carolina wren, the soft, sweet, flutings of the mocking bird's nocturne, a suggestion of the resonant tone of the song sparrow, with an underlying current of self-forgetful passion made music that I could not forget if I would. Brown thrasher, cardinal, sparrows, even the mocking bird passed out of mind; they could sing for me some other time when this strange new melody was not coming out of the canes with every puff of the jessamine-laden breeze. I rose and walked quietly over toward the thickest of the brake and peered intently into the leafy twilight, as I did so the sound seemed to change direction and to come from the tree above; no bird there, either. Even as I looked, the music burst out afresh, apparently before my eyes, but stare as I might, only the little yellow bells of the jessamine came into the field of vision. At last as I was about to return to my seat on the log feeling that deep sense of defeat that only an ornith-

ologist can know, my old friend of a score of January mornings, the ruby-crowned kinglet, came out of the dense undergrowth and repeated his musical performance as if for my special benefit, coming near enough so that through the glass I could plainly see the pulsing of the tiny throat as he sang. Eureka!! I have found, not it, but him! My reserved seat was good enough for all day, I thought, but after giving me the best selections in his list, the little fellow gave a chirp and flew away over the hill.

Since that lucky Sunday morning in the far south one of the greatest attractions of the season of opening buds and flitting migrant hordes has been the unique, unapproachable song of *Regulus calendula.* April in Illinois and Ohio brings other things to cheer besides showers and the smell of sprouting grass; when the box elder begins to bloom, take your glass and repair to the nearest thicket of haws and crab-apples, or if these are not accessible, to a broad-topped box elder; now if the morning is warm and you have a little patience, the chances are all in your favor that you will hear the melodious warbling I have so imperfectly described.

The nearest approach to this song that I can think of, is the mid-summer music of the warbling vireo or the nocturne of the mocking bird; but in addition to the soft dreamy quality so prominent in the songs of these two, there is another, a ventriloquial quality, that I have never found in the song of any other bird. Listening, you think the singer is deep in the recesses of the bushes while the probabilities are that he is close to you, just behind that tuft of bloom or creeping his way along the limb where his olive tints sink into the greens and greys of his surroundings. When spring comes again, get out and make his acquaintance; it will be worth your while.

JAMES STEPHEN COMPTON.

THE OVEN-BIRD'S LOVE-SONG

When the woods and fields are most beautiful; when all the early trees are in full leaf and form a substantial background for the dizzy pink of the oaks; when dogwood is in full blossom, and the snowy-white trees add a touch of life and gaity, altogether wanting in the sombre woods of midsummer; when the new, fresh undergrowth is set off by fiery Indian-pink and the exquisite lavender flowers of wild phlox and geranium; when the fields are covered like thin sheets of snow with honstenia, and everywhere flourishes the composite squaw-weed;—it is at this time of the year—early May—that we go into the woods toward sunset and listen for the love-song of the Oven-bird, and keep an eye open for the inspired singer.

To our left "teacher, teacher, teacher, teacher, teacher," sounds the simple but not unpleasing crescendo. From the right come the same gushing notes—the same to exactitude. From the distance, like a rushing waterfall flood the same notes. Oven-birds are everwhere. The simple song of a redstart, the nasal "zee-u, zee-u, ksee-ksee, ksee-ksee," of a blue-gray gnatcatcher, and the rasping song of a black and white warbler, relieve what might otherwise be a monotony. Suddenly a great flood of indescribable melody is poured out from the tree-tops. There is the lover, soaring higher and higher, thrice as high as the forest trees, dashing downward suddenly, and all the while pouring forth a song not unlike the Louisiana water-thrush's flight-song but even more varied. Can it be that demure, sedate little walker, who, but a moment before, with so little energy opened his bill to let forth his commonplace crescendo? It is.

NORMAN O. FOERSTER.

OUR CUBAN GUESTS

I was called from my work one morning, by my little daughter, shouting, "Oh, mamma, Cousin Walter has sent you something from Cuba!" I hastened to open the packages; there were two; the first contained several fern plants, which were received with great joy, they were so unlike our native ferns. When the next package, which proved to be a round tin box, was opened, there seemed to be nothing but decayed wood. We thought he had sent us some "fox fire," when suddenly it seemed to be alive and the children shouted, "Bugs! bugs!" and out walked three "Lightning Spring Beetles," very happy indeed to stretch their legs, say nothing of their wings, after a whole week's confinement on their long journey from Cuba. There were four in the party when they left Cuba but one died on the way, doubtless from sea-sickness. One had parts of two legs missing, but did not in the least mind so little a thing, but rushed about just as lively as the others.

They were members of the family *Elateridæ,* having the habit, when laid on their backs, of giving a sudden upward spring by a quick movement of the articulation between the abdomen and the thorax. This performance was a great amusement to all, especially the children, and has given the common names of Click Beetles, Spring Beetles, Snapping Bugs, etcetera, to members of the family. The largest of these beetles was very nearly two inches long; the others were one and one half inches. They are of a dark brown color, not the shiny, polished surface that many beetles have, but looking very much as if they had been dipped in a light brown powder. On each side of the thorax, quite near the abdomen, were two circular spots that looked like pale yellow spots when the beetles were quietly resting, but when aroused, and as it grew dark, they gave out a brilliant greenish light like two shining emeralds; they also emitted the same bright light from the under segments of the abdomen, the segments seemed to fold back, displaying a brilliant emerald light as large as a pea, which radiated the light to some distance. A letter came with them saying their favorite food was decayed wood, and it was surprising what a quantity they managed to eat. Every morning I would moisten the dead wood, then they would eat their breakfast with apparent relish, then crawl under the pieces as best they could and for the most part would remain very quiet throughout the day, but when twilight came they were very active, fairly rushing about their room, which was a wooden box cover, securely covered with a wire screen, which years ago kept the flies from our food. Each evening before lighting the lamps, we would remove the screen and allow them to go about the room. They were almost sure to pause on the edge of the cover and open and close their wings displaying to the very best advantage all their emerald lights. They evidently enjoyed travelling over the carpet and would rapidly pass from one side of the room to another, but we did not fear of losing them as they carried such bright lights we could easily follow their course. They would often crawl over each other and over the same piece of food but never seemed to show the least disposition to quarrel. When put on the cool, marble topped table they immediately put out all their lights and refused to move until put in a warmer place. After three weeks of our September weather, the one with the broken legs died, and a week later the largest one found a crack under the screen where he could get out. In the morning he was nowhere to be found and although we formed a searching party and searched the whole house, we did not find him for several months and then he was dead. The poor lone one must have missed his friends or his warm southern home, for he too lived but a few days alone. Per-

haps they had lived their life and would have died had they remained in Cuba. We placed them in the insect cabinet really with regret, for we had never tired of watching them and many people came to see them. We learned quite a little about them. One author stated that the ladies of Cuba sometimes fastened them in their hair as an ornament at evening parties; also that a large number of them on a tree would give sufficient light to read by. We did not doubt it.

REST H. METCALF.

MY DOG-WOOD TREE

Its slender portions roughly clad
  Are curved in lines distinct and bold,
Blending with grace the strength of steel;
  So stands my tree through the winter's cold,
And I marvel not that lovingly
  The snow-flakes soft its twigs enfold.

But when spring comes with long, bright hours,
  And promises of summer gay,
My tree is decked with blossoms white,
  That cluster close round its branches grey,
Companions of the violets blue,
  And friends of the frail wind-flowers, they.

But when the sunset of the year
  Blends earth and sky in radiance bright,
My Dog-wood lights its jets of flame
  Where once had flaunted its blossoms white,
And the frost elves touch with magic brush
  Its leaves, and lo! they glow with light.

In summer's heat, and winter's cold,
  It stands, a thing of beauty still,
A picture by my window framed,
  'Gainst the shaded background of the hill;
A friend most true is my Dog-wood tree,
  Constant and strong through good and ill.

—KATE MATSON POST.

DUSKY GROUSE.

THE DUSKY GROUSE

(*Dendragapus obscurus.*)

The Dusky Grouse is known by several common names. It is also called very properly the Mountain and Pine Grouse, for it inhabits the pine regions. Pine Hen, Blue, Gray and Fool Grouse are names sometimes applied to it. Perhaps the latter name is the most fitting, for it often does what seems to be very foolish. An observer in Colorado has said: "Until almost fully grown they are very foolish; flushed they will tree at once, in the silly belief that they are out of danger, and will quietly suffer themselves to be pelted with clubs and stones until they are struck down one after another. With a shot gun, of course, the whole covey is bagged without much trouble; and as they are, in my opinion, the most delicious of all grouse for the table, they are gathered unsparingly." To the sportsmen of the far western United States this Grouse occupies the same exalted position that the ruffed grouse does in the minds of the eastern lover of game birds.

These handsome birds inhabit the evergreen forests of their range, which includes quite a large portion of the Rocky Mountain region of the United States. There are two varieties of this species besides the birds of our illustration. They are known as the sooty grouse and Richardson's grouse. The range of the three varieties extends from Alaska, southward to New Mexico. The range of the Dusky Grouse is generally considered as limited to the Rocky Mountains, from central Montana and southeastern Idaho to New Mexico and Arizona, eastward to the Black Hills of South Dakota and westward into Nevada.

Dr. Newberry considered this Grouse the handsomest of all the American birds of its family. Regarding their habits, the Doctor has said: "When on the ground they lie very close, flying up from your feet as you approach them, and when flushed always take to a tree; while sitting on a tree you may fire as many times as is necessary to hit the bird before you can dislodge it. In the spring the male, seated motionless on a branch of pine or fir where it issues from the trunk, makes a booming call, which, by a remarkable ventriloquial power, serves rather to mislead than direct the sportsman, and, unless experienced in shooting this kind of Grouse, he will be likely to spend much time, with nothing to show for it, in a vain search for the bird." Even though sitting upon a tree directly over one's head, the voices of these birds seem to come from quite a remote locality. The mating notes of the male have been described as prolonged and similar to that produced by a rattan cane whirled rapidly through the air. This peculiar sound is said to be produced "by inflating, and contracting a sac on each side of the throat, which for the most part is concealed when collapsed, and is covered with an orange-yellow, thick, corrugated, unfeathered skin." This area, however, is surrounded by a frill of white feathers edged with dusky. This is the period, too, when the males feel their importance and strut through their habitat with a display of their plumage.

The Dusky Grouse nest upon the ground, where the female makes a slight depression in the ground, often under the shelter of an old log or a projecting rock, or in underbrush, and sometimes in an open area. The nests may be lined with pine needles or other leaves, or if built in the midst of growing grass, by breaking and pressing down the grass. From eight to ten eggs are laid and the time of incubation lasts about three weeks, when the mother leads forth her young, which she cares for in a very devoted manner. The males do not as-

sist in the care of the young, but rejoin them when they are able to care for themselves. A family covey is then formed.

During the summer season the Dusky Grouse feed upon various insects, especially grasshoppers, wild fruits, young leaves and buds. At this time their flesh has a pleasant flavor and is very much liked. In the winter they frequent trees and feed upon the buds of pines and the seeds of their cones. They will also feed upon the buds of other coniferous trees. During the winter season they fly from tree to tree and their tracks are not found in the snow. As they perch in the evergreens, their plumage blends quite perfectly with the color of the pine branches and foliage, and when they observe an intruder they remain perfectly still and may readily be taken for a knot, or a broken limb. If they move at all, it is to take flight, and with a sudden movement they leave their perch and must be looked for in other tree tops, and it may be very difficult to again find them. Even while feeding upon a food which possesses a strong resinous flavor, the flesh of the Dusky Grouse is said to be fairly attractive.

They are solitary birds and it is seldom that more than three or four adults are seen together. Of course a family of young, dependent upon the mother bird, make quite a party, but when they can take care of themselves separation ensues. It is only when the young are unable to fly into the branches of trees that these tree-loving Grouse roost on the ground. When disturbed, the young quickly hide under leaves, bushes, or logs, and their mother flies away and makes an effort to attract attention to herself.

A RAIN-TIME PRAYER

O Father, kind, who sendeth from above
  These gentle drops of rain
To cheer the earth, and haste the birth
  Of buds, and grass, and grain—
O Father, like these raindrops make my love,
  That ev'ry heart I know
May gain from me some strength to be,
  And learn, and love, and grow!

—JAC LOWELL.

BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

WHEN CRAB TREES BLOW

If I were blind and deaf, and had
No sense of taste or touch, I know
That I could tell by sense of smell,
When Crab Trees blow.

No other fragrance of the wood
So cloys with sweet the laden air,
Or fills the soul with plenitude
Like Crab blooms fair.

If I were blind, and had no sense
Of taste or touch or smell, I know
That by the sense of sound, could tell
When Crab Trees blow.

By insects' buzz, and busy bees,
And humming birds among the trees,
And pliant twig's soft swaying sigh,
In spring time breeze.

And if the sense of sound and smell
Were gone, by others still would know,
That seasons' cycle was complete
When Crab Trees blow.

The songs of birds, the waving grass,
The forest's changing robes all tell
Of season's progress, and are signs
I know so well.

But when my senses all are keen,
I watch the seasons steady grow;
Ah then! Ah then! my joy's complete
When Crab Trees blow.

—L. O. MOSHER.

THE SOUTH AMERICAN RHEA

(*Rhea americana.*)

In a work on the genera of birds, published in 1752 at Aurich, Germany, Möhring gave to this South American bird the name Rhea. The bird, however, had long been known and even described by earlier writers, none of whom had even thought to give it a special scientific name. It seems strange that Möhring should have used the name Rhea as the generic title of these birds. It is a classical mythological name, well known, but its application to birds is hardly apparent, unless it is due to the classical belief that Rhea, who was the mother of Zeus and the other great gods of Olympus, was looked upon as the mother and producer of all plant life. "She was also believed to exercise unbounded sway over the animal creation, more especially over the lion, the noble king of beasts. Rhea is generally represented wearing a crown of turrets or towers and seated on a throne, with lions crouching at her feet." It may be that Möhring looking upon this American bird as powerful gave it the name of this noted goddess.

Because of the resemblance of the Rheas to the ostriches they are commonly called American Ostriches. The two groups of birds, however, are at least separate families of birds, and by some observers of the habits and characteristics of the Rheas and the ostriches it is considered that the two birds are even more widely separated and distantly related. The Rheas, or American Ostriches, have three toes which end in claws, while the true ostriches of the Old World have but two toes which end in short nails. The Rheas are also characterized by fully feathered heads and necks and they have no tail, while the ostriches have a practically naked neck and a tail of white feathers. There are also structural differences which are not so easily seen. The Rheas do not possess plumes or feathers which are such a beautiful adornment of ostriches. Their feathers, however, have quite a market value and large numbers have been killed each year until now it has been exterminated from considerable of the area which the species once inhabited.

In some ways the general habits of the Rheas resemble those of the ostriches, but they are more gregarious. It is said that these birds sometimes associate with herds of deer on the pampas of their range, in the same manner as the ostriches in Africa seem to be fond of associating with zebras and antelopes.

The Rheas are polygamous, and as a rule, each male is associated with five or a few more hens. It is also known that the male performs the duties of incubation sitting upon the eggs laid by his several mates. Mr. Charles Darwin has given the following excellent account of some of the breeding habits of the Rheas based on his observations made as naturalist to Her Majesty's Ship Beagle on an exploring voyage around the world during the years 1831 to 1836. He writes: "When we were at Bahia Blanca (Argentina) in the months of September and October, the eggs, in extraordinary numbers, were found all over the country. They lie either scattered and single, in which case they are never hatched, and are called by the Spaniards *huachos,* or they are collected into a shallow excavation, which forms the nest. Out of the four nests which I saw, three contained twenty-two eggs each, and the fourth twenty-seven. In one day's hunting on horseback, sixty-four eggs were found; forty-four of these were in two nests, and the remaining twenty scattered huachos." Mr. Darwin also states that the Peasantry and Herdsmen (Gauchos) "unanimously affirm, and there is no reason to doubt their statement, that the male bird alone hatches the eggs, and for some time afterward accompanies the young." He also says

FROM COL. CHI. ACAD. SCIENCES

153

SOUTH AMERICAN RHEA.
(Rhea americana).
⅛ Life-size.

the male lies so very close when on the nest that he had almost ridden over one. It is also asserted that at such times the male Rheas are sometimes fierce, and even dangerous, for they have been known to attack a man while on horseback and try to kick and leap upon him. The fact that the work of incubation is wholly performed by the males has been proven by carefully made observations of wild males in their nature homes, and also of captive individuals in England, which have freely bred. It is generally understood that the period of incubation lasts for about thirty days, and that in the southern portions of their range the eggs in the sets vary from fifteen to twenty, while in the northern portions as large a number as thirty-two have been noted in a set.

There are two other species of rheas besides the one of our illustration. The range of the species of our illustration extends from southern Brazil and Paraguay southward through the country into Patagonia. Mr. Darwin discovered and obtained a specimen of what proved to be a new species. It was named by Mr. Gould *Rhea darwini* in honor of its discoverer. It is a native chiefly south of the Rio Negro River and may be considered essentially a native of Patagonia. The third species or the long-billed rhea (*Rhea macrorhyncha*), is seemingly a native of the northern portion of Brazil. While the South American Rhea is the most abundant of the three species, it is also the largest of the three though it is much smaller than the ostrich.

REX

We have heard a great deal of the motherly hen, but who will tell us anything of the fatherly rooster? Having been well acquainted with one such fowl, it would seem to be my duty to spread his fame for the credit of his sex.

One happy spring day when I was a little girl, I was given twelve hens and a rooster, and told that I might raise as many chickens as I would take care of. How I did love those hens, and how soon each of them learned her name, and came at my call! My especial pet was a little white pullet, who was so dainty, and busy, and gay, that I called her "Dot," and she accepted her name and all the tid-bits that fell to her share as hers by right of youth and beauty. I was a little shy of the rooster at first, because he was such a lordly fellow. I didn't know what to name him, until I learned that Rex means King, and saw that he ruled the other twelve fowls. When I called him Rex he seemed to understand that I had chosen well, and came to me at once. I soon found that like many another king, Rex had his favorite, and it showed his good taste that he chose Dot for that position. She was well pleased with his attentions until she had laid thirteen eggs in her soft nest, and felt the call of motherhood in her downy breast. Then she bade adieu to youthful pleasures, and became the most anxious of care-takers. It was all that Dot could do to spread her snowy wings over so many eggs, but she did it with many a nestle and cluck.

Although Rex had most of the other hens for company, he missed Dot, and when she left her nest once a day, he tried hard to win her back, offering her the best food in his realm. This she scorned to accept, but with bustle and flutter would come to feed from my hand.

As day by day another hen began to set, Rex became more and more troubled. I could see his anxiety at feeding time, and his call for his absent hens became sad to hear when the last one had left him for her three weeks of brooding.

By this time Rex and I were intimate friends. When I tried to comfort him he would lay his head on one side, and turn up his eye, and try to assure me that he felt less forlorn in my society.

My interest in the hatching time became as intense as Dot's. She and I had

many a talk about it while I helped her to turn her eggs during the long waiting time, and she and I were nearly wild when we heard the chickens tapping on their shells and calling "peep, peep," when they had broken the egg and rolled in the nest. I could hardly sleep that night, and next morning I was up with the dawn, and flew to Dot's nest. There were the whole thirteen chicks—little rolls of down, beautiful to see.

Dot allowed me to carry her family into the deserted hennery, and as I had been told that roosters were liable to peck chickens, I was about to drive Rex out of the enclosure, when he ran to Dot as if he were crazed with delight. He began to scratch and call to the chicks, and though at first Dot ruffled her pretty feathers and tried to cluck her little brood back to her sheltering wings, the fearless little beauties tottered over to Rex, and tried to eat the grain which he offered. Dot soon accepted the services of the now gentle Rex, and divided her cares with him, as if she felt that he had a right to help her raise the family.

Rex did not weary in well doing. His fatherly interest in the chickens did not grow less—indeed if I had not fed him plenty of corn, which the chicks could not swallow, I believe that the generous fellow would have gone hungry for them. He gave up his roost at night to sit close to Dot, and hover more than half of the brood.

In due time the other hens came off their nests, followed by their chickens, but Rex paid no attention to them. Not a worm did he ever offer them, although he was glad to see the hens return to his realm—but woe to the other mothers if they ever picked at one of his own thirteen.

After a few weeks of good care for her family, pretty Dot began to plume her feathers, and take less and less interest in her chicks. She dropped the "cluck" which her little ones loved, and began to sing and lay eggs. As night approached she paid no heed to the sleepy cries of her family, but left them and flew up on the roost.

Not so, Rex. He tried and tried to coax Dot down, but she seemed to toss her gay head and laugh at him. Then he gave her up, and spread his wings wide, and hovered as many of the growing chickens as could get under the shelter, and the rest of them nestled about him.

It was a divided love with Rex, for he could not forget pretty Dot—naughty though she was. The next night he followed Dot to the roost, and seemed to coax her again to return to duty. She seemed to harden her heart, and not listen to Rex, or hear the cries of the motherless thirteen—but Rex soon flew down to hover his brood.

I felt so sorry for this fatherly fowl that I made a ladder of a pole and slabs, and leaned it against the lowest roost, making an easy slope, and one of the prettiest sights I ever saw was Rex going slowly up that ladder, coaxing his chicks after him by the tenderest calls. When a chicken fell from the ladder, he flew down to sympathize with it, and coaxed it to "try, try, again," until every one was safe on the roost. There he hovered two on each side of him, and he continued to do this until they grew so large that he could no longer raise his wings over them.

Rex never deserted his family. Even when his young roosters began to crow, Rex seemed to take a fatherly pride in them, although I have seen him punish other young fowls when they dared to begin a cock-a-doodle-do in his barnyard.

M. R. Hodder.

FROM COL. CHI. ACAD. SCIENCES

PINTAIL DUCK.
(Dafila acuta.)

THE PINTAIL DUCK

(*Dafila acuta.*)

The Pintails are elegant birds and very graceful, not only in the appearance of their bodies, but also in the stateliness of their motions. We cannot but agree with Neltje Blanchan, when she says: "Their necks, which are unusually long and slender for a duck; their well poised heads and trim, long bodies, unlike the squat figure of some of their kindred; their sharp wings and pointed tails, give them both dignity and grace in the air, on the land, or in the water, for they appear equally at home in the three elements." The range of the Pintails is very extensive and they are admired wherever they are seen. It is too bad that these birds have been exterminated from large tracts of country where they were hunted by sportsmen without mercy. They are known to frequent North America, breeding from the northern central portion of the United States (for they are not known to nest on the Atlantic coast) northward to the Arctic Ocean. They winter from the central portion of the United States, southward to Panama and the West Indies. These Ducks are also called Sprigtails, Gray Ducks, and Winter Ducks.

The range of the Pintails is circumpolar and in the Old World they are known to winter as far south as the Mediterranean Sea, Ceylon, China, Borneo, and Japan. They nest in dry, grassy places, usually near the water. The nests are sometimes placed in a depression upon a tussock. Usually, however, wherever built, the nest is quite well concealed. Frequently the depression, in which the eggs are laid, is excavated by the female who performs all the work required by family cares. The nests are lined with grass and feathers from her breast. In common with many other species of water-fowls the Pintail, when leaving her eggs unprotected from the warmth of her body, covers them well with feathers and grass. The eggs vary from six to twelve in a set. They are quite small and usually pale olive-green in color while perfectly fresh. Mr. E. W. Nelson says regarding the Pintail in Alaska: "This is about the first of the water-fowl to commence nesting. The date when the first eggs are laid varies from May 18 to 25, according to the season. As a consequence the young are hatched early in June and are on the wing early in August, before any of the other species. When the young are hatched the parents lead them to the adjacent pool, and they keep in the most secluded parts of the marsh until able to take wing. In the fall, the Pintails feed upon the various berries growing on the hill-sides until they become extremely fat, and a young bird at this season is the most delicious of the water-fowl found in the north." In the southern United States where the Pintails winter, their delicate flesh is deeply appreciated by the hunter, and some other ducks, whose flesh is even more delicate, do not attract more than a small fraction of the hunter's attention.

The Pintails frequent, as a rule, shallow waters for the purpose of feeding upon both animal and vegetable food, and in winter, they are usually found in flocks, varying in number according to locality, from fifteen or twenty to two hundred or more birds. Flocks have been observed in which the number of birds was estimated to be over one thousand. Sometimes large flocks consist of the males only, and as Neltje Blanchan has said: "It is an amusing sight to see a flock of drakes feeding in autumn, when they chiefly live apart by themselves. Tipping the fore part of their bodies downward while, with their long necks distended, they probe the muddy bottoms of the lake for the vegetable matter and low animal forms they feed

upon, their long tails stand erect above the surface, like so many bulrushes growing in the water."

The Pintails are silent during the day but at night they frequently utter a mild quacking note. They are birds of rapid flight and they also possess shy and wary habits. It is unfortunate, however, that when they are flushed by the shooting of a gun near them, the birds fly upwards as a flock, thus giving the hunters a splendid opportunity to kill quite a number. It seems strange that they do not scatter in all directions or retreat into dense vegetable growths, as many other species of ducks always do under the same circumstances. This fault in their habits has been the cause of their disappearance in many localities where they were once abundant.

AN AUNT JANE STORY

SEEDS

"Children," said Aunt Jane, as a group gathered about her for a little talk, "do you know of anything in nature more wonderful than a seed? Dame Nature takes care to grow single flowers mainly as they produce more seed, the double flowers sacrifice the seeds to petals. There is a wonderful difference in the number of seeds produced by flowers."

"I should say so," said John. "A poppy has a whole cup full!"

"I read about an orchid," said Alice, "that produced 72,000,000 seeds."

"Mr. Darwin calculated," Aunt Jane continued, "that the spotted orchid produces so many seeds that the descendants from one plant—its great-grandchildren—would more than clothe the entire surface of the globe, allowing each plant just room to grow, and yet, strange to say, this plant is not increasing in most places."

"I guess red clover does not have too many seeds, unless bumble bees are plenty," said Howard.

"No; that most useful plant only bears about 2,720 seeds on each one hundred heads, and needs the help of bumble bees to do that, but common bees can fertilize the second crop."

"Does the size of seeds have anything to do with the size of the tree, plant, or flower?" Alice inquired.

"Nothing whatever," was the response. "Nor anything as regards length of life. Let us take this brown apple seed and read its fairy-like story. The maturity of this seed was not accomplished without special care. Mother Nature has curiously contrived that in a cluster of apple blossoms the central flower shall open first. All around it is a ring of brilliant, unopened buds with the under surface of the petals most highly colored. This coloring of the petals on the under side assists in the successful fertilization of the central flower. Thus the buds perform a healthful function which in other flowers is performed by older blossoms. The central apple blossom is often the only one that bears an apple. All the rest take their chances. The more conspicuous a floral cluster the more certain the bees will visit it, as they have learned that faded flowers have been already rifled of honey. When the fruit appears it is first the color of the leaves; this serves to protect it in order that the seed may ripen. But when this is effected, the apples are then painted gold or carmine."

"Well, Auntie," cried Alice, "I have often noticed how brilliant apple flower buds are, but did not know they were colored on the *wrong* side to insure fertilization. Of course, usually, in a flower the *upper* surface is most brilliant."

"I suppose, then, we may conclude," said Howard, "that bunches of apple blossoms are truly altruistic."

"Just hear Howard's big word, 'altruistic' indeed!" cried the girls. "He's been studying the dictionary and is primed."

"Hark! hark!" said Aunt Jane. "Now here is a curious three-cornered seed, the buckwheat, which tells another story. The plant has two kinds of blossoms differing in the length of the stamens and pistils. In one flower the pistil is divided

into three parts at the top, and stands above the pollen pouches which lie at the base of the pistils. In the other kind of flower the opposite arrangement is seen, with the pistils low and the stamens long. The bees visiting the flowers for the honey which is secreted in the eight yellow glands at the base of the stamens, has part of its body dusted from the pollen of the short stamens and another part from the long stamens. At the same time he brushes the pollen of each on the receptive tips of pistils of corresponding lengths. By this arrangement close fertilization is checked."

"Dear me!" cried John, "that is almost as curious as buckwheat cakes are good. Whenever I eat them now, I shall remember how much trouble they cost in the first place. But what can you say about wheat?"

"That it is also a peculiar seed. The humble ancestor of the wheat is said to have been only a dwarfish grass. Long periods of time passed before wheat attained its present high state of development. It is a bi-sexual, close fertilizing plant. In the various parts of a grain of wheat, in the layers, scales, tissues, cells, teguments and membranes lie its richness of gluten, starch, and albuminoids, which are elements of good flour."

"A grain of wheat looks to me," said Alice, "as if it might be a little human being who had crossed its arms and rolled itself up in a cloak."

"I think it looks more like a boat," cried Madge.

"Yes, the longitudinal furrow on one side, which with the pointed ends and broadened center, do make it appear somewhat boat-shaped," Aunt Jane responded. "It was certainly a providential accident when the slave of Cortez brought to Mexico a few grains of wheat, for upon those little germs, dropped into the soil of a new world, the development of a great nation was in a large measure dependent."

"Are there many varieties of wheat?" John inquired.

"Yes; in the United States alone there are more than 270 named varieties. The wonderful variety of shape adds much interest to seed. A common pink seed, under the microscope, looks like a piece of iron ore beautifully carved. Each portulacca seed is a tiny silver shell, while the seed of the begonia suggests nuggets of purest gold."

"Another curious thing," interrupted Alice, "is that seeds that look just alike, as sweet peas, will yield differently colored flowers, some purple, pink, white, and a few of mixed hue."

"Yes; and it is so with the poppy," cried Edith. "One seed will produce a scarlet enchantress all silk and flame, while in the small body of another is folded up a curled pink or white beauty."

"Some seeds are rich in odor, as the vanilla pod, which is produced on a vine belonging to the orchid family. The Mexican vanilla plant is fertilized artificially, but the work is tedious as the flowers do not open simultaneously."

"How joyously the workers would hail the advent of some 'altruistic' insect to do this work for them," laughed Howard.

"Figs, very curiously, have their flowers inside. Each pistillate blossom has an ovary which ripens into a minute nut. This is the seed or true fruit, the fleshy part being only the stem or receptacle of the ovaries. Figs rise in the form of little buds, directly from the joints of the tree. Now, Madge, you may pass around this box of the seedy fruit as a reward for your interest in seeds."

"Do go on, Auntie, we are not half tired yet," the children exclaimed, as they helped themselves to figs.

"But, my dears, this subject is well nigh endless! There are so many curious devices for scattering seeds. Many of them have spines, feathery tails, wings, down and hair to assist in their wanderings. To germinate requires such various lengths of time, and some will not grow unless scalded and others swallowed by birds. The longer we consider the subject the more it opens up of interest."

"Auntie," said Edith, "you quite agree with the lines—

> " 'O, a wonderful thing is a seed,—
> The one thing deathless forever.' "

BELLE PAXSON DRURY.

THE MAGNOLIA WARBLER

(*Dendroica maculosa.*)

One of the brightest and most summery bits of bird-life that lights up our springtime groves and copses is the Magnolia Warbler. It is not one of the early birds to arrive; too warm and summery in appearance to fit in with the naked earth and sky, and with the reminiscence of a warmer climate in its manners and its name, it waits until the fields and forests have greened well to the touch of spring, and the fleecy white clouds have begun to float high in the blue. Then, some fine morning, down in the woodlands along the streams, the bright yellow of its striped breast gleams through the new fresh verdure like a fleck of mellow sunshine among the leaves.

The bright yellow of the bird's under parts, which is the first thing to attract one's attention, helps one to associate the bird at once, or even to confuse it, if not careful, with some of the other warblers which bear conspicuous patches of yellow, such as the yellow rump or the Cape May. From all these other species, however, it can be distinguished by the black marks on the yellow of the under parts—a bar crossing the breast, followed by narrow longitudinal streaks, the black area having much the general shape of a curved comb. The upper parts of the bird are of somber colors, black and olivaceous, relieved by a white streak under the eye, white on the wings, and a yellow patch on the rump.

The bird is so retiring in its demeanor, and its colors are so mellow that one never thinks of it as a gaudy bird. It is usually quiet with us; rarely, however, it gives utterance to a song—which consists of a series of loud clear whistles.

The bird stays with us only a comparatively short time, usually coming some time near the first of May, and generally leaving before the last of that month. It passes on northward to the forests of evergreens, among which it usually nests. The nest is usually placed low down in an evergreen of some sort, and here are laid from three to five creamy-white, speckled eggs.

During the bird's stay with us it is constantly busy, darting out from its perch after insects, so that it leaves its blessing on the woods through which it has passed. After the brood is reared in the north, they return, sometimes spending as much as a month with us during September, on their journey southward. On their autumn visit, however, they are much duller colored than during the spring migration, and would hardly be recognized by one who became acquainted with them on their bridal tour the spring before.

This exquisite warbler has quite an extensive range covering North America east of the base of the Rocky Mountains. It is occasionally seen as far west as British Columbia. Its breeding range extends from northern New England, New York, and Michigan, northward to the Hudson Bay region, and it also extends southward in the Alleghanies into Pennsylvania.

H. Walton Clark.

MAGNOLIA WARBLER
(Dendroica maculosa).
Life-size.

BLUEBIRD JOTTINGS

Comes vernal sun and gentle rain,
To nurse the flowers to life again;
Comes bluer sky and swelling bud;
Come secret whisp'rings of field and wood;
While, flowing from out its rust-brown throat,
Comes, sweetest of all, the bluebird's note.

Blue for beau-u-ty (beauty), *blue for beau-u-ty.*

It was a sweet and mellow note that greeted the ear, and we scanned the fence posts and the branches of neighboring trees in the hope of catching a glimpse of the blue herald of the loitering spring-tide.

Blue for beau-u-ty, blue for beau-u-ty. In spite of the vanity expressed in his assertion you can not help loving him, for beautiful indeed he is in his bright azure dress, and he tells you of it so sweetly that you entertain no thought of conceitedness. The flashes of blue from his sky-coat, whether seen as he takes his easy swinging flight through the air, or as he darts to earth to pick up the insect which his keen eye has detected, make a pretty sight. Then, there is no note from bird-land more pleasing. It is the kind of tone one likes to hear from the soprano of the church choir,—clear, mellow, serious, refined, exquisite. Added to all his other attractions he possesses the qualities of grace, dignity, and cleanliness. So many are his charms that we are almost turned aside by them from our real purpose, which is, to write the simple story of the doings of our birds, last season.

This was the first time we had attempted to cultivate a close familiarity with the bewitching fellow who "carries the sky on his back." We had begun planning very early in the season to attract him to our neighborhood, and if possible, to our dooryard, and had constructed a house of two apartments, with round openings for entrance, in imitation of woodpecker holes. When the birds' first notes apprised us of their coming we fastened the little house upon the roof of the coal shed, in full view from kitchen windows. The Bluebirds were not long in finding it but had a struggle with the English sparrows before securing possession, for those intolerable pests are so numerous and impertinent that they quickly seek to appropriate to their own use any niche or crevice wherein a nest may be placed. After our blue friends had obtained possession through the force of might, which in this case we were glad to see triumph, the female busied herself for a few days with building the nest. What was our surprise, however, to find the pair, later, taking great interest in the mail-box close beside the front door. The male was the leading spirit in the examination of this prospective home, and soon persuaded his mate that it was a desirable place for the nest. She forthwith began to carry into the box little wisps of grass, as though fully resolved to build there. Why they forsook the nest so recently built in the little house we had put at their disposal we could not determine with certainty, but our supposition is that it was because the close floor of their apartment retained the water which had driven in at the entrance during a hard rain, for we found the nest thoroughly soaked. Seeing that they were so strongly attracted to the mail-box, and fearing they would not rear a family in so exposed a situation, we hastily fashioned a new box of similar proportions, with opening near the top, and placed it under the cornice of the veranda, only a few feet away from the mail-box, closing the latter so that they could not get into it. Within half an hour the birds had taken possession of the new box and began at once to build. We could watch their operations from a near upstairs window, if we but kept out of plain sight,

and it was most interesting to observe their movements. While the female did the nest-building the male rendered good service by keeping guard, often sitting on the perch at the entrance, but always staying in the near vicinity to see that the sparrows or other enemies did not interfere with the progress of the nest-making. In three or four days the nest was completed, and a couple of days later Mrs. Bluebird began laying her eggs. In all, five eggs, in size about half way between a wren's and a robin's, although a little longer in proportion to the breadth than either of these, were deposited in the nest. The eggs, in color, through observation at a little distance, appeared to us to be of a faint green tinge, although others describe them as pale blue. We leave this an open question, however, until after closer investigation.

After fourteen or fifteen days brooding, during which if the female left the nest for a brief period the male took her place on the eggs, four wee birdlings had come out from their little shell prisons into free air and light, and two proud parent birds began the earnest task of providing food for four ever hungry mouths. In another fourteen days the young had become full fledged and were ready to go out into the world and be introduced into society. And now the male became exceedingly solicitous about his children. He did not want anybody prying around and showing too much concern in their affairs. It happened that departure from the nest was to be taken on Decoration Day. We were not aware of the family secret, and according to custom put out the stars and stripes to the breeze, adjusting the flag, as usual, to the corner of the veranda near which their box had been placed. While we were putting the flagstaff in place the male bird showed his disapproval by flying angrily at us, snapping his beak with a click like that of steel pincers. He continued to fight the flag in the same manner, and so disturbed was he that we thought best to move it to another position.

In view of all that has been written regarding the disposition of most male birds to shirk domestic responsibilities we wish to say of the male Bluebird that he acts a very commendable part. He frequently carried food to his mate during the brooding period, and afterward aided in the care of the young. It is true he was not as active as the female in providing for the hungry mouths, but he had other important duties to perform. As we have already intimated he is a faithful and courageous guardian. He does not go far away from the nest, and if occasion takes him out of sight of it he hastens back in a very short time to see that nothing happens to disturb the quiet tenor of the home life. We feel quite sure that his mate's consciousness of his nearness, of which she is apprised, when she can not see him, by an occasional sweet warble, is more gratifyto her than might be any increased desire upon his part to relieve her of home duties. Relative of his attentiveness to his mate Audubon declared him to be "as tender and affectionate as the dove." In defense of his home he does not hesitate to attack any creature that may threaten the safety of the family. He has an especial grudge against the red-headed woodpecker. If Mr. Redhead presumed to alight upon the top of the house or upon a tree in the near neighborhood Mr. Bluebird soon spied him and set about to rout him. It was amusing to see Redhead dodge around the tree trunk in his efforts to escape Bluebird's blows, but it would not be long before he was compelled to betake himself to more remote quarters. Although quite a sturdy fighter the Bluebird is not quarrelsome. He fights for the protection of his home and family, but for this we do not find it in our heart to blame him.

When the first brood had left the nest the sparrows made it an opportunity to try to get in some earnest work, and began carrying straws and feathers into the box preparatory to raising a family themselves. We tried to keep the box clear of their rubbish, but it must have been the finding of some of their materials in the old nest which caused the Bluebirds, when ready to take up the task of rearing a second brood, to come again to the mail-box and show evident inten-

tions of building there a new nest. We at once procured another box and put it up, in underneath the veranda ceiling, leaving the top of the box wholly open. By again closing the mail-box their attention was diverted from it, and the new box, in plain view from mail-box, was soon espied. The sparrows also discovered it at about the same time and there was another sharp conflict for possession. We had not allowed the sparrows to build anywhere about our premises, although they had made many attempts, and they were now getting desperate. After several fierce tussles between them the Bluebirds, much to our joy, were again victors, and there the female builded her neat and cozy nest, again laid five eggs, and hatched her brood of five, right over our heads.

It was a pleasing yet quite remarkable matter that the older brood should show such affection toward the younger. They would perch upon the edge of the box and look down upon the little fellows in the nest with as much apparent interest and tenderness as older children look upon the little baby brother or sister in the cradle. The male parent, however, was loth to allow the youngsters to be too familiar, and would drive them from the box, as if he feared they might unintentionally harm the little things. This first brood evidently understood that the later members of the family had yet to pass through the ordeal of learning to fly, and only the day previous to that on which they took their flight we observed some of the older ones fluttering above the nest and uttering a tender little chirp, as much as to say, "Don't be afraid,—this is the way to do it,—only see how easy."

The second brood left the nest about the middle of July. Being yet early in the season we rather expected the pair to nest again, but having now a family of nine they probably considered their work well done, and gave the rest of the summer and the fore part of autumn to teaching their young the economics of bird life. They remained in the neighborhood, cheering us with their presence and pretty ways, until taking their departure for the southland. They were all fond of the bath, but especially did the young birds find great delight in it. And our delight in watching them was not less. During the warmer weather they came quite regularly, morning and evening, for a dip in the water, and often would get into the pan three or four together. And how they made the water fly! So well did they love it that at times, after preening their feathers for a few moments, they were back again into the water for a second dip, then off to forage or to bed.

But the summer waned, and autumn was fast verging upon winter, with its cold northerly winds, when, loth as we were to have them leave us, they followed the lead of their native instinct and flew away in search of a warmer clime. We loved them and miss them, but long for renewed acquaintanceship another season.

FRANK M. BONER.

GOD'S GREEN VELVET

One morning in the month of May,
I took my journey o'er the hills,
Where Nature in her bridal lay.

I saw the forest's smoky line
Beyond the river's sparkling tide,
Decked in sweet green of living pine.

Nearer, the oak and elm stood
In all the forest's lusty strength,
As kingly monarchs of the wood.

The swelling leaves of willows rank
That swept the stream with tresses fine,
Showed in the vale a pale green bank;

While in the glowing morning sun,
A million new born leaflets shone,
As Nature's lovely work begun.

In mazy tints the hill's broad breast
Majestic lay beyond the pines,
In wavy lines from east to west.

The corn rows showed a line of green,
That lifted slowly toward the sky,
And all attired in spring-time's sheen.

Like summer waves upon the beach,
Rolled in long swells the waving wheat,
Far as the visive orb could reach.

A morning glory's trailing vine
Was pushing green arms everywhere,
And mixing with the wild woodbine.

The clear, sweet piping of the quail,
Borne on the freshened morning breeze,
Came from far down the velvet swale.

The hill's tall crest whereon I stood,
Seemed to be dipt in a green sea
Of flowing vales, 'mid isles of wood.

The meadows fair sloped gently down
Towards the river's rippling marge,
Dressed in a flowing emerald gown.

A million diamonds of dew
Shone full of ever shimmering light,
And sparkled bright with every hue.

The soft green velvet of the sod,
That rippled rich beneath the sun,
Was grown an ample couch for God,

Where Deity alone might lie
And lave His soul in limpid joy,
Beneath His blue and cloudless sky

And dream, and think, if any place
In this vast universe of His,
Could show so fair, so sweet a face.

—L. F. HARMAN.

FROM COL. CHI. ACAD. SCIENCES

159

GREAT BLUE HERON.
(Ardea herodias).
½ Life-size.

THE GREAT BLUE HERON

(*Ardea herodias.*)

One of the most conspicuous objects in the landscape of certain regions of the United States is the large bird known as the Great Blue Heron, or "Blue Crane," as it is erroneously called in some sections of the country. Watch him as he comes slowly and majestically flying over yonder river, with his long legs stretched out far behind, his long neck extended in front, and his great wings spread out on either side! How easy and graceful seems his flight! As he approaches a tree which stands out boldly against the background where he can watch for both prey and enemies, his long legs dangle in a truly comical manner, his neck is bent in a curious curve and his great wings flap spasmodically as he alights on a branch just above the water. Here he perches like a great gray statue, with his neck sticking straight up in the air and with his head turned toward you, his bright, keen eyes ever on the alert for danger or a possible meal. Watch him again as he descends from his perch and stalks soberly along in the shallow water, looking for his prey! Occasionally he is seen to stand perfectly motionless on one leg, the other being drawn up, while his neck is folded back upon his breast. In this position he seems the very personification of peace and quiet; but let an unsuspecting fish swim by and note the lightning-like change; the other leg is put into action, the body is thrown forward, the sharp, javelin-like bill is thrust into the water, and the ill-fated fish disappears down the omnivorous throat. The diet of this bird consists principally of fish, but includes also frogs, mice, and insects. It is a shy bird, and very difficult to approach.

The breeding habits of the Herons are interesting. They build their nests generally in large colonies called "heronries." These are established in more or less inaccessible places in swamps and bayous or, when isolated, in the topmost branches of some tall tree. A visit to a heronry which has been built in a swampy region is one never to be forgotten. This may be approached for some distance by boat, but a goodly distance must be covered on foot, jumping from root to root or wading through the muddy water. This is sometimes accompanied by more or less danger, for one can never tell where a quicksand or quagmire hole may be waiting to engulf the eager student. The coverted locality is reached after much effort and is found to be upon an island several hundred feet in diameter, which is covered with a growth of cypress and other trees. The nests are placed in the tops of the trees, from forty to sixty feet from the ground. They are loosely and roughly composed of twigs and small branches of trees, forming a platform about two feet in diameter. The nests are sometimes lined on the inside with moss or weeds. It is difficult and often impossible to secure the eggs of this Heron, as the nests are built so high and on trees with such straight and branchless trunks that telegraph pole climbers are absolutely necessary for this purpose. Each nest contains from three to six eggs of a delicate greenish-blue color, measuring two and one-half by one and one-half inches.

The Great Blue Heron ranges throughout America from the United States of Colombia and Venezuela in South America, to Hudson Bay and Sitka. It breeds locally throughout this wide range. It winters from about the thirty-ninth degree of north latitude southward. In Indiana and Illinois this bird is a common migrant and summer resident, and breeds in several localities. One notable heronry in Indiana is known as "Crane Heaven" and is said to occupy thirty or forty acres along the Kankakee River, about twenty miles above Water Valley. Mr. C. E. Aikin writes as follows concerning this heronry, as quoted

in Butler's Birds of Indiana: "The locality is a timbered belt, the ground being submerged with twelve to eighteen inches of water at the time. At our approach, upon the discharge of a gun, the birds arose with a noise like thunder and hovered in hundreds above the tree tops. They were of three species—the Great Blue Herons and the black-crowned night herons comprising the majority; but the beautiful white plumage of the American Egret was conspicuous through the feathered cloud, and these birds were quite numerous.

"Nearly all the trees throughout the area were loaded with nests, those of the two species first named being found upon the same tree, but the latter birds appeared to build in little groups by themselves. We did not climb to examine the nests; but most of them appeared to contain young birds. Many of the trees were dead, apparently from the effects of the birds building and roosting upon them."

These Herons sometimes select queer nesting sites; it is recorded that along the Colorado River they build their nests on the ledges of rock which project from the sides of the deep canyons.

Other heronries occur in Lake County, Jasper County, Carroll County and in many other places in Indiana and Illinois. The Great Blue Heron nests in April or May, and the young are reared and ready to fly during June or July. After they are reared, the young birds wander about the vicinity of the nesting place and from August to September begin their southward migration in isolated groups; some birds have been known to linger as late as November or December before starting for their southern home.

Like other birds which subsist upon fish, the Great Blue Heron is not very palatable for the table, although it has been used for culinary purposes, especially the young birds which are called "Squab Herons." They taste similar to the wild ducks, but have a strong and disagreeable flavor.

This great bird is being persecuted along with the egret and other herons, by the plume hunters, sportsmen, lumbermen and farmers, who have ruthlessly shot the old birds, leaving the young birds to perish or the eggs to spoil. It would be very desirable to have the few remaining heronries protected, as the birds do man no harm but rather do him considerable good in destroying noxious insects and rodents. This is one of the many birds which are worthy of protection.

COLLINS THURBER.

PLANT STUDIES

PART VIII, WEEDS AND THEIR WAYS

Plants that persist in growing where they are not wanted, or which, for any other reason, are obnoxious to us, we call Weeds. Very few of our weeds are native most of them having been brought from Europe either by accident or by design. Many plants that have been brought over were thought to have been either useful or ornamental, but have since spread over our prairies and become great nuisances. Some weeds have stolen a passage across the ocean in the ballast of ships or in packages of flower seeds.

Once over here, they settle down to stay, pretending to be honest citizens, though they never take out naturalization papers. In most cases they are more vigorous than our own plants and so often crowd these out. In their native land they had less space in which to spread, and also were obliged to compete with the crops, so that gradually they acquired better methods of distribution and of reproduction than are yet possessed by our plants. The Russian thistle, a well known emigrant, a vigorous plant indeed, sometimes growing to be three feet in diameter, breaks off at the base when the seeds are mature—one plant produces as many as 200,000—and is blown by the wind to great distances. The dispersal of seeds and their protection by the plant has been spoken of at another time, but

let us mention a very few of the ways by which weeds protect themselves.

There are numbers of weeds that the animals will not eat because of their bitter taste or bad odor, as, for example, the dog fennel, smart weed, tansy, or jimpson weed. The latter is poisonous. Other weeds are difficult on account of prickles or stinging hairs, as the thistles, cockleburs, and nettles, though the goat is said to manage them.

Lack of home or of nutrition does not discourage these outcasts of society. I wandered along the paved beach of Lake Michigan at Jackson Park, and gathered a thorny and meager bunch. It was almost impossible to dislodge the weeds from between the stones. I pulled at a splendid thistle which spread out an expanse of green top, but only succeeded in breaking it off. Dandelions, plantains, and pepper-grass crept out from the cracks, very sorry looking but, after all, successful. The fact that all, or most of the weeds growing in these narrow confines had adopted the rosette habit, made such homes possible; the petioles, or stems of the lower leaves, are longer than those of the upper leaves and the whole plant is thus flattened into a rosette. One will notice if he looks carefully at one of these plants, that the leaves overlap each other and so the plant does not get too much light and is somewhat protected from drought and heat.

Not all weeds are as ugly and disagreeable in their habits as cockleburs, for many are handsome and ornamental. Others, with a little cultivation become desirable plants; the jimpson weed is developed by gardeners for decorative purposes and is considered very beautiful. Sometimes a weed is raised to an honorable position by the discovery that it is of use, as is the case of the tomato, which was regarded by the early English colonists as a poisonous fruit.

When we consider the ease with which weeds grow, with no intentional help from us and, on the other hand, the labor that we expend on some of our garden flowers, the latter hardly seem worth while! Why do we prize so highly sickly pansies, and tea roses, pale and insect bitten? Wander along the roadside or take a short cut across a vacant lot and you will see dozens of weeds that might easily rank in beauty with some of our garden flowers. Imagine an autumn garden after this fashion; the fence ablaze with the brilliant black-eyed Susan and blue-eyed daisy; in front of these a mass of golden rod; on one side a great bed of thistles, their foliage dark green, their rosy heads the softest pink, and bursting seed pods all of silver; on the other a large bed of yarrow.

But I fear there would be prudent souls who would object to such a garden as this, and perhaps not altogether wrongly. Pansies and roses stay in their places quietly and respectably, but weeds are a vagrant throng and I fear will get over the tramp habit very slowly.

MARY LEE VAN HOOK.

BLOOMING OF THE FLOWERS

The birds have come, and the flowers have come,
The music of waters, ice bound and dumb
Through frigid nights and the long cold days,
Is heard again in the psalm of praise,
That nature, in sylvan temple bowers,
Sends up with the vernal birth of flowers.

Red are the buds and the leaves are green;
An azure haze on the hills is seen;
Like phantom ships in the crystal sky
The white-winged clouds go sailing by:
Sunshine and shadow and passing showers,
Sweeten the air with the breath of flowers.

—CHARLES F. FUDGE.

THE NESTING HABITS OF SOME BIRDS

Our illustration of bird's eggs in this issue represents those of interesting birds, some of which are well known, and others are those of species that are not commonly seen. Many of them are those of birds which are of great economic value because they are insect eaters.

The Great-crested Flycatchers (*Myiarchus crinitus*) nest quite throughout their range, which covers the United States east of the Great Plains. They nest in the woods as far north as southern Canada where they arrive early in May. Their homes are built in the hollows of trees and in post-holes. They will also, at times, occupy the boxes prepared for bluebirds and martins. The nest consists of fine twigs, weed stems, rootlets and grasses. They frequently also use cast-off snake skins, and feathers are used as a lining. The sets of eggs vary from three to six in number. They are noisy birds, especially when they first arrive from their winter home in the south.

The Kingbirds (*Tyrannus tyrannus*) nest quite throughout the United States east of the Rocky Mountains and are rare west of them. The nests are usually built near the extremity of a branch and from about eight to twenty-five feet above the ground. They seem to enjoy building in fruit trees, and the nests are compact and well constructed with "weeds, grass, moss, fine roots, strips of grapevine bark, leaves, string, and catkins, lined with thin strips of bark and horse hair." The common number of eggs is five, though the sets vary from three to five.

The Nighthawks (*Chordeiles virginianus*), also called the Bull-bats, breed quite throughout their range, from the Gulf States east of the Great Plains northward to Labrador. They build no nests. The eggs, two in number are laid on the bare ground in fields, on flat rocks in open places or, at times, on the flat roofs of either country or city houses.

The American Crows (*Corvus americanus*) have an extensive breeding range covering the whole of the United States, and as far north as the Fur Countries. Their bulky nests are quite variable in size and are made of sticks, vines, fragments of bark, which are firmly interlaced; and weeds and grass, frequently with clods of earth adhering, are often used. The nests are built in trees, usually not lower than thirty feet above the ground, and are usually lined with leaves and fine grasses. They are occasionally built in tall bushes. The number of eggs in the sets vary from two to seven.

The Red-headed Woodpecker (*Melanerpes erythrocephalus*) nests from Florida to northern New York and Manitoba, practically throughout the eastern United States. The nests of these familiar birds are found in both deep and open forests, in groves and orchards, and in solitary trees of fields, roadsides, or prairies. The nesting holes are sometimes excavated by the birds in large, living trees but usually in the decaying trunks of partially or fully dead trees, or in stumps. They often use holes made by other birds or animals and have been known to lay eggs in buildings. Telegraph poles are sometimes selected for a nesting place. The sets of glossy white eggs vary from four to six in number.

The Yellow-billed Cuckoo (*Coccyzus americanus*) builds a nest which seems far too slovenly for such a beautiful bird. It is usually built in low trees or briar bushes which are generally covered with growing vines. The nests vary both in size and in the method of construction. Sometimes it is a mere platform of sticks, covered with a few leaves and a small amount of grass or a few catkins. Others, which are generally larger are more carefully lined with leaves, catkins, dry ferns, mosses and feathers. While the sticks used in the foundation are usually quite short, they are sometimes from ten to fifteen inches in length. The

EGGS.
Life-size.

1. Great Creasted Flycatcher. 2. King Bird. 3. Night Hawk. 4. Crow. 5. Red-headed Woodpecker. 6. Yellow-billed Cuckoo. 7. Audubon's Caracara. 8. Black-billed Magpie. 9. Kingfisher. 10. Screech Owl. 11. Turkey Vulture. 12. Gamble's Partridge. 13. Bob-White.

nests are usually built from five to ten feet above the ground and the number of eggs in the sets varies from three to five.

The Audubon's Caracaras (*Polyborus cheriway*) have a limited range within the United States, including Florida, Texas, and Lower California. Their range also extends southward through Mexico and Central America to Ecuador and Guiana. They breed throughout their range within the United States and southward. They are related to the hawks and associate with vultures and feed, to some extent, on carrion. Their bulky nests are built in trees, such as the cabbage palmetto; in bushes; and sometimes, though rarely, in cliffs. The nests are merely bulky platforms built with branches, with a slight depression for the eggs, which may or may not be lined with fine twigs, roots and grasses. Two or three eggs form the sets.

The Black-billed Magpie (*Pica pica hudsonica*) has a breeding range in the western part of North America from the Plains westward to the Cascade Mountains, from Alaska southward to New Mexico and Arizona. The large and bulky nests of this bird are "a rustic lattice-work of sticks, measuring from two to three feet high, though not more than twelve to eighteen inches in the greatest diameter." The nests have an opening on one side and an arched roof. The openings and roofs are not always carefully made, and the sticks are cemented together by the use of mud. The lining consists generally of a few fine roots and grasses. The number of eggs in the sets is commonly seven, but they vary from five to nine.

The Kingfisher (*Ceryle alcyon*) has an extensive breeding range which nearly covers the United States. The eggs are laid in a hole excavated in a bank, usually of sand, gravel, or earth, on the borders of a stream or in a gravel pit. The excavation, dug by the bird, is usually about four feet in depth, but varies from three to nine feet, and the nest is at the end. The number of eggs in a set varies from five to nine, and they are laid in the bones and other food refuse cast away by the birds.

The Screech Owl's (*Megascops asio*) breeding range extends over eastern North America, from Georgia northward to New Brunswick and Minnesota. Its eggs are usually laid in hollow trees or stumps. In reality, no nest is built, for the eggs simply rest on a few leaves, rotten wood, chips, and at times a few feathers. The number of eggs in the sets varies from four to nine, though the usual number is not more than six.

The Turkey Vulture's (*Cathartes aura*) nesting range extends from New Jersey and the Ohio Valley, the Saskatchewan region and British Columbia, southward. The eggs may be laid on the ground beneath bushes, among rocks, or in hollow logs and stumps. The number of eggs in the sets vary from one to three.

The Gambel's Partridge (*Callipepla gambelii*) is also called the Arizona Quail, and its range includes "Western Texas, New Mexico, Arizona, southern Utah, southern Nevada, southern California in the Colorado Valley, and southward into northwestern Mexico." Its nest is on the ground at the base of a tree or under a bush. At times, it is at the side of a log or stump. It is usually simply a mass of dead leaves and a few feathers. The sets of eggs vary from eight to sixteen in number.

The Bob-white, or Quail (*Colinus virginianus*) nests throughout its range, which covers the eastern United States from southern Ontario southward to the Gulf of Mexico. The nests of this well known species are simply constructed in a loose manner with grasses, leaves, straw, and weeds. The nests are on the ground in the corners of fences, at the foot of stumps, which are surrounded by a growth of vegetation, along roadsides and in grain fields. In fact, they may be found in almost any quiet locality where there is growing vegetation to hide them. The sets of eggs vary from ten to twenty in number.

LITTLE BOY BLUE

"Dear little blossoms down under the snow,
You must be weary of winter, I know.
Hark! while I sing you a message of cheer,
Summer is coming, and Springtime is here."

It was Mr. Bluebird swinging in the tall apple tree, and singing so sweetly and so happily. He looked very handsome in his new spring suit. His blue cap and coat fitted him perfectly, and his russet red vest, with its trimming of soft white feathers, could not have been improved upon. His little wife was less gayly dressed, but he thought her the sweetest and dearest little mate in the world, and so he was telling her as they perched on the twig together. She had just arrived from the South, but Mr. Bluebird, as is the custom with most gentlemen birds, had come on some days before, and been busy house-hunting.

"I think, my dear," he said, after they had made love in their own sweet fashion, "we cannot find a better house than the one we lived in last year. It is so private and snug and cozy, too. Besides it will save us a lot of work, for it needs only a bit of cleaning."

"Oh, you lazy fellow," laughed Mrs. Bluebird, "you do like to find your home ready-made, don't you? I quite agree with you about using the old nesting place, though."

"It is settled, then," said Mr. Bluebird, "and I think we'd better get to work right away."

Mrs. Bluebird thought so too, and soon both were busy cleaning out the hole in the old apple tree, and gathering grass and feathers to make their nest. They were very cheerful little workers, singing sweetly all the while, for both were thinking of the babies who were coming to fill the tiny cradle, and their hearts were bubbling over with happiness. When the small home was quite finished, and they had examined it on all sides with much satisfaction, they flew off together for a little rest. Just then, Mr. and Mrs. English Sparrow came that way. They had decided that the maple tree was not a good place to build in, and they were on the lookout for something better. Mr. English Sparrow took a peep at the bluebirds' hole and thought it a very nice place indeed. But his wife was not satisfied with a peep only. She stepped right in, as independent as you please, and said it suited her so well she meant to stay there. Then the naughty thieves tore up the dear little nest Mr. and Mrs. Bluebird had made with so much care. You can imagine how the little owners felt when they came back and saw the dreadful thing that had happened.

It took Mr. Bluebird just one second to decide what to do, for, with all his dainty ways he is a pugilist when he fights for his home, and his little wife is amply able to help him. But the sparrows were inside and had the advantage. They sputtered and scolded at such a rate that, in spite of their pluck, the poor little "Blue people" had to go away. They didn't go far, though, and after awhile the Sparrows had to come out. Then there was a battle you may be sure, but this time the Bluebirds had the best of it and got their home back again. Mrs. Bluebird was sad over her ruined nest, but her little husband comforted her in his sweet way, and it was soon fixed as nice as ever. After that one of them always stayed at home on guard.

Before very long the great wonder had happened and five pretty blue eggs lay in the soft little nest. Mrs. Bluebird began her tiresome setting, and her devoted little husband perched on a twig near her, and sang his sweetest songs to cheer her. He also brought her the juiciest worms and the fattest grubs and never seemed tired of trying to please her. When at last the five wee babies came, it seemed as though he could not hold his happiness, and so he sang and sang. In her

quiet way Mrs. Bluebird was just as happy. She really thought her children the prettiest birdies that had ever lived. I daresay we would have thought them the hungriest, for the first thing they did was to open their big mouths and holler for something to eat.

Boy Blue, who came out of his egg first, and was the biggest, hollered the loudest. He really was a very greedy fellow, and vain too. Long before he could stand on his rickety little legs, he used to try to preen his feathers as he had seen his father and mother do. This was really very funny, for he had no feathers to preen, only quills with the ends of feathers sticking out. He next tried to fly before he had had a lesson, and one day he managed to climb to the edge of the nest, but he could only flap his wings and hang on for dear life.

He would have fallen out entirely if his mother had not come home just then, and pushed him in the nest with her bill. Afterwards she gave him a good pecking, which is a bird whipping. This was not much of a lesson though, for a few mornings later Mr. and Mrs. Bluebird returned from market to find Boy Blue quite out of the nest, and fighting with Bobby Sparrow. Mr. English Sparrow was looking on, and the sight of him made Mr. Bluebird so angry that there might have been another fight, had not their common enemy, Mr. Kingbird, come flying along, and sent them all to the safety of their nests.

"Never let this happen again," said Boy Blue's father, when they were home once more. "English Sparrows have bad reputations, and it is best not to be seen in their company. I don't wish you to be a coward, but a self-respecting bluebird fights only for his home and his family. Always remember that." And Boy Blue replied very meekly that he "would try."

LOUISE JAMISON.

BIRD LEGENDS IN RHYME

THE BLUEBIRD

Fair tune warbler of the early spring,
Tell us the secret of your mystic charm!
How do you bind our ever willing hearts,
Till fain to banish all that does thee harm?

Is it your happy, ever joyous song,
That to our hearts brings such a wealth of cheer?
Is it that you're the harbinger of spring
And tell us that the summer time is near?

Or is it that you wear a coat of blue—
So like our heaven above where best hopes lie?
I think 'tis this, we love you best of all
Because you seem a bit of God's blue sky.

Sometimes we like this story to repeat,
That angels fashioned you in heaven above—
And sent you down to warm earth's aching heart
With messages of cheerfulness and love.

While dropping through the bright blue skies to us,
Your fluttering wings took on their dainty hue;
When to your tender breast the brown earth gave
Her touch, for very love of you.

—EDITH DRURY LENINGTON.

THE BANQUET IN THE SNOW

The earth lay green and fair beneath the genial sun of May-time; the trees had unfurled their tender leaflets to the breeze and the wind flowers, the first of summer's reign, made the low hills radiant with their delicate blossoms, when stern winter, but lately departed, turned and once more laid his ermine mantle over the prairie.

Following the great flocks of wild ducks, geese and pelicans, of cranes and herons and crows, numberless hardy songsters, blackbirds and cheery sparrows, had left their winter homes and ventured into the great Northwest. In our grove and garden, many were the homes undergoing the process of construction, whose owners awoke in the chill morning air to find their favorite feeding ground covered by the snow.

Close by our cottage window is a clump of lilac bushes whose intricate leaves and branches held the soft snow forming a canopy over the bare ground beneath, where a few chipping sparrows were busily searching for food. Seeing this, I spread there a variety of grains and other food suitable for the varying tastes of my expected guests, and sitting at the window, I awaited their arrival.

The sparrows soon returned and began daintily picking up the smallest seeds. They were soon joined by the thrushes, veeries, wrens, catbirds and robins, and the white throated sparrows tossed the autumn leaves beyond the borders of their banquet hall. In the robin's nest were four blue-green treasures which the male covered from the falling snow while his mate came to feed at the board where all were welcome, though uninvited.

The grackles strode majestically to the feast, followed by their more timid cousins, the red-winged and yellow-headed blackbirds, and then dissension arose, the larger driving away the weaker, and those of equal strength fighting over food where there was abundance for all.

All day there were coming and going not alone the residents, but those who on their long migrations had stopped to rest their weary wings beneath the sheltering branches of our grove, and the nook beneath the canopy of snow resounded with their chatter save when they suddenly started forth at some false alarm.

On the succeeding day summer smiled on earth once more and the soft covering of snow was dispelled as if by magic while the birds renewed their songs of mirth and cheer, and the fairy banquet hall was deserted.

Long afterward a single stalk of barley growing from the rich loam gracefully waved a head of bearded grain above the spot. A fitting emblem, I fancied, of that long remembered banquet in the snow.

HATTIE WASHBURN.

FROM COL. CHI. ACAD. SCIENCES

157

DOUBLE YELLOW-HEADED PARROT.
(Amazona oratrix).
½ Life-size.

THE DOUBLE YELLOW-HEADED PARROT

(*Amazona oratrix.*)

The Double Yellow-headed Parrots inhabit Mexico. The forests of their range abound in trees of many kinds bearing nuts and fruits, upon which they feed. Not infrequently these Parrots will also visit corn fields, for they seem to be very fond of the kernels of corn. In the fields they are frequently caught by the owners and sold, but the adult Parrots caught in this manner rarely become fully tame in captivity, and do not learn to talk well. This Parrot to become a good mimic of the human voice and a good talker, must be raised from the nest by the hand of its keeper. It is said that by the time it is able to eat alone, and if it has been friendly with its keeper, it will have learned to repeat some words and possibly a few sentences. These Parrots are hardy birds and become easily acclimated in other places than their natural habitat. They do not resort to water courses to any extent, for in their habitat the dews are heavy and the leaves become saturated with water. These the Parrots suck at their roosting places before they leave in search of food. In captivity, however, they should be furnished with water. In some places abroad, it has been thought that these Parrots can live without water and it was not furnished to the captives for a long time. It was soon demonstrated, however, that the birds suffered, and unless they were given water, did not remain active and died quite soon.

It is said by the observers of these Parrots that they do not build a nest, but that deep hollows in high tree trunks are selected by the females. At the bottom of these hollows their two eggs are laid. The Parrots are wise birds, and not only are their eggs laid in places where they are free from usual dangers but the birds are also very careful not to betray the locations of their nests by their actions. The forests frequented by these Parrots are also the homes of many species of birds which are beautiful because of their richly colored plumage. It is said that there are nearly thirty species of parrots which range from Mexico southward through Central America, and also from the West Indies southward to Bolivia and Paraguay.

The Double Yellow-headed Parrot inhabits a wild and picturesque region of swamps, jungles, and savannahs and is greatly admired by those who frequent such localities. By many this species is considered one of the best of the talking parrots found in the Americas. The parents, while feeding their young, utter clucking sounds which are answered by the young birds.

It seems strange that in spite of the abundance of this species of parrots as well as the large number of individuals of many of the species, that so little has been published regarding their wild habits. It is said that the live birds of the species we illustrate will net the hunters about twenty dollars each when captured and sold.

MRS. HOPSEE SHOWS ME A PRAIRIE HEN'S NEST

It was an old-fashioned vegetable garden in which I saw and imagined many wonderful things.

Not the least of these strange things was Mrs. Hopsee, a little round woman who wore a stiff rustling brownish-green gown, and who was always picking hops. Her gown was so nearly the color of the vines, and rustled so like the leaves, that it was a long time before I discovered her, although I was in the garden every day. One drowsy afternoon, she seemed to come so close that I saw her little face, which looked very much like one of the little catkins. She spoke in a little rustling voice which I had thought was only the sound of the leaves, and she said, "I heard a little girl say that she wished to see a prairie-hen's nest. Come with me and I will show you one." Then she touched me and it seemed as if I became as small as herself, for we went out between the palings of the fence, and along the edge of the field till we came to a tangle of weeds in the corner of the old worm-fence,—and there was a shallow hole in the ground lined with broken stems and grass which looked as if it had been thrown together to get it out of the way.

Lying on this pile of rubbish were fourteen eggs of a grayish or yellowish-white, and about half as large as the eggs of my old "Speckle" at home.

One egg had rolled a little way from the nest and I was about to replace it when Mrs. Hopsee said, "hush—sh" and drew me backward to a point where we could not be seen by the mother bird, who was returning to her home. Then the beautiful speckled creature came into view, walking with a quick, jerky step and turning her bright dark eyes in every direction. She appeared to be all brown and gray mingled, but I could not be sure of the colors, because she looked light while in the sunshine, and darker in the shade. She espied the egg which had rolled from the nest, and putting her bill to the ground, she rolled the egg over and over just as a boy rolls a snowball until she had replaced it,—then she glided onto the nest so quickly that the next moment I could barely distinguish her from the moving shadows of the weeds. Suddenly Mrs. Hopsee disappeared and I found that I had only been dreaming over the description of a nest in the new Bird-book which Uncle Wesley had given me.

MILLIE NOEL LONG.

IN THE ORCHARD

The first fellow in the orchard, and the most aggressive, is Mr. Bluejay. He held the fort through the winter, close to our neighbor's corn house, with the merry jingling of sleigh-bells; at least his pipings sounded like them. Then he introduced himself to every corner with a rasping scrape of his own name, "Jay, jay, *jay!*" till your ears almost rang. Now, he and his less assertive mate are as whist as mice, 'tending the babies, I suppose. In fact, Mr. Jay hardly comes in sight, only now and then to raid a robin's nest, if he dare.

The orchard is a small one of apple, pear, cherry and one peach tree. A stately elm guards it on the side towards the road, though the street is some distance away. The entire orchard is protected by a row of thickly-foliaged pine

trees, the shelter, in winter and summer, of hosts of songsters.

In the elm an oriole has hung his nest, and every hour of the day he flashes through its branches like a flaming spirit. Next after the robins' songs, in the early morning, comes his clear whistle, ending with "Just see here!" in a whistling staccato.

The most in evidence of all the birds is the robin. If you sleep on the side of the house toward the orchard, you will be aware, about half past three, of his twitter here and there through the trees; and presently, one bolder, or wider awake than the others, bursts into song. Soon another, and then another follows. Perhaps you drop off to sleep, and suddenly you are awakened by a perfect volley of song from a thousand robin-throats, you are sure.

Two hours from then, when you are sitting down to breakfast, you notice a score or less of robins breakfasting in full view upon the back lawn. Just watch them turning their heads on one side and bending close to the ground to listen to the silent steps of the earthworm! Then dab goes their bill into the soft earth, and up comes Mr. Worm!

Robin Redbreast has already fledged one nest full of cavern-mouthed infants and I think he is starting his second nest over our wood shed door. He chose the chip-yard where the chickens scratch, for the dumping ground of his babies, much to their sorrow, as it turned out; for the hens waged war on the poor little fledglings as soon as they appeared. But the concerted action of all the robins and blackbirds in the neighborhood put the hens to rout forthwith, and poor little robin was left to the care of his elders, to be guided down into the creek lot, where low, bushy trees, and fresh water, and the early worm, and seclusion have created a paradise there for fledglings.

Up in the orchard the airy gold-finch has begun to dart his zig-zag lines and call his merry chick-o-ree. The dear little yellow warblers have come, too, and one of them graces my breakfast with his exquisite ditties. Mrs. Yellow Warbler has built her a home just around the corner, in the honeysuckle on the porch. She does not know that I had slyly dropped the combings of my hair from the chamber window for her especial benefit, but she has cunningly woven them, gray hairs and all, into her dainty nest.

Occasionally Chickadee makes a call at the orchard and spends a few minutes gossipping. I have accused her of hiding her nest in the lower part of the orchard, down a little declivity, where the tree-trunks are knot-holey and the branches are thick, and the noises of man are comparatively far away. Mr. Frank Chapman says he has been so fortunate as to have a chickadee light on his hand. So have I, and they took hickory-nut meats from my fingers. One even lit upon my head. I feel myself set apart as great in the bird world in consequence.

I must not forget the numerous sparrows that make their home here. Most numerous and noisiest is the English sparrow, but he was born without a spark of romance, so we will skip him. The grasshopper sparrow, chippy, and song sparrow fill up all the vacant nesting places. They mostly take the outskirts of this bird town, where they can hear the creek gurgling, and can soar away to hidden haunts.

"Peace, peace, be unto you, my little children," is the benediction which the Oberlin girl has translated for us from the strain of the song sparrow, and peace indeed he leaves with us from the very loveliness of his song.

Somewhere in the orchard, though I can't tell where, a wren has a hidden retreat, from which he appears to give us a scolding or a merry ditty.

Only a week ago the catbird made his notable appearance as prima donna of the orchard, and now the whole place is turned into a concert hall with all sorts of musical instruments and occasionally a cat-call when bird temper gets the better of good nature.

AMANDA M. E. BOOTH.

THE BAY-BREASTED WARBLER

(*Dendroica castanea.*)

This tastefully colored and beautiful little Warbler, while it has quite an extensive range, and migrates through the eastern portion of North America as far to the westward as the Great Plains, it is not a well known bird. During its migrations either in the spring or fall, it does not tarry long, and as Dr. Chapman has said it is "generally uncommon enough to be considered somewhat of a prize." At times, however, it is quite common but this usually only occurs in the northward journey of the spring. Its nesting range extends from northern New England and northern Michigan, northward to Labrador, and Hudson Bay, and it winters through Central America and in South America to Colombia. Regarding the migrations of these Warblers, Mr. Maynard has said: "Avoiding the eastern and middle states, the majority pass along the borders of the Great Lakes, through Ohio, southern Illinois, down the Mississippi Valley, across into Texas, and so on into Mexico and Central America, where they winter." Probably the reason why they are usually considered much rarer during the fall migrations than during those of the spring, is that the young Bay-breasts bear a striking resemblance to the young of the black-poll warblers which are generally very abundant during the fall southward migrations. Even the identification of specimens of the young of the two species is frequently very difficult, and while they are alive, it is practically impossible when free. Many observers who have listened to the song of these Bay-breasted Warblers have likened the sound at the beginning to that of the black-poll, and at the end to that of the redstart. Mr. Langille has said, the song "bears to my ear no resemblance whatever to either, but is a very soft warble, somewhat resembling the syllables *tse-chee, tse-chee, tse-chee, tse-chee, tse-chee* but far too liquid to admit of exact spelling." Mr. Langille's views of the sweet voices of these birds are certainly very satisfactory to all who have heard them singing.

During the fall migrations, when it is so difficult to distinguish between the Bay-breasts and the black-polls, the observations of Mr. Frank W. Langdon may be helpful. He says: "A comparison of specimens of both species shows that the chin or feathered space between the forks of the lower mandible, is considerably wider in *castanea* (Bay-breasted) than in *striata* (black-poll)—arguing a greater width of base of bill in the former species. The bill of *castanea* is generally the larger in every way but its greater width at the base is especially evident. This character appears to be constant in a number of specimens from this (Cincinnati) and other localities, and being an anatomical peculiarity, it is, of course, much more reliable as a diagnostic mark than any slight differences in coloration."

The nests of these Warblers are compact and somewhat cup-shaped structures. They are usually built in coniferous trees at a height of from five to twenty feet above the ground. The materials used in their construction are fine strips of bark, small and wiry twigs, small and fibrous roots, and they are lined with the down of plants, moss, and animal hairs. The usual number of eggs in a set is four. They are white with a slight tinge of bluish, and speckled with reddish brown at the larger end.

BAY-BREASTED WARBLER.
(Dendroica castanea).
Life-size.

A MODERN NARCISSUS

Sir Redbird was forlorn. His Lady, faithful mate of many seasons, was dead. In vain his friends sought to console him; in vain the dainty maiden-birds in his neighborhood preened their feathers and sang their sweetest songs to distract him; his lordship refused comfort.

Six months passed, and finally, one day, someone noticed a change in him. Once more his brilliant plumage was well arranged, once more he sang from aloft his song, "What cheer, what cheer, what, what, what." Curiosity was rife among the birds, and some, more forward than the rest, followed him one day, they found him swinging on the branch of an orange tree, close to the closed window of a packing house. Inside the glass, on another branch, was another bird, which cocked its head, ruffled its feathers, and swang up and down in concert with Sir Redbird. So happy was his lordship that he sang his sweetest, clearest song, his little throat fairly bursting with the tale of the love which this beautiful bird in the packing house had inspired in his breast.

In a little while he flew away, and returned with a great, black mulberry in his beak. Flying against the glass, he pressed the fruit to the bill of his love, who had flown to meet him. Again and again he flew, until the glass was crimson with the juice and a pile of seeds lay on the sill below. Next he tried a worm, but that she would not take, and so he had to sit off by himself, and eat alone.

Day after day he did the same thing until, the season being nearly over, someone moved the boxes stacked against the inside of that closed window, and lo! the bird never came again. In vain did Sir Redbird sing his loveliest songs, in vain did he bring his sweetest berries; his little love was gone.

After watching for many weeks he finally gave up the search, never knowing it was but his own reflection he had been making love to, all of the time.

MILDRED VAN DEMAN.

A STORY OF A BLUEBIRD

I had read many times of the success of bird-lovers with wild birds in cages, and I had resolved to try what I could do in that line whenever I found the opportunity. One beautiful day in May I discovered a Bluebird's nest in an old pump near by. I watched it with zealous care and when the wee birdlings were hatched the first day of June I redoubled my attentions. The days crept on and my fledglings grew. The twelfth, thirteenth, and fourteenth day passed. The fifteenth day, at noon, the birds were snugly sleeping in their cozy nook and I saw no signs of leaving. Imagine my consternation a little after four o'clock that afternoon to see the nest empty! Everywhere I might look I could find no trace of the young birds. I searched as long as I could that night and renewed my quest early the next morning. I was sure the birds could not be very far off, for the nearest trees were many rods away. At last, in the wet grass I found one bedraggled bird, and still later, the half-eaten body of another. The fate of the third blue baby I never knew. The one I captured I took home with me, feeding it often with egg and potato and giving at each meal a few drops of wa-

ter. This was Friday. Saturday I continued to feed it every hour and oftener if it called, and in the late afternoon the birdling first helped itself to food. That ended my services as nurse. Henceforth I studied the diet and disposition of my bird and sought to keep it healthy and happy. I read that grated carrot was nice food and I took pains to bring in a fresh carrot from the garden every morning. Sand I furnished daily, and my Bluebird grew and throve. It soon began to trill a little song, sweet and low but very musical.

Flies and spiders are its special relish. Fearing a time when I could not get such luxuries for it, I one day scraped a little beefsteak and gave it to the bird. This was even better than the insect dainties. Berries, lettuce, cherries, sweet corn, oatmeal, crackers, and celery vary the bill of fare.

I do not know the gender of my pet but certain dainty ways make me think of it and speak of it as lady bird. Is the bird happy? Yes, if her daily song and her affection for her friends tell anything of her frame of mind. She is a source of constant pleasure and study to us at home and we delight in trying to interpret her different notes. For instance a long shrill note sounding much like "Come here, come here," tells us she is lonesome and wants some one to talk to her, sit near her or to take her out for recreation. She has another call for food while her alarm note of "Quit, quit, quit" will bring the whole household to her relief. This is invariably her call if the cat approaches her cage, but of the dog she has no fear. Often when out of the cage she will alight on his head or back. She knows every member of the family and is perfectly fearless with us. Sometimes I will put my hand into the cage and ask her if she wants to come out. Nearly always she will hop into it and nestle there till out of the cage. Then she is ready for any diversion and she seems to expect to be entertained as a visitor, too, manifesting impatience, sometimes scolding if she is not satisfied with the attention given her. She answers readily to her name going from one friend to another as she is called. She will perch on the finger of one and preen her pretty feathers, fly to another and pause long enough to sing her bluebird song, then alighting on my desk, she will make a queer medley of the pens, pencils and so forth. She examines every new thing and if it does not please the little midget's fancy she will charge at it with rumpled feathers and snapping bill.

She has her playthings too. Toothpicks, a gaily colored marble and a tiny bell are her familiar toys. She is quite vain and will stand many minutes before a glass admiring herself in different poses. She is shy of strangers and will protest loudly if we attempt to take her from the cage when anyone strange to her is in the room.

Her cage is her home and she objects to a change of quarters. Put her into another cage and she will fret continuously till put back to her accustomed place. One can scarcely credit the great intelligence in that wee bit of bird-life, but what I have written of my pet is true in every particular and I'll be happy to introduce her to any bird-lover who wishes to make her acquaintance.

BERTIE M. PHILLIPS.

FROM COL. CHI. ACAD. SCIENCES

155

BLACK-NECKED STILT.
(Himantopus mexicanus).
½ Life-size.

THE BLACK-NECKED STILT

(*Himantopus mexicanus.*)

The range of the Black-necked Stilt, an interesting bird whose habits and general appearance have caused much discussion, is quite extensive. While it is far from common in the eastern United States, its range may be given as covering the whole of temperate North America from the northern United States southward to the West Indies, Brazil, and Peru. It is fairly abundant in the western portion of its range. It bears a few other common names, such as Lawyer, Long-shanks, and Pink-stockings.

Of all the grotesque forms among our wading birds, the Black-necked Stilts, I think, are the most prominent. Their legs are longer in proportion to the size of their bodies than are those of any other birds, excepting the flamingoes. In the southern states, especially Louisiana and Texas, and also in southern California, it is probably the best known of all the waders, because of the fact that almost every pond has a pair of these birds which are always on the alert and quickly give the alarm of the approach of an intruder. The shrill cry alarms the other birds in the vicinity, and the lives of many egrets and ibises have thus been saved by the warning notes of these watchful birds. This is, however, not always their habit. Dr. Elliott Coues relates the following as his experience with the Stilts at Los Pinos, New Mexico. He says, speaking of a flock: "They offered a very striking and pleasing effect, wheeling in easy flight, the flock appearing one moment black, the next white, as they showed alternately the upper and under parts, with the long, bright-tinted legs heightening the contrast of color. Although not heedless or unduly familiar, they were not very shy. Besides being almost unacquainted with the danger that may lie in man's approach, they appeared of a gentle, unsuspicious nature, the more noticeable in contrast with the restlessness and watchfulness of most waders." Dr. Coues also writes of approaching a large flock, by walking quietly and slowly. The Stilts saw him, but stood motionless and seemed to be looking at him with more curiosity than fear. In an instant, however, as if they had but one mind in common, a thought occurred, and they very quickly flew away.

The antics of the Stilts when suddenly alarmed are very amusing, as they usually run, when on the ground, a few steps in order to obtain momentum for flight, and in their haste will often stumble and fall to the ground, and the efforts they make, at times, to recover their balance is very ridiculous. On the other hand, when they are quietly walking and feeding, particularly when wading in four or five inches of water, they are extremely graceful, the slender neck and head being moved and carried with dignity.

The confidence which these birds often have in man may be shown by the fact that a pair spent several days on a small pond within five hundred feet from the house in which I was staying in Galveston, Texas. Inside of the town limits, they soon became as tame as the boat-tailed grackles and buzzards, and when a dog would run at them they would circle above him and make quick darts at his head. Sometimes they would approach so close to the dog that I fully expected to see one of them caught.

It is said by some observers that the Stilts sometimes nest in quite large groups. At times, their nests are merely slight depressions in the ground, which are lined with dry grass. It is also said that the nests are at times built with small twigs and roots, in grass at the margin of bodies of water. The number of eggs in a set varies from three to four in number. They are of a greenish-yellow color and spotted, blotched and lined with varying shades of brownish-black. The nests are always located near bodies of water.

FRANK MORLEY WOODRUFF.

HOUSE FLIES

There are several species of flies which are found in houses, but only one is properly called the House Fly *(Musca domestica)*. This one is a medium sized grayish fly with its mouth parts spread out at the tip, for sucking liquids. It breeds in manure and door-yard filth, and is found all over the world. On account of the conformation of its mouth, it cannot bite, but most people think that this insect does occasionally indulge in venous fluid.

Another fly which is found in houses is called the stable fly and differs from the House Fly in that its mouth parts are formed for piercing the skin. It is perhaps second in abundance to the House Fly. A third species is commonly called the cluster fly *(Pollenia rudis)* and is very frequent in the houses in the spring and fall. It is larger than the House Fly with a dark colored, smooth abdomen and a sprinkling of yellowish hairs. It is not so active as the House Fly and in the fall is very sluggish. The fourth species is another stable fly *(Cyrtoneura stabulaus)* and the fifth is called the blue bottle fly *(Calliphora erythrocephala)*. This fly breeds on decaying animal material. The sixth species is the green bottle fly (*Tucilia caesar*). A seventh species is smaller than any so far mentioned and is known as the small House Fly *(Homalomyia canicularis)*. It is distinguished from the others by its paler and more pointed body and by its conical shape. The male is much commoner than the female and is distinguished by large pale patches at the base of the abdomen. When seen on the window-pane, the light shines through that part of the body. There is still another species, and this one is even smaller, a small jet black fly, known as *Scenopinus fenestralis,* which has become abundant in late years. It breeds on the dust under the carpets, having a white, very slender, almost thread-like larvæ.

As we go farther south, the House Fly becomes more numerous and more troublesome. The number of generations annually increases as the season becomes longer, and with warm climate, the development of larvæ becomes more rapid. The House Fly will lay its eggs freely on fresh horse manure in an undisturbed condition. When the manure is spread out, the flies will not lay their eggs on it.

The three distinct larval stages are as follows: Egg from deposition to hatching, one-third of a day; hatching of larva to first molt, one day; first to second molt, one day; second molt to pupation, three days; pupation to emergence of the adult, five days. The life of a house fly approximates ten days.

BURTON B. REINEMAN.

AMONG THE HILLS

Along the man-path on the quiet hill,
The sneering scar of steel lies glistening;
But some dear glades there be, where hearts may still
Unto the silence of the woods be listening.

Up to the pleasant dome of God's blue sky,
The reek of cities rises drearily;
But, deep within the forest, you and I
Rest, and the days slip by unwearily.

—GEORGE H. MAITLAND.