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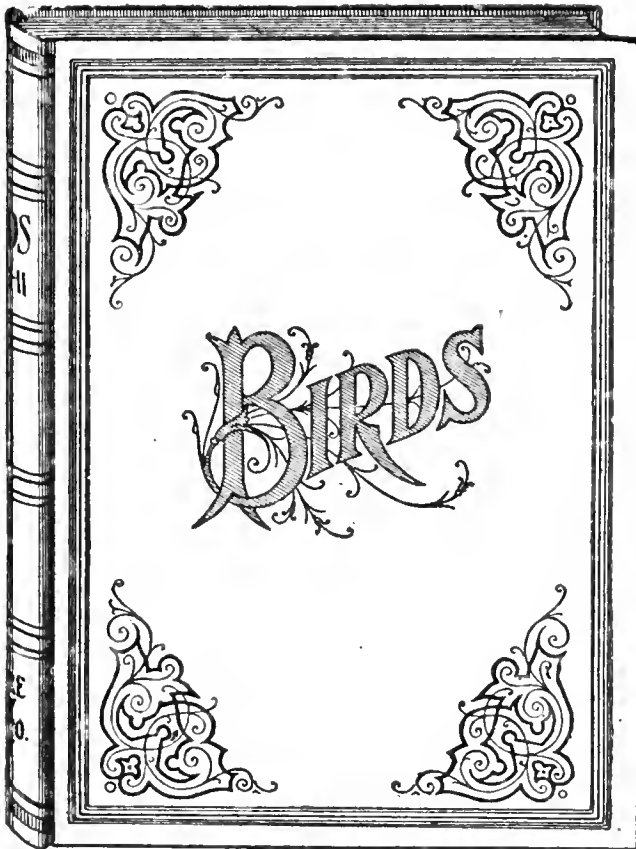
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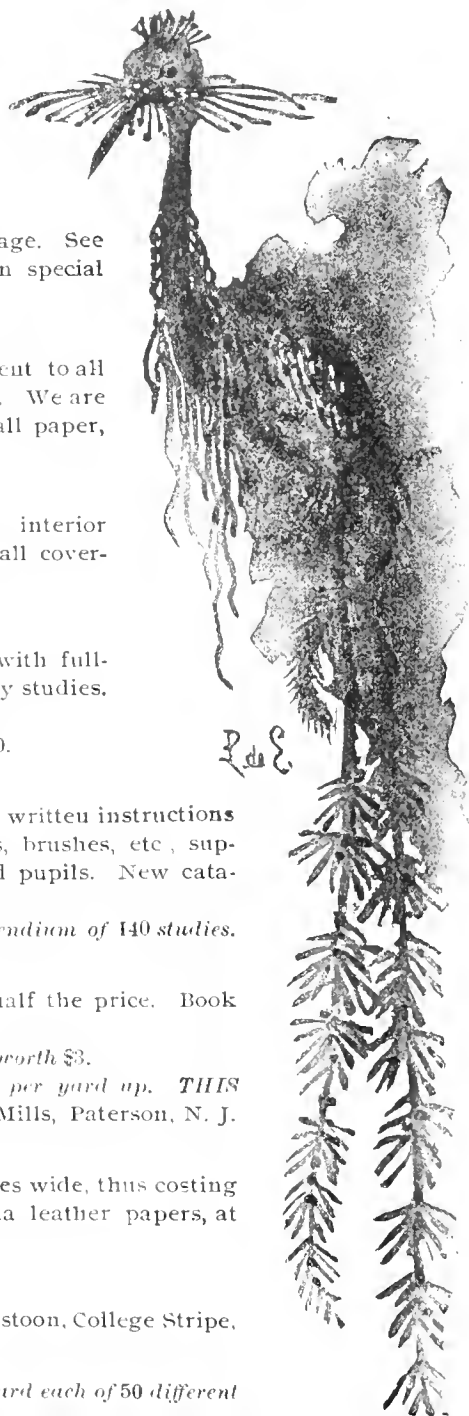
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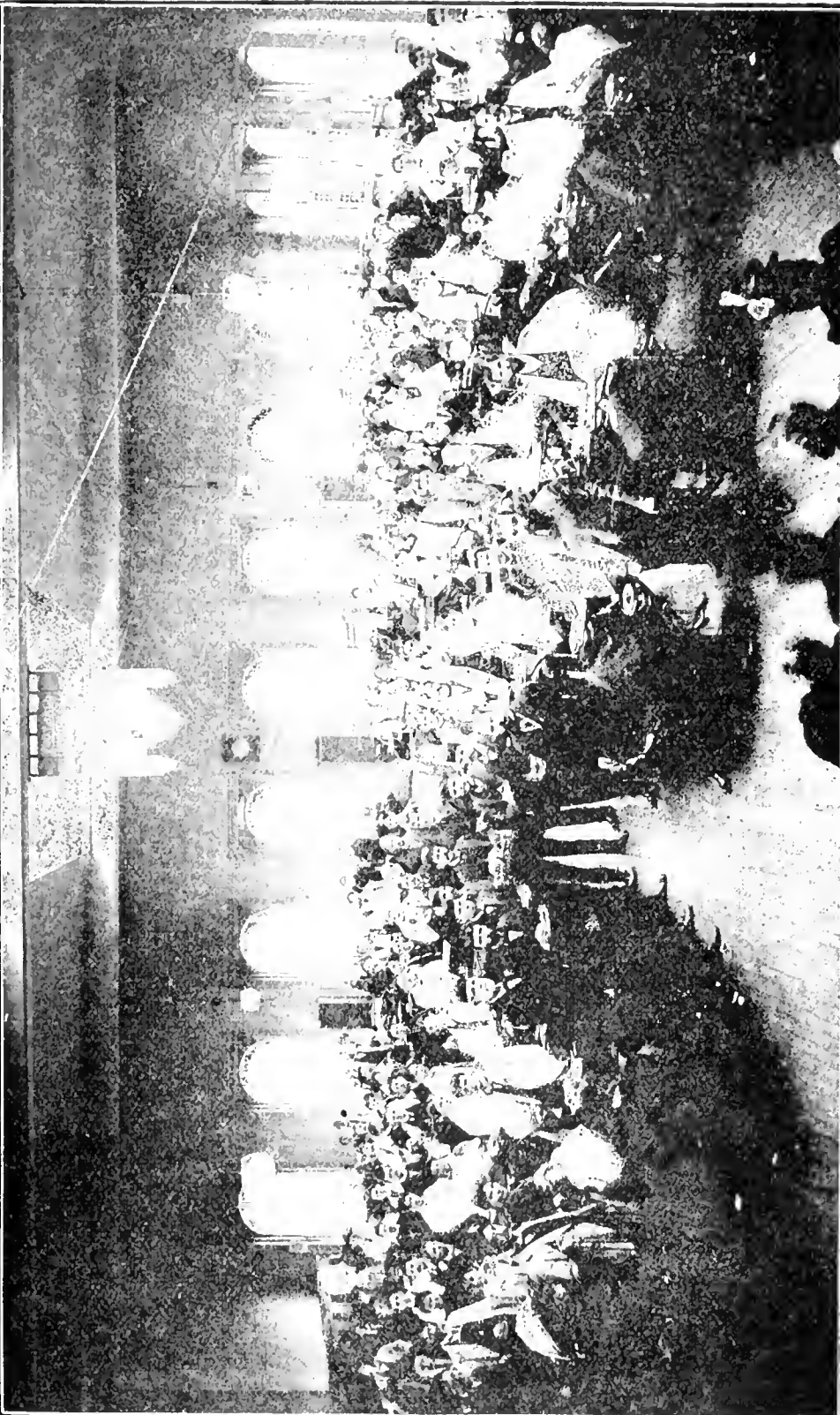
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AND

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A MONTHLY SERIAL

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOLUME IV.

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INTRODUCTION.



As heretofore announced, beginning with the present, each number of BIRDS AND ALL NATURE will present at least two birds, three or four animals, and the remaining plates will depict such natural subjects as insects, butterflies, flowers, geological specimens, etc. In fact, everything in nature which can be brought before the camera will in its due course be portrayed.

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SQUIRREL TOWN.

Where the oak trees tall and stately
Stretch great branches to the sky
Where the green leaves toss and flutter
As the summer days go by,
Dwell a crowd of little people,
Ever racing up and down,
Bright eyes glancing, gray tails whisking ;
This is known as Squirrel Town.

Bless me, what a rush and bustle,
As the happy hours speed by !
Chatter, chatter—chatter, chitter,
Underneath the azure sky.
Laughs the brook to hear the clamor ;
Chirps the Sparrow, gay and brown
“ Welcome ! Welcome, everybody !
Jolly place, this Squirrel Town.”

Honey-bees the fields are roaming ;
Daisies nod and lilies blow ;
Soon Jack Frost—the saucy fellow—
Hurrying, will come, I know.
Crimson leaves will light the woodland ;
And the nuts come pattering down.
Winter store they all must gather—
Busy place, then, Squirrel Town.

Blowing, blustering, sweeps the north wind—
See ! the snow is flying fast.
Hushed the brook and hushed the Sparrow,
For the summer time is past.
Yet these merry little fellows
Do not fear old Winter's frown ;
Snug in hollow trees they're hiding.
Quiet place is Squirrel Town.

—ALIX THORN.



BIRDS AND ALL NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. IV.

JULY, 1898.

No. 1.

WILSON'S SNIPE.

WILSON'S SNIPE, otherwise known as the English Snipe, Jacksnipe, and Guttersnipe, and which is one of our best known game birds, has a very extended range; indeed, covering the whole of North America, and migrating south in the winter to the West Indies and northern South America. Its long, compressed, flattened, and slightly expanded bill gives it an odd appearance, and renders it easily recognizable. From March till September the peculiar and cheerful "*cheep*" of the Snipe may be heard in the larger city parks where there are small lakes and open moist grounds, and where it can feed and probe with its long, soft, sensitive, pointed bill in the thin mud and soft earth for worms, larvae, and the tender roots of plants. In some localities in the Southern states, during the winter months, thousands of Snipe are killed on the marshes where they collect on some especially good feeding ground. We have rarely seen more than two together, as they are not social, moving about either alone or in pairs. Its movements on the ground are graceful and easy, and, while feeding, the tail is carried partly erect, the head downward, the bill barely clearing the ground. We recently watched one through an opera glass, but the frequency of its changes from point to point and the rapidity of its flight discouraged long observation. The

flight is swift, and, at the start, in a zigzag manner. Sportsmen say it is a most difficult bird to shoot, requiring a quick eye and a snap shot to bag four out of five. Col. Goss said that he always had the best success when the birds were suddenly flushed, in shooting the instant its startled "*scaipe*" reached his ear, "as it is invariably heard the moment the bird is fairly in the air."

It is entertaining to watch the courtship of these birds, "as the male struts with drooping wings and wide spread tail around his mate in the most captivating manner, often at such times rising spiral-like with quickly beating wings high in the air, dropping back in a wavy, graceful circle, uttering at the same time his jarring, cackling love note, which, with the vibration of the wings upon the air, makes a rather pleasing sound.

The snipe's nest is usually placed on or under a tuft of grass, and is a mere depression, scantily lined with bits of old grass and leaves. The eggs are three or four, greyish olive, with more or less of a brownish shade, spotted and blotched chiefly about the larger end with varying shades of umber brown.

If you want to identify Wilson's Snipe, have with you a copy of this number of BIRDS AND ALL NATURE as you stroll along shore or beach. Our picture is his very image.

THE BLACK WOLF.

Some of my little readers have probably heard about the small boy who thought it rare fun to frighten his friends by crying "Wolf! Wolf!" as though he were being pursued. They lived in a wild part of the country where Wolves were frequently seen, but in time they grew used to Johnnie's little joke, so that one day when he cried "Wolf! Wolf!" in frantic tones they paid no attention to him. Alas! that day a Wolf really did sneak out of the woods—a hungry Wolf—and poor little Johnnie furnished him a very satisfactory meal. There is a deep meaning attached to this fable, which you had best ask your teacher to explain.

Well, the Black Wolf, whose picture we present is a fierce looking fellow indeed. We have heard so many stories about Wolves attacking travelers and their horses that we have thought them full of ferocity and courage, when in fact they are the most cowardly of all our animals. Unless pressed by extreme hunger they never attack animals larger than themselves, and then only in packs. A cur dog, as a rule, can drive

the largest wolf on the plains. Lean, gaunt, and hungry looking, they are the essence of meanness and treachery. Their long, bushy tails are carried straight out behind, but when the animal is frightened, he puts his tail between his legs just like the common dog.

There are men who make it a business to go Wolf hunting in order to secure their "pelts," or hides. The bait they use is the carcass of some animal, elk, deer, or coon, which they impregnate with poison, and leave in a place which will do the most good. In the morning sometimes as many as fifty dead Wolves will be found scattered about the carcass whose flesh they had so ravenously devoured. A Wolf skin is worth about one dollar and a half, so that it pays a hunter very well to "catch" a number of these mean animals.

They are sometimes hunted on horseback with hounds, but they can run with such speed when frightened, that no ordinary dog can keep up with them. Among the pack are one or more greyhounds, who bring the wolf to bay and allow the other dogs to come up.



THE BLACK WOLF.

AT one time the Black Wolf of America was considered by naturalists to be only a variety of the common Wolf, but it is now believed to be a distinct species, not only by reason of the color of its fur but from differences of stature, the position of the eye, the peculiar bushiness of the hair and other evidence entitling it to rank as a separate species. This variety is referred to as an inhabitant of Florida, and is described as partaking of the general lupine character, being fierce, dangerous, and at the same time cowardly and pusillanimous, when they find themselves fairly enclosed. If imprisoned in even a large space, they crouch timidly in the corners, and do not venture to attack man when he enters the cage. Audubon mentions a curious instance of this strange timidity in a ferocious nature, of which he was an eye-witness: "A farmer had suffered greatly from Wolves, and determined to take revenge by means of pitfalls, of which he had dug several within easy reach of his residence. They were eight feet in depth and wider at the bottom than at the top. Into one of these traps three fine Wolves had fallen, two of them black, and the other a brindled animal. To the very great astonishment of Mr. Audubon, the farmer got into the pit, pulled out the hind legs of the Wolves, as they lay trembling at the bottom, and with his knife severed the chief tendon of the hind limbs, so as to prevent their escape. The skins of the captured animals were sufficiently valuable to reimburse the farmer for his labor and his previous losses."

The Esquimaux use traps made of large blocks of ice, constructed in the same manner as our ordinary mouse-

trap with a drop-door. The trap is made so narrow that the Wolf cannot turn himself, and when he is closed in by the treacherous door, he is put to death by spears.

Wood says that when Wolves and Dogs are domesticated in the same residence a mutual attachment will often spring up between them, although they naturally bear the bitterest hatred to each other. A mixed offspring is sometimes the result of this curious friendship, and it is said that these half-breed animals are more powerful and courageous than the ordinary Dog. Mr. Palliser possessed a fine animal of this kind, the father of which was a White Wolf and the mother an ordinary Indian Dog. It is a well-known fact that the Esquimaux are constantly in the habit of crossing their sledge Dogs with Wolves in order to impart strength and stamina to the breed. Indeed they are so closely related to Wolves that there can be no question that they are descended from them.

The Wolf produces from three to nine young in a litter. In January the mother Wolf begins to prepare her habitation, a task in which she is protected or assisted by her mate, who has won her in a fair fight from his many rivals. He attaches himself solely to one mate, and never leaves her till the young Wolves are able to shift for themselves. The den in which the young cubs are born is warmly lined with fur which she pulls from her own body. The cubs are born in March and remain under her protection seven or eight months. They begin to eat animal food in four weeks after birth.

The Wolf's whelp will at last a Wolf become
Though from his birth he find with man a home.

Arabian Proverb.

AN ARMADILLO AS A PET.

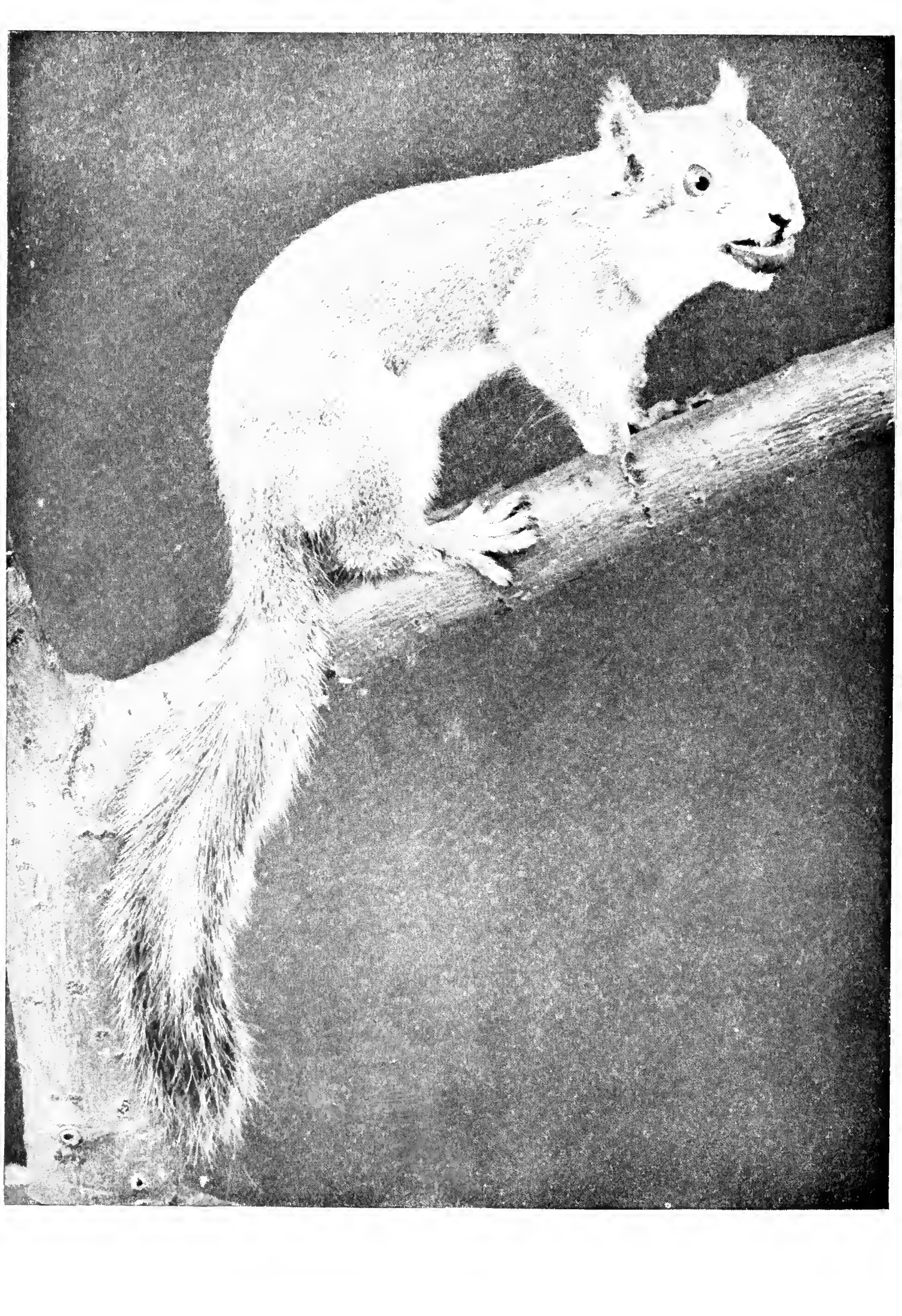
NURSE McCULLY of the Royal infirmary, Liverpool, has an Armadillo as a pet. This little animal, which is a native of South America, was given to the nurse by a sailor when it was quite a baby, weighing only three pounds. It was most advantageously reared on peptonized milk,—ordinary cow's milk being too strong,—and the little creature now weighs 11 pounds. Its present diet is peculiar, consisting of bread and milk, bacon, apples, and sardines. Also, it supports its adopted

country by eating English tomatoes, but rejecting American ones. It sleeps all day, rising at 6 p. m. and running all over the ward. Its chief amusement seems to be tearing to pieces the patients' slippers. It knows its mistress, and will readily come to her. The little Armadillo sleeps in a warm barrel, furnished with bran and flannel. It has now been at the Royal infirmary for about four years.—*Strand Magazine*.

AFRICAN FOLK LORE.

AFRICAN LITERATURE is very rich in fables of animals, which may be divided into the two categories of moral apologues and simple narrations. In the former such an identity is noticeable with stories of the peoples of Asia and Europe as almost to cause us to think that both proceed from a common source whence they were drawn in prehistoric times. To this may, however, be opposed the hypothesis of an original and simultaneous origin in different places; a question for the discussion of which we have not yet all the elements. One of the most brilliant of the African apologues comes from Somaliland, and is perhaps better than the corresponding Euro-

pean fable: "The Lion, the Hyena, and the Fox went hunting, and caught a Sheep. The Lion said, 'Let us divide the prey.' The Hyena said, 'I will take the hinder parts, the Lion the fore parts, and the Fox can have the feet and entrails.' Then the Lion struck the the Hyena on the head so hard that one of its eyes fell out, then turned to the Fox and said, 'Now you divide it.' 'The head, the intestines, and the feet are for the Hyena and me; all the rest belongs to the Lion.' 'Who taught you to judge in that way?' asked the Lion. The Fox answered, 'The Hyena's eye.'"—*Popular Science Monthly*.



THE RED SQUIRREL.

HICKAREE is the common name of the Red Squirrel, so called from the cry which it utters. It is one of the most interesting of the family, and a pleasing feature of rural life. During the last weeks of autumn the Squirrel seems to be quite in its element, paying frequent visits to the nut trees and examining their fruit with a critical eye, in anticipation of laying up a goodly store of food for the long and dreary months of winter; as they do not, as was formerly asserted, hibernate, but live upon the stores they secure. A scarcity may mean much suffering to them, while an abundance will mean plenty and comfort. In filling their little granaries, they detect every worm-eaten or defective nut, and select only the soundest fruit, conveying it, one by one, to its secret home. Feeding abundantly on the rich products of a fruitful season, the Squirrel becomes very fat before the commencement of winter, and is then in its greatest beauty, the new fur having settled upon the body, and the new hair having covered the tail with its plumy fringe.

Did you ever watch a squirrel open and eat the contents of a nut? It is very curious and interesting. The little fellow takes it daintily in his fore-paws, seats himself deliberately, and then carrying the nut to his mouth, clips off the tips with his sharp chisel-edged incisor teeth. He then rapidly breaks away the shell, and after peeling the husk from the kernel, eats it complacently, all the while furtively glancing about him, ever

in readiness to vanish from his post at any suspicious disturbance. The food of the Squirrel is not vegetable substances. Young birds, eggs, and various insects constitute a part of his food. He has the destructive habit of nibbling green and tender shoots that sprout upon the topmost boughs, thus stunting the growth of many a promising tree. He visits the farmers' corn-cribs, too, and thus renders himself somewhat obnoxious. All in all, however, he has his uses, and should not be wholly exterminated. Tender and juicy, he has always paid for his apparent despoliation, and his destruction of much injurious insect life rather favors his protection.

The Squirrel is a variable animal in point of color, the tint of its fur changing with the country it inhabits. It is easily tamed, and is a favorite domestic pet. It is said, however, that one should beware of purchasing so-called tame Squirrels, as they are often drugged with strychnine, under whose influence they will permit themselves to be handled. In some cases the incisor teeth are drawn, to prevent them from biting. It is sad that such cruel tricks of the vendors exist and cannot be prevented.

It is related that about 1840, during a season of great scarcity of mast, vast multitudes of Squirrels migrated from the eastern states to Canada, where food conditions were more favorable. They crossed the country in armies, swam rivers with their tails curled over their backs, sailing before the wind. It was a curious instance of rare instinct and self-preservation.

SECRETS OF AN OLD GARDEN.

THIS garden had some small fruit trees thickly covered with leaves, and a tangle of currant bushes and raspberry vines, as well as neatly worked rows of vegetables. There was also a thick clump of tall, feathery grass beside the paling.

It was well it had these small places of refuge, for it had many perils. Two cats, a white and a gray, patrolled the garden with silent and velvety tread; boys, who were not silent, used all kinds of small but deadly weapons on the street that ran beside it, and great heavy wagons rumbled up and down all day, making a great noise and dust.

But how many birds I have seen and heard there! Red-headed Woodpeckers tapped and called early in the morning on the tall telegraph pole at the corner, and flocks of Grackles, the Bronze, the Purple, and the Rusty Grackles, were fed from the fresh-turned earth. A Catbird hopped lightly in the shadow of the tool-house, and I suspect some Robins of foraging turn with their young families. Sparrows of all kinds dwelt there—flocks of yellow Ground Sparrows, Brown and Gray Sparrows, Clipping Sparrows. I saw one day the funniest Clipping baby with his chestnut cap pushed up into a regular crown almost too big for his

tiny head, and the brightest black eyes peering at me, as he stood on a clod of earth. Flocks, also, of Goldfinches, glittering like small balls of gold, and Indigo Buntings, blue as the sky, held merry-makings there, and oh, the songs from morning until night! A Warbling Vireo sang so loud and so splendidly that we thought he must be some big bird of scarlet plumage instead of the wee wood-sprite he was; and little Wrens and little Indigo Birds fairly bubbled over with songs of joy.

The nests, the hidden nests, were the old garden's secrets, and the garden kept them well. There was a flutter of wings, the bird floated down, and was straightway invisible. Not the tip of a tail or beak was to be seen. Or up flew the bird and was as quickly lost in the thick screen of interwoven leaves overhead. There were certain gray birds so much the color of the dead wood on which they perched that they might have nested in full, open view, and yet have remained unseen until they moved. How the little birds did love this garden—the noisy street on one side, the close, dingy houses on the other, and how near its heart did the old garden keep the birds.

So many and such different birds—yet “not one of them is forgotten before God.”—ELLA F. MOSBY.

BIRDS FORTELL MARRIAGE.

Some of the Prussian girls have an odd way of finding out which of a number will be married first. The girls take some corn and make a small heap of it on the floor, and in it conceal one of their finger rings. A

chicken is then introduced and let loose beside the little heaps of corn. Presently the bird begins to eat the grain, and whichever ring is first exposed the owner of it will be the first to marry.



THE PRAIRIE HEN.

RUTTALL says that, choosing particular districts for residence, this species of Grouse is far less common than its Ruffed relative. It is often called Prairie Chicken and Pinnated Grouse. Confined to dry, barren, and bushy tracts of small extent, these birds are in many places now wholly or nearly exterminated. They are still met with on the Grouse plains of New Jersey, on Long Island, in parts of Connecticut, and in the Island of Martha's Vineyard. Mr. Nuttall was informed that they were so common on the ancient bushy site of the city of Boston that laboring people or servants stipulated with their employers not to have the Heath Hen brought to table oftener than a few times in the week. They are still common in the western states, but thirty years ago we saw vast numbers of them on the plains of Kansas. As there were no railroads then, they could not be sent to market, and were only occasionally eaten by the inhabitants. The immense wheat fields which have been sown for a number of years past have largely increased this species, where they assemble in flocks, and are the gleaners of the harvest.

Early in the morning Grouse may be seen flying everywhere, from one alone to perhaps a thousand together. They alight in the cornfields. "Look! Yonder comes a dozen; they will fly right over you; no, they swerve fifty yards to one side and pass you like bullets; single out your bird, hold four feet in front of him, and when he is barely opposite cut loose. Following the crack of the gun you hear a sharp whack as the shot strike, and you have tumbled an old cock into the grass. You have of course marked down as many of the birds as possible;

let them feed an hour and then drive them up. They will rise very wild, and the only object in flushing them is to see them down where they will take their noon-day siesta."

On the prairies they are often shot from a wagon, the hunter remaining seated, so plentiful are they in remote districts. Near the towns very few are seen. The birds always seem to prefer the low ground in a field. They are rarely seen during the middle of the day, as they do not move about much. It is a fine sight to see a large flock of chickens rise on the wing and fly swiftly and steadily for several hundred yards. When they drop in the grass they separate and run in every direction. Like the Quail, in the inclemency of winter they approach the barn, "basking and perching on the fences, occasionally venturing to mix with the poultry in their repast, and are then often taken in traps." They feed on buds and mast, sometimes leaves and the buds of the pine. In wintry storms they seek shelter in the evergreens, but in spring and summer they often roost on the ground in company. These birds begin pairing in March or April. Mr. Nuttall's account of this interesting period (see his Hand-book of Ornithology—Little, Brown & Co.)—is as follows: "At this time the behavior of the male becomes remarkable. Early in the morning he comes forth from his bushy roost and struts about with a curving neck, raising his ruff, expanding his tail like a fan, and seeming to mimic the ostentation of the Turkey. He now seeks out or meets his rival, and several pairs at a time, as soon as they become visible through the dusky dawn, are seen preparing for combat. Previously to this encounter, the male, swelling out his throat, utters what is called a toot-

ing—a ventriloquial humming call to the female three times repeated, and though uttered in so low a key, it may yet be heard three or four miles on a still morning. About the close of March on the plains of Missouri we heard this species of Grouse tooting or humming in all directions, so that at a distance the sound might be taken almost for the grunting of the Bison or the loud croak of the Bull-frog. While uttering his vehement call the male expands his neck pouches to such a magnitude as almost to conceal his head, and blowing, utters a low drumming bellow like the sound of *k-tom-boo! k-tom-boo!* once or twice repeated, after which is heard a sort of guttural squeaking crow or *koak, koak, koak*. In the intervals of feeding we sometimes hear the male also cackling, or, as it were, crowing like *ko, ko, koop, koop!* While engaged in fighting with each other, the males are heard to utter a

rapid, petulant cackle, something in sound like excessive laughter. The tooting is heard from day-break till eight or nine o'clock in the morning. As they frequently assemble at these *scratching places*, as they are called, ambuscades of bushes are formed around them, and many are shot from these covers."

The nest is placed on the ground in the thick prairie grass, and at the foot of bushes on the barren ground; a hollow is scratched in the soil, and sparingly lined with grass and feathers. The nest is so well concealed that it is not often discovered. The eggs are from ten to twelve, and of a plain brownish color. The female alone protects and attends the young, brooding them under her wings in the manner of the domestic fowl. The affectionate parent and her brood keep together throughout the season.

ABOUT THE SONGSTERS.

NEW NEIGHBORS.—“I see they are building a two-story house in our back yard,” said papa.

“O papa, that won't be nice!” said Marjorie. “People will look right into our windows!”

“Yes,” said papa; “one of the builders was sitting on my window-sill this morning; but when he saw me he flew away.”

“Oh, you mean a bird!” cried Nan.

BLUE-JAY ON A SPREE.—“Naw, sir, I ran him down. He's drunk on madberry. I didn't shoot him,” so said our little stable-boy, John Henry. We examined the beautiful Blue-jay.

It was lying in the boy's hand, with a sort of contented *dolce far niente* expression on its face. Its saucy eyes were elated and fearless. Its head wagged ridiculously in the effort to hold it up. It was a common North American drunk, nothing less. The bird was intoxicated on the berries of the Pride of China, known throughout the south as the poison or mad-berry.

In Florida thousands of respectable Northern Robins, that would blush to do it at home, are found lying about in the state of grossest drunkenness from the same cause. We wondered if some blue-ribbon society might not be profitably started among these poor birds. But they do not know any better.

We have this advantage over them, we know the mad-berry when we see it. It is to our disgrace if we do not let it alone.

SERVES AS WATCHMAN AND WAKES THE FAMILY.—A Mocking Bird serves as a night watchman at the residence of R. F. Bettes, at Tampa, Fla., and notifies the family of the coming of dawn every morning by pecking on the window pane. Often when the

doors are left ajar the Mocking Bird comes inside and perches on the chairs and about the room. It will allow the family to come very close and shows marked attention to Mrs. Bettes and her little daughter. When they start out for a visit it follows them some distance, and then returns to the yard. When the family returns it appears very glad and will fly all about them, and gives evidence of its joy in other ways. The children feed it about the house, and when the family meal is to be served, if the window is not raised, it makes its presence known by pecking on the window. During the day it gets on a neighboring brush or tree and sings its roundelay of song for hours at a time.

A WONDERFUL CANARY. — Mrs. Willet C. Durland, of Union Hall street, Jamaica, is the owner of a Canary possessing extraordinary vocal powers. It never tires of singing, and was the admiration of all who heard it, until eight months ago, when it suddenly, and for no apparent reason, became absolutely silent, uttering scarcely a chirrup for days at a time. Mrs. Durland at last tired of keeping a Canary that did not sing, and, finding a young Chippie bird on the lawn, one day, she put it in the cage and let the Canary go. About sundown that evening, the Canary returned and hopped about on the window sill, evidently making a plea to be received back into the family. This was too much for Mrs. Durland. She put the little creature back in its cage, and the next morning the household was awakened by a flood of joyous song. The Canary has been singing ever since, and the Durlands are sure it considers being set free a punishment for its long silence, and is now trying to make amends.

THE BUTTERFLY TRADE.

THESE are probably hundreds, if not thousands, of butterfly collectors in this country, says the Boston Transcript. But it is doubtful if there are many who gain their livelihood in this way, as is done by the four Denton brothers of Wellesley, who have among them one of the finest, and certainly one of the most beautiful collections in the world, comprising specimens from India, China, South America, and many other distant countries.

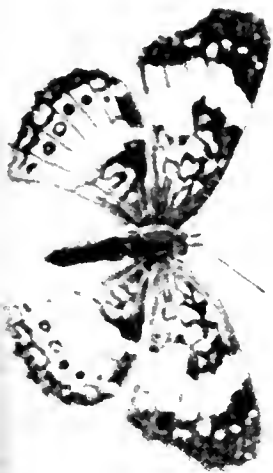
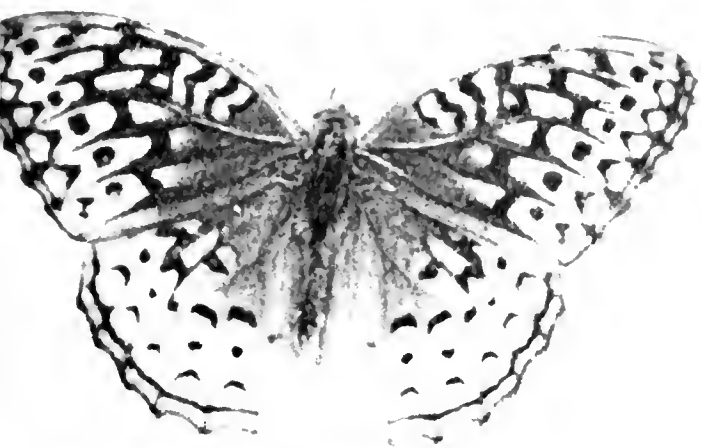
Large and fine as their collection is, however, it contains only a small part of the butterflies that they have collected, as almost all of them are sold to museums, and collectors, or simply as house ornaments, for as they mount them, they are objects of great beauty and are preserved in such a way as to give every opportunity for the display of their fine points, while they will last for an indefinite number of years.

They began this work in the usual amateur manner, and simply for their own amusement, but instead of becoming tired of it and dropping it, as is the case with most amateur collectors, they became more and more interested, and their methods attracted so much attention and interest in outsiders that they finally found it advisable to adopt this as their life work. How extensive a business it is may be judged from the fact that they have found it profitable to make a journey of six months to South America for the purpose of increasing the size of their collection, and that they have in India, China, and several other parts of the world agents who collect for them and ship the butterflies to them here.

The work of preparing the butterflies for sale and exhibition is all done in a small building back of their house on Washington street at Wellesley, and keeps them busy nearly all the


time that they are not collecting. When the butterflies are sent or brought in, each is in a small paper folder, which protects it from friction or breakage. The insects are laid with their wings together and pressed, being then put into the folder, and shipped in small boxes, enough being put into each box to prevent them from slipping about. In this way the insects arrive in very good condition, although they are, of course, very dry and brittle if they have come a long distance. In order to get rid of this dryness, which would make it impossible to work on them, they are put into a box with a lot of wet paper, and the dampness from this soon saturates them and makes them soft again and easily shaped. The next part of the work is in repairing what damage they have sustained, for, of course, in spite of the care of shipping, they are not as perfect as before they were caught, and there is a great deal of delicate work on them before they are ready for exhibition or sale.

Mounted, a drawer full of butterflies is more beautiful than a collection of precious gems, for, although many of our native butterflies are exceedingly beautiful, they are not to be compared with the average of those from India, China, and South America. In these dead, heavy black alternates with brilliant crimson, yellow, and gold, livid greens and blues, and deep, rich garnet and purple, sometimes in broad bands and blotches of glowing color, and in others in wonderfully delicate and intricate traceries and patterns. The texture of the wings is also infinitely more beautiful than anything we have here, some of them having a heavy rich gloss that exceeds that on the finest fabric that human skill can produce, while others have the deep changing lustre of gems or liquids.



THE PASSENGER PIGEON IN WISCONSIN AND NEBRASKA.

[See Vol. III, p. 23.]

UR records of this species during the past few years have referred, in most instances, to very small flocks and generally to pairs or individuals. In *The Auk* for July, 1897, I recorded a flock of some fifty Pigeons from southern Missouri, but such a number has been very unusual. It is now very gratifying to be able to record still larger numbers, and I am indebted to Mr. A. Fugleberg of Oshkosh, Wis., for the following letter of information under date of Sept. 1, 1897: "I live on the west shore of Lake Winnebago, Wis. About six o'clock on the morning of August 14th, 1897, I saw a flock of Wild Pigeons flying over the bay from Fisherman's Point to Stony Beach, and I assure you it reminded me of old times, from 1855 to 1880, when Pigeons were plentiful every day. So I dropped my work and stood watching them. This flock was followed by six more flocks, each containing about thirty-five to eighty Pigeons, except the last which only contained seven. All these flocks passed over within half an hour. One flock of some fifty birds flew within gun shot of me, the others all the way from one hundred to three hundred yards from where I stood." Mr. Fugleberg is an old hunter and has had much experience with the Wild Pigeon. In a later letter dated Sept. 4, 1897, he writes: "On Sept. 2, 1897, I was hunting Prairie Chickens near Lake Butte des Morts, Wis., where I met a friend who told me that a few days previous he had seen a flock of some twenty-five Wild Pigeons and that they were the first he had seen for years."—This would appear as though these birds

were instinctively working back to their old haunts, as the Winnebago region was once a favorite locality. We hope that Wisconsin will follow Michigan in making a close season on Wild Pigeons for ten years, and thus give them a chance to multiply and perhaps regain, in a measure, their former abundance.

In *Forest and Stream*, of Sept. 25, 1897, is a short notice of 'Wild Pigeons in Nebraska,' by 'W. F. R.' Through the kindness of the editor he placed me in correspondence with the observer, W. F. Rightmire, to whom I am indebted for the following details given in his letter of Nov. 5, 1897: "I was driving along the highway north of Cook, Johnson County, Neb., on August 17, 1897. I came to the timber skirting the head stream of the Nemaha River, a tract of some forty acres of woodland lying along the course of the stream, upon both banks of the same, and there, feeding on the ground or perched upon the trees were the Passenger Pigeons I wrote the note about. The flock contained seventy-five to one hundred birds. I did not frighten them, but as I drove along the road, the feeding birds flew up and joined the others, and as soon as I had passed by they returned to the ground and continued feeding. While I revisited the same locality, I failed to find the Pigeons. I am a native of Tompkins County, N. Y., and have often killed Wild Pigeons in their flights while a boy on the farm, helped to net them, and have hunted them in Pennsylvania, so that I readily knew the birds in question the moment I saw them."

—RUTHVEN DEANE in April *Auk*.

THE AMERICAN RABBIT.

COTTONTAIL and Molly Cottontail are the names commonly applied to this easily recognized species of the Rabbit family, everywhere prevalent in the middle states, continuing to be numerous in spite of the fact that it is constantly hunted in season for food. Its flesh is more delicate than that of the larger species, and is much valued. In winter the city markets are well supplied with Cottontails, their increase being so large that they are always abundant, while in rural districts the small boys capture them in great numbers with dogs. We have known two hundred of these innocent creatures to be taken in one day on a single farm. If protected for but one season they would become as Rabbits are in Australia, a pest.

Rabbits live in burrows, which are irregular in construction and often communicate with each other. From many of its foes the Rabbit escapes by diving into its burrow, but there are some animals, as the Weasel and Ferret, which follow it into its subterranean home and slay it. Dogs, especially those of the small terrier breeds, will often force their way into the burrows, where they have sometimes paid the penalty of their lives for their boldness. The Rabbit has been seen to watch a terrier dog go into its burrow, and then fill up the entrance so effectually that the invader has not been able to retrace his steps, and has perished miserably in the subterranean tomb.

When the female Rabbit is about to begin to rear a family, she quits the ordinary burrows and digs a special tunnel in which to shelter the young family during the first few weeks of life. At the extremity of the burrow she places a large quantity of dried herbage

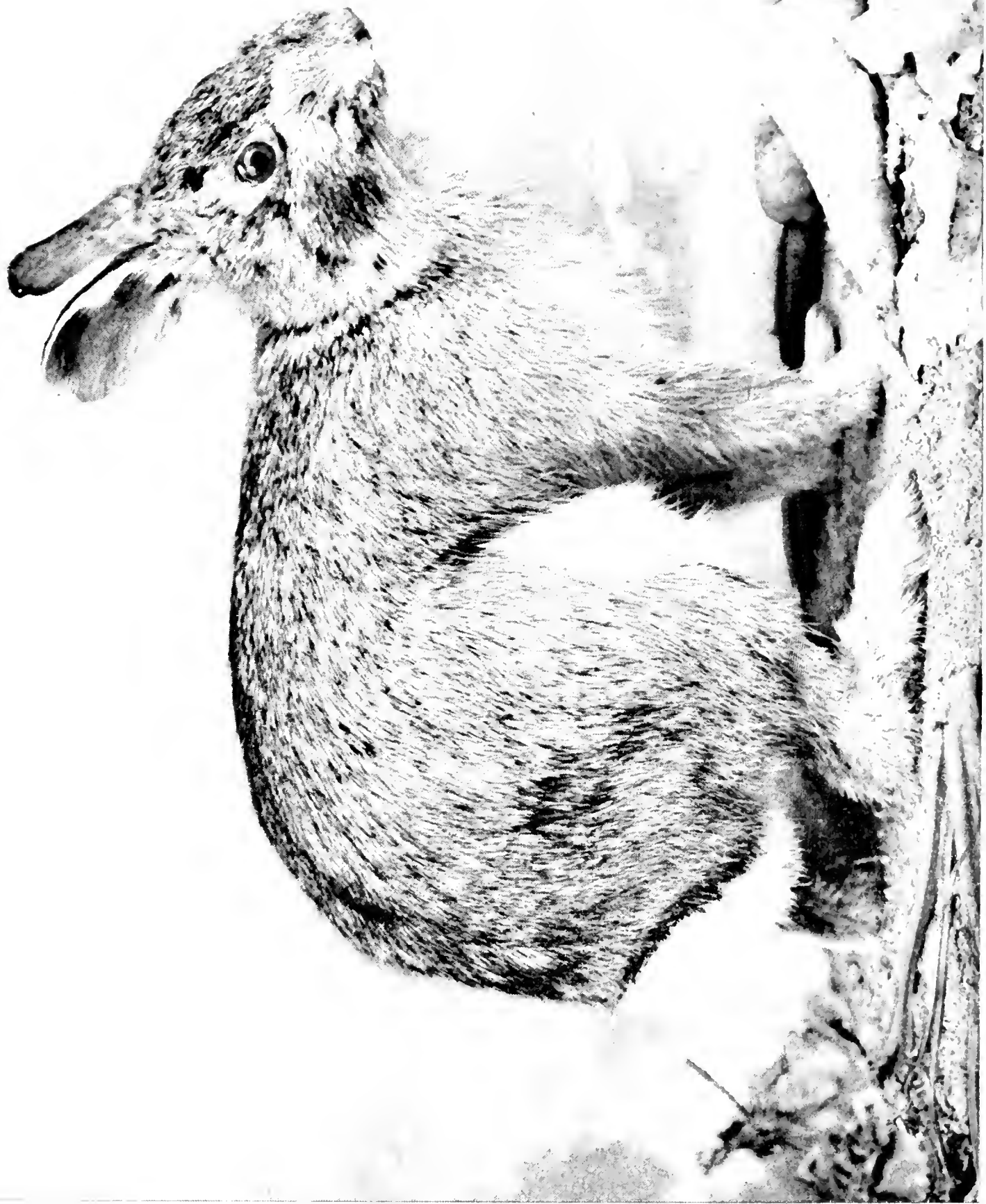
mingled with down from her own body, with which to make a soft and warm bed for the little ones. These are about seven or eight in number, and are born without hair and with closed eyes, which they are only able to open after ten or twelve days.

When domesticated the female Rabbit will often devour her young, a practice which has been considered incurable. This propensity has, however, been accounted for by natural causes. It has been the custom to deprive pet Rabbits of water on the ridiculous plea that in a wild state they do not drink, obtaining sufficient moisture from the green herbs and grasses which constitute their food, but in the open country they always feed while the dew lies upon every blade, which of course is never the case with green food with which domestic Rabbits are supplied. Thus have these poor innocents been the victims of ignorance.

Rabbits are great depredators in fields, gardens, and plantations, destroying in very wantonness hundreds of plants which they do not care to eat. They do great damage to young trees, stripping them of their tender bark, as far up as they can reach while standing on their hind feet. Sometimes they eat the bark, but in many cases they leave it in heaps upon the ground, having chiseled it from the tree merely for the sake of exercising their teeth and keeping them in good order.

It is true that most Rabbits burrow in the ground, their burrows having many devious ramifications, but the Cottontail usually makes his home in a little dug-out, concealed under a bush or a tuft of grass. We remember one of these little excavations which we found in a cemetery concealed by the overhanging branches of a rosebush at

(Continued on page 29.)



the foot of a grave. While reading the inscription on the tombstone we were startled by a quick rush from the bush, and discovering the nest, in which there were five tiny young with wide open eyes, we took them up tenderly and carried them home. We too, were young then. Admonished that we had cruelly deprived a mother of her offspring, and that our duty was

to return them to her, we unwillingly obeyed, and put them back in the little cavern. They huddled together once more and no doubt were soon welcomed by their parents.

A frosty Saturday morning, a light snow covering the ground, a common cur dog, Cottontail tracks, and a small, happy boy. Do you not see yourself as in a vision?

THIRTY MILES FOR AN ACORN.

Far away I hear a drumming—
Tap, tap, tap!
Can the Woodpecker be coming
After sap?

DOWN in Mexico there lives a Woodpecker who stores his nuts and acorns in the hollow stalks of the yuccas and magueys. These hollow stalks are separated by joints into several cavities, and the sagacious bird has somehow found this out, and bores a hole at the upper end of each joint and another at the lower, through which to extract the acorns when wanted. Then it fills up the stalks solidly and leaves its stores there until needed, safe from the depredations of any thievish bird or four-footed animal.

The first place in which this curious habit was observed was on a hill in the midst of a desert. The hill was covered with yuccas and magueys, but the nearest oak trees were thirty miles away, and so it was calculated, these industrious birds had to make a flight of sixty miles for each acorn stowed thus in the stalks!

An observer of birds remarks: "There are several strange features to be noticed in these facts: the provident instinct which prompts this bird to lay by stores of provisions for the winter, the great distance traversed to collect a kind of food so unusual for its race, and its seeking in a place so remote from its natural abode a storehouse so remarkable."

Can instinct alone teach, or have experience and reason taught these birds that, far better than the bark of trees or crevices in rocks or any other hiding place are these hidden cavities they make for themselves with the hollow stems of distant plants?

This we cannot answer. But we do know that one of the most remarkable birds in our country is this California Woodpecker, and that he is well entitled to his Mexican name of *el carpintero*—the carpenter bird.—*Exchange.*

THE OCELOT.

THE smaller spotted and striped species of the genus *Felis*, of both the old and the new world, are commonly called Tiger-Cats. Of these one of the best known and most beautifully marked, peculiar to the American continent, according to authority, has received the name of Ocelot, *Felis pardalis*, though zoologists are still undecided whether under this name several distinct species have not been included, or whether all the Ocelots are to be referred to as a single species showing individual or racial variation. Their fur has always a tawny yellow or reddish-grey ground color, and is marked with black spots, aggregated in streaks and blotches, or in elongated rings inclosing an area which is rather darker than the general ground color. They range through the wooded parts of Tropical America, from Arkansas to Paraguay, and in their habits resemble the other smaller members of the cat tribe, being ready climbers and exceedingly blood-thirsty.

The fierceness of the disposition of this animal, usually called by the common name of Wild Cat, and its strength and agility, are well known, for although it is said that it does not seek to attack man, yet "when disturbed in its lair or hemmed in, it will spring with tiger-like ferocity on its opponent, every hair on its body bristling with rage," and is altogether an ugly customer to meet with.

It was long believed that the Ocelot was the offspring of the domestic cat, but it is now known to be distinct from the wild form of our woods. One would scarcely wish to stroke the

Wild Cat's hair in any direction. As soon as the young are able to see and crawl, their savage nature is apparent, and they cannot be tamed. They are not often hunted, but when accidentally met with by the hunter are despatched as quickly as possible.

In length the Ocelot rather exceeds four feet, of which the tail occupies a considerable portion. The height averages about eighteen inches. On account of the beauty of the fur the skin is valued for home use and exportation, and is extensively employed in the manufacture of various fancy articles of dress or luxury. It may be said to be a true leopard in miniature.

In its native wilds the Ocelot seeks its food chiefly among the smaller mammalia and birds, although it is strong enough to attack and destroy a moderate sized monkey. It chases the monkeys into the tree branches, and is nearly as expert a climber as they are, but, as it cannot follow the birds into the airy region, it is forced to match its cunning against their wings, and it rarely secures them. As is often done by the domestic cat it can spring amongst a flock of birds as they rise from the ground, and, leaping into the air, strike down one or more of them with its swift paw. But its usual method of securing birds is by concealing itself among the branches of a tree and suddenly knocking them over as they unsuspectingly settle within reach of the hidden foe.

The movements of the Tiger-cat are graceful and elegant, and few specimens of animal life found in our zoological gardens are more interesting.



AZAMET THE HERMIT AND HIS DUMB FRIENDS.

AZAMET the vizier had been raised by Sultan Mahmoud to the highest office in the empire. As soon as he was established in his position, he tried to reform many abuses; but the nobles and imams plotted against him.

Deprived of his property, and deserted by his friends, Azamet withdrew to the wilderness of Khorasan, where he lived alone in a hut of his own building, and planted a little garden by the side of a brook.

He had lived a hermit's life for two years, when Usbeck, one of his old friends, found his dwelling place.

The sage met the vizier about a mile from his hut; the two friends recognized each other and embraced, while Usbeck shed tears; Azamet, on the contrary, smiled, and his eyes beamed with joy. "Thanks be to God, who gives strength to the unfortunate," said Usbeck. "The man who had a gorgeous palace in the rich plains of Ghilem is contented with a hut in the wildest part of Khorasan!"

Presently, when they drew near Azamet's hut they heard a young horse neigh, and saw him come galloping to meet them. When he came near Azamet, he caressed him, and ran home before him.

Usbeck saw two fine heifers come from a pasture near by, and run back and forth near Azamet, as if offering him their milk; they began to follow him. Soon after, two goats, with their kids, ran down from a steep rock, showing, by their gambols, their

delight at seeing their master, and began to frolic around him.

Then four or five sheep came out of a little orchard, bleating and bounding, to lick Azamet's hand as he patted them, smiling. At the same moment, a few pigeons and a multitude of other birds which were chirping on the trees in the orchard flew upon his head and shoulders. He went into the little yard near his cabin, and a cock saw him and crowed for joy; at this noise several hens ran, cackling, to greet their master.

But the signs of joy and love which all these animals showed were as nothing compared to those of two white dogs that were waiting for Azamet at the door. They did not run to meet him, but seemed to show him that they had been faithful sentinels over the house which their master had placed in their care. As soon, however, as he entered, they caressed him lovingly, fawning upon him, throwing themselves at his feet, and only leaping up to lick his hands. When he gave them caresses they seemed beside themselves with delight, and stretched themselves at their master's feet.

Usbeck smiled at this sight. "Well!" said the vizier, "you see that I am now as I have been from childhood, the friend of all created things. *I tried to make men happy, but they could not let me. I made these animals happy, and I take pleasure in their affection and gratitude.* You see that even though I am in the wilderness of Khorasan, I have companions, and love and am beloved."

Listen! what a sudden rustle
Fills the air.
All the birds are in a bustle
Everywhere.

Such a ceaseless croon and twitter
Over-head!
Such a flash of wings that glitter
Wide outspread!

THE USE OF FLOWERS.

God might have bade the earth bring forth
Enough for great and small ;
The oak tree and the cedar tree,
Without a flower at all.

We might have had enough, enough
For every want of ours,
For luxury, medicine, and toil,
And yet have had no flowers.

The ore within the mountain mine
Requireth none to grow ;
Nor doth it need the lotus flower
To make the river flow.

The clouds might give abundant rain ;
The nightly dews might fall ;
And the herb that keepeth life in man
Might yet have drunk them all.

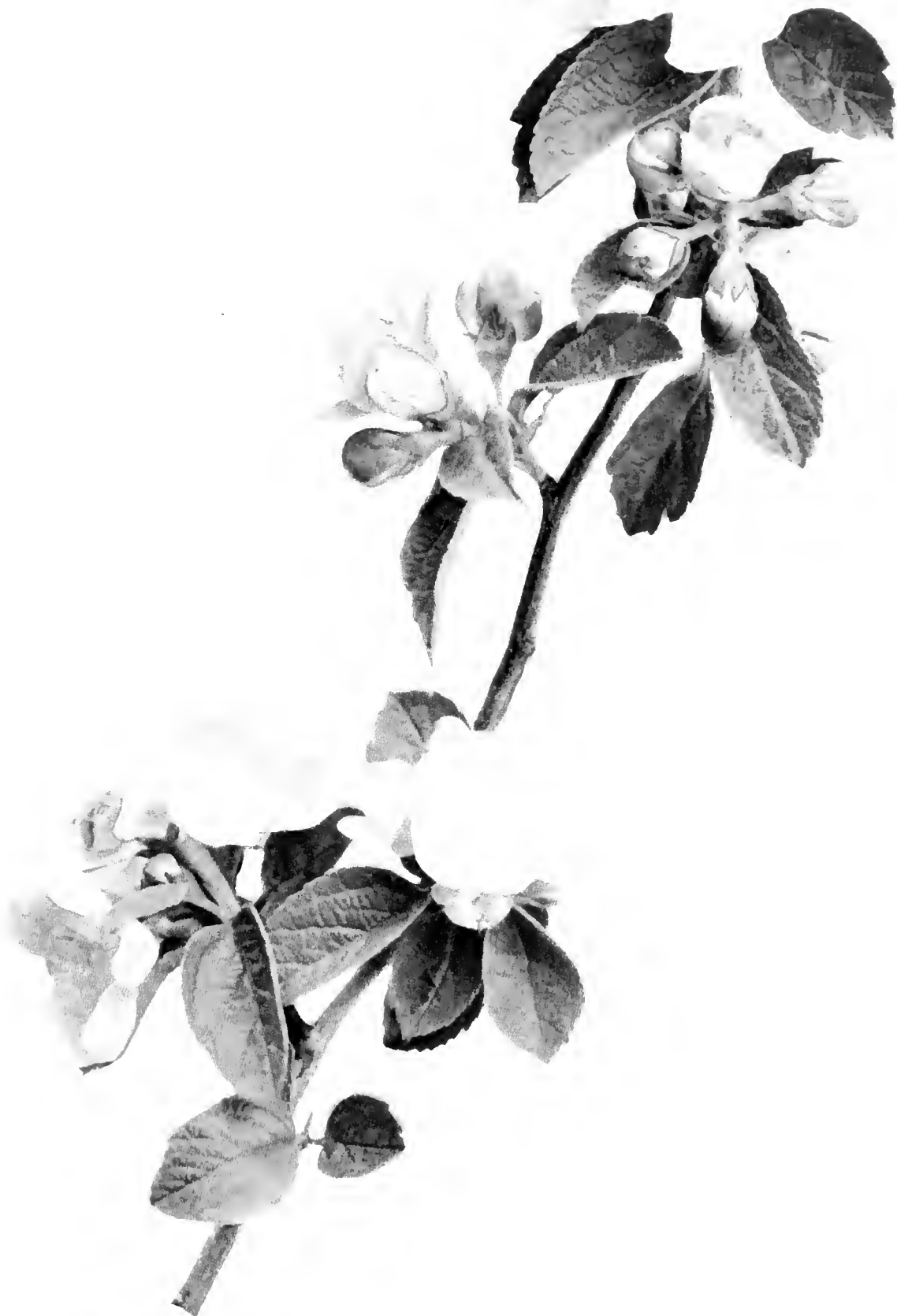
Then wherefore, wherefore were they made,
All dyed with rainbow-light,
All fashioned with supremest grace
Upspringing day and night ;

Springing in valleys green and low,
And on the mountains high,
And in the silent wilderness,
Where no man passes by ?

Our outward life requires them not—
Then wherefore had they birth ?
To minister delight to man,
To beautify the earth.

To comfort man—to whisper hope,
Whene'er his faith is dim,
For who so careth for the flowers
Will much more care for him !

—MARY HOWITT.



APPLE BLOSSOMS.
From Nature by Chicago Colortype Co.

ALL NATURE.

W. E. WATT.

BIAS, one of the seven sages of Greece, was a noted political and legal orator. His most famous utterance was, "I carry all my wealth with me." His store of learning and power of speech were always at hand, and his life had been such that all his investments were in the man, rather than in property which might or might not afterwards belong to the man.

He who knows nature and has a habit of seeing things carries with him a fruitful source of happiness. It requires technical knowledge to use any of the mechanical appliances with which civilized life is crowded. It requires artistic training to appreciate any of the great productions of the leaders in the fields of ideal pleasure. But there is no preparation demanded by nature herself of those who would enjoy her feasts. Whosoever will may be her guest.

But because she is so free with the race in giving pleasure to all her guests, it must not be inferred that cultivation and systematic pursuit will not be rewarded. All eyes are blind until they have been opened, and all ears deaf till they have learned desire. Just why I am delighted with the landscape before me is beyond my power to tell, and the reasons for the varying feelings that course through me are too numerous for recognition. But with all these thronging sensations and reflections that occupy me, there is a multitude of others that escape me because I have not had my soul opened in their directions.

Every new item of nature's news that breaks upon the consciousness increases capacity for pleasure for all time. He who meets nature with enlightened senses is rewarded every

day of his life for the pains taken in delightful study by way of preparation. A landscape is infinitely enhanced to him who has pursued the science of color with some diligence. The sounds of the forest speak tenderly to all; but he who knows the secrets of melody and harmony, and the limits of human skill in music, has worlds of delight in the forest that others may not enter. And so has the swain whose childhood was spent among the voices of the trees. The sense of smell has a thousand raptures for the man whose nose has lived up to its possibilities.

To look upon all nature broadly with the familiarity which comes only from long acquaintance and scientific investigation of her various aspects is the highest type of living. While this is not possible to all, yet, much of it may be experienced by every one who has the desire and follows it. The leading facts of all the sciences are open to all who care to know them. The beauties and mysteries of the world are constantly inviting us. And the rapid developments of knowledge in all directions give us all the exciting motives one can desire.

Looking out over the face of the world, we note that there are two sorts of material to be considered. One is alive or was produced by the action of life, and the other is material which has never known a want. We are drawn most to that which has pulsed with sap or blood—that which has made a struggle of some sort.

All things that live are made up chemically principally of four of the elements of the universe which are best adapted by their characteristics for the purposes of life. Three are gases, oxygen, hydrogen, and nitrogen; one is a solid, carbon. All these have what is technically known as affinities

of narrow range and low intensity except oxygen. Oxygen is greedy to attack almost everything, the others unite but sparingly and feebly. From these elements, life chooses combinations that are easily changed in form and light enough to stand up from the earth, to swim in the waters, and even to fly in the atmosphere. So gaseous and quick to change are the things of life that life itself has the reputation of being fleeting. Development is a change in the arrangement of parts, and function is a transformation of motion. These four elements, three gaseous and one solid, three very exclusive and one very free in choosing all sorts of associates, have been the means whereby life has been possible upon the earth. Their characters have provided for what are known as differentiation and integration.

With these materials is formed the mass which is the lowest form of life, protoplasm. This may be formed into cells or not, but it is from this beginning the scale of living things springs, rising in beautiful and mysterious forms till the earth is enveloped and beautified so that we can hardly think of it except as the receptacle prepared by Omniscience for the entertainment of living beings, all of which point to the highest and speak of the expansion and eternal value of the human soul.

By getting next to other substances, or by getting them inside, the organism draws within itself new matter of its own selection. It chooses always material that is chemically similar to itself, and we say it grows. Where it wears away in the pursuit, it makes repairs with the fresh

material. Where the pursuit is wearing, and requires great activity or strength, the new matter is consumed in furnishing energy alone.

When the period of growth is well advanced, the living thing matures organs for the preservation of its kind. Male and female are distinguished. A seed marks the female element in the plant, and in the animal an ovum or egg. And as soon as the race has been provided for, the individual is of no more use upon the face of the earth. It has served its purpose, and merits a reward. But whether in the economy of nature the joys of life are regarded as sufficient reward to every living creature, there follows fast upon the heels of its usefulness a period of lamentable decline. The elements which were so facile in building up the individual are no longer active in furnishing energy, repair, and growth. All these products are lopped off. Weakness, debility, and shrinking ensue. The organism loses its attractiveness for its kind, the pulse of life weakens, and the corpse falls to the earth, yielding rapidly to a process of transformation called decay, which is merely a giving up of what has been recently of use to this form of life to some new form of the same sort or a different one. Life is so swift and relentless that most of its subjects fall by the way and give up their substance so effectually that there is no memory or record left upon the face of the earth that such a form has ever been.

And so God is creating the heavens and the earth. While we participate in a measure in this creation, let us observe and enjoy it and be wise.

THE BLOODLESS SPORTSMEN.

I GO A-GUNNING, but take no gun;
I fish without a pole;
And I bag good game and catch such fish
As suit a sportsman's soul;
For the choicest game that the forest holds.
And the best fish of the brook,
Are never brought down by a rifle shot
And are never caught with a hook.
I bob for fish by the the forest brook,
I hunt for game in the trees,
For bigger birds than wing the air
Or fish that swim the seas.
A rodless Walton of the brooks
A bloodless sportsman, I—
I hunt for the thoughts that throng the woods,
The dreams that haunt the sky.
The woods were made for the hunters of dreams,
The brooks for the fishers of song;
To the hunters who hunt for the gunless game
The streams and the woods belong.
There are thoughts that moan from the soul of the pine,
And thoughts in a flower bell curled;
And the thoughts that are blown with the scent of the fern
Are as new and as old as the world.

—SAM WALTER FOSS.

A BOOK BY THE BROOK.

Give me a nook and a brook,
And let the proud world spin round;
Let it scramble by hook or by crook
For wealth or name with a sound,
You are welcome to amble your ways,
Aspirers to place or to glory;
May big bells jangle your praise,
And golden pens blazon your story;
For me, let me dwell in my nook,
Here by the curve of this brook,
That croons to the tune of my book,
Whose melody wafts me forever
On the waves of an unseen river!

—JAMES FREEMAN CLARKE.

SUMMARY.

Page 6.

WILSON'S SNIPE.—*Gallinago delicata*.
Other names: English Snipe, Jack Snipe,
Guttter Snipe.

RANGE—From Canada and British Columbia,
south in winter to the West Indies, and even
to South America. Breeds from the latitude
of New England southward.

NEST—Slight depression in the grass or moss
of a bog.

EGGS—Three to four; grayish-olive to
greenish-brown, spotted and blotched with
reddish-brown.

Page 10.

BLACK WOLF.—*Canis occidentalis*. Found
in Florida.

Page 14.

AMERICAN RED SQUIRREL.—*Sciurus
Hudsonius*. Other name: Chickaree, from
its cry.

Common in North America.

Page 18.

PRAIRIE HEN.—*Tympanucus americanus*.
Other name: Pinnated Grouse.

RANGE—Prairies of the Mississippi Valley,
east to Indiana and Kentucky, north to
Manitoba, west to the eastern Dakotas,
south to Texas and Louisiana. *T. cupido*, until
lately supposed to be this species, is now
apparently extinct, except on the island of
Martha's Vineyard.

NEST—On the ground in the thick prairie
grass.

EGGS—Eight to twelve, of tawn brown, some-
times with an olive brown hue, occasionally
sprinkled with brown.

Page 27.

AMERICAN RABBIT.—*Lepus sylvaticus*.
Other names: Cottontail and Molly Cottontail.

Page 31.

OCELOT.—*Felis pardalis*. Other name:
Tiger-Cat.

RANGE—From the southwestern United States
to Patagonia.



Birds and All Nature

Beginning with the July issue of **BIRDS AND ALL NATURE**, the publishers will eliminate all advertisements which will not bear the closest scrutiny; and we invite all persons who do not receive entire satisfaction from advertisements appearing in our magazine to write us frankly, that we may correct matters promptly. No impositions on the public will be allowed to appear in **BIRDS** after they are discovered.



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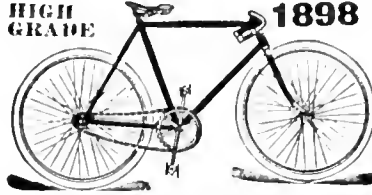
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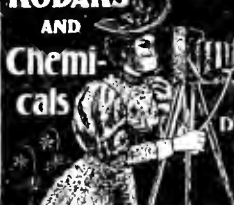


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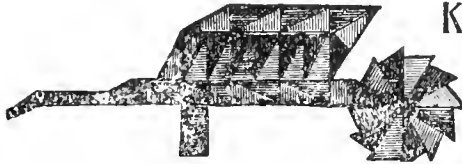
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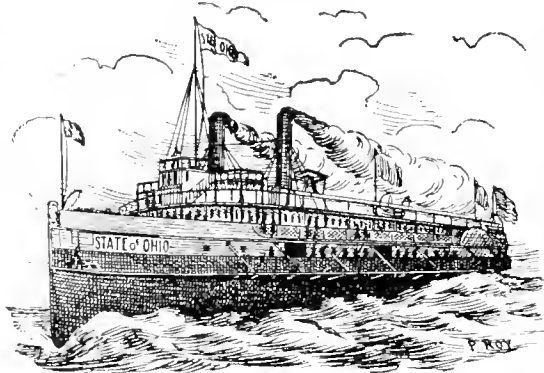
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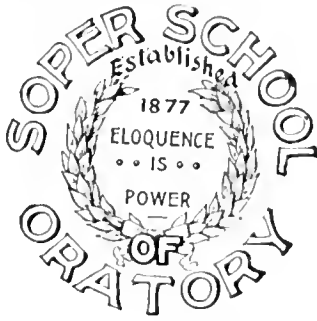
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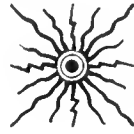
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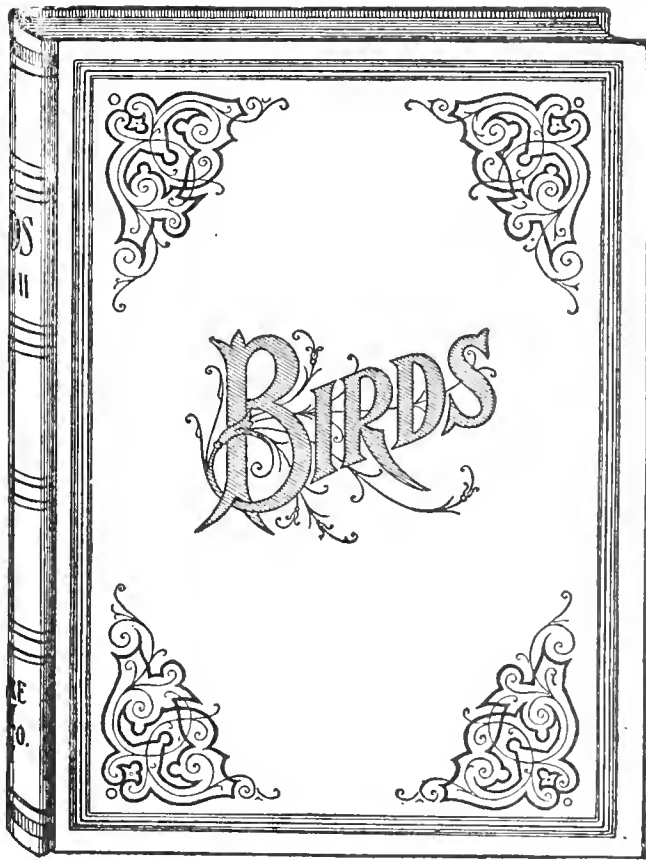
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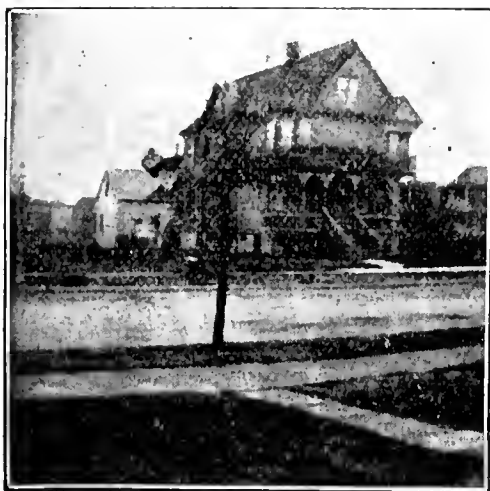
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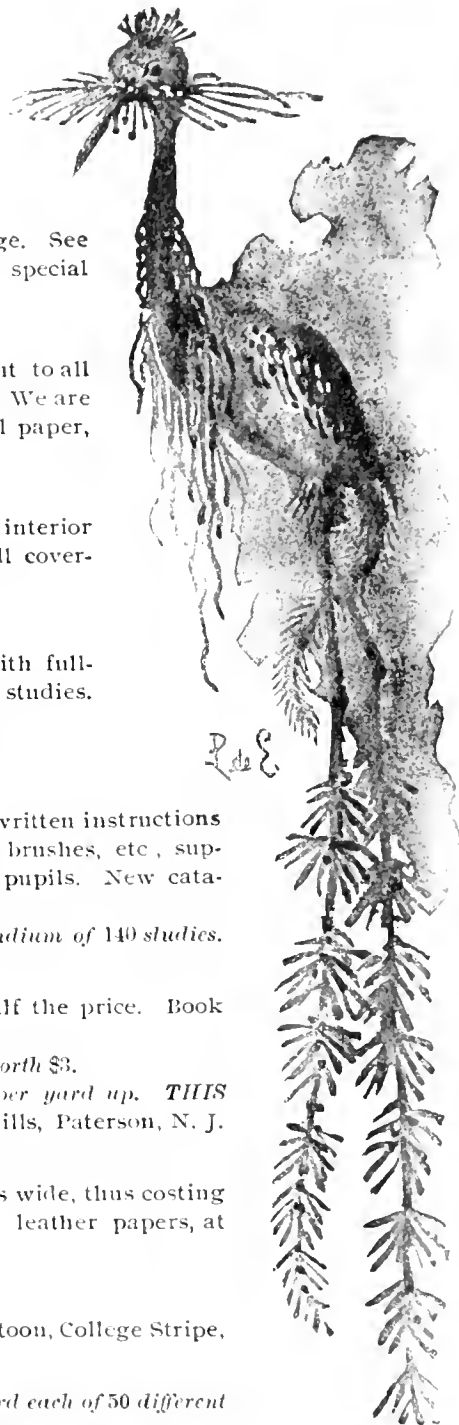
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BIRDS AND ALL NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

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AUGUST, 1898.

No. 2.

NATURE'S ADJUSTMENTS.

BY W. E. WATT.

We have a general notion that whatever Nature does is just right. It has become an article of popular faith that the ways of Nature are not to be improved upon. We feel that he who proposes something better than what is offered by the forces of the material world is by far too presumptuous. We look upon the man who would improve upon what is natural much as the old farmer did upon the lightning rod man. "No, sir; I'd never put a rod up over my house or barn to keep off the lightnin'. 'Twould be defyin' the Almighty. If he wants to strike me, do you suppose I'm goin' to appear before Him and say I put that up to stop him?"

When the qualities of the soil and conditions of the atmosphere have been propitious for the production of husk fiber, we look at the husk upon the corn or the beard of the wheat head and declare solemnly to our friends that the coming winter will be a severe one. We say that Nature knows what is about to occur and has provided for the protection of the grain. We infer that she has thought it all out beforehand and we can see but a small portion of her plans. It seems never to have occurred to us that grain left to shift for itself through

the winter is just as well off and little likely to sustain injury when the husk is thin as when it is thick.

We examine the fur of the Squirrel in the fall and say winter will not be severe because there is not a heavy coat on the specimen examined. We think Nature tells the Squirrel in some mysterious way that there is to be a light winter and that it will not be worth while for him to put much of his summer energy into hair growing, or that he may as well count on frisking through the winter in scant garments because he will not suffer greatly so attired.

We are oblivious of the fact that the fur on the Squirrel depends as to its profusion upon the general health of the subject and the condition of the fluids of his system, and that these are much more influenced by the winter he last experienced and the food he has recently had than by the weather that is to be some months hence.

We frequently speak rapturously of the mimicry of Nature. The Giraffe escapes his enemy by appearing to be a part of a clump of tree trunks, the Butterfly felicitously reposes upon a limb with his gaudy colors folded away and an exterior presented which makes him appear a veritable dead leaf with

no tempting juices for the destroying Bird. But the same Providence which gave these marvelous powers of mimicry also gave the other parties the eyes to see and apparent judgment to penetrate the mask and secure the needed meal. And so the ravening Beast sometimes fastens himself upon the Giraffe in spite of the disguise and the Bird finds the Butterfly in his curious garb.

Those who know least about Nature are loudest in their praise of her remarkable adaptations for special ends. Those who know most about her are obliged to confess that while her ways are marvelous indeed and her adaptations strangely effective and various yet she does not provide accurately and certainly for all contingencies.

In fact there is no such thing in Nature as a perfect adaptation. No living thing is perfectly protected from its enemies. No part is accurately adjusted to the part to which it is to be applied. The beak and talons of the Eagle are not perfectly adapted to flesh tearing. The hoof of the Arabian Horse is not perfectly adapted to carrying him over the sands of the the desert, but the very preservation of the horse upon the sands requires that he shall be peculiarly shod to protect his hoof. No animal that Flies attack has a tail capable of whisking them from every part of its body. A Dog's teeth are beautifully adapted to many purposes, but he cannot remove a Tick from his skin. The Cat has particularly keen sight, adjustable to all degrees of light. But when the Ocelot was being photographed for the July number of BIRDS AND ALL

NATURE the old Cat that purrs about the studio was not keen enough to see that it was a mounted animal. He came forward in a most belligerent attitude with glaring eyes and distended tail. When the artist gave the stuffed beast a slight motion the affrighted cat sped down the stairway and out of the building with the celerity hitherto entirely unsuspected in him.

There is no eye in Nature that sees perfectly and no ear that hears all that is going on. One animal is superior to others in certain ways, but none is perfect. All wings are not for flight. Some are better than others for sweeping through the air, but perfection is found in none.

In most animals are found organs which are not of use. They frequently resemble organs that are of the highest utility to some other form of life, but for the animal in question they are apparently waste material. When the Horse uses but one toe of each foot there seems to be little reason for his having the rudimentary forms of more. There are claws on the legs of many Dogs that have never been called into action. They are so far from the ground and so weak and immovable that the Dog himself does not know they are there.

In every man there are muscles beneath the scalp for moving the ear. We have no such need for ear motion as have many of the lower animals, but it is the despair of many a school boy to discover how few of the race are able to contract these muscles ever so slightly.

The Lammergeier, or Bearded Vulture, is instinctively instructed to

carry marrow bones and Tortoises high into the air and drop them upon stones so as to obtain their contents. Yet he is not beyond making serious mistakes, for one of them is said to have taken the bald head of the great poet Aeschylus for a smooth stone, dropped a Tortoise upon it, and secured in lieu of a luscious meal the lamentable demise of one of the greatest of men.

A true view of Nature leads us to regard whatever we find in an organism not as a perfect instrument to a given end, but as a remnant of what may have been produced by desire on the part of ancestors more or less remote. Indeed, it has well been said that our whole body is but a museum of antiquity of no practical interest, but of great historical importance. What we find in ourselves and elsewhere among living things is not to be regarded as creations perfectly adapted to given ends, for there is no perfect adaptation. Plants and animals are continually

striving for it, but conditions change more rapidly than they and the chase is unsuccessful. Perfect adaptation would be stagnation.

A manifest design of Nature is that things may live. But death is the rule and life the exception. Out of a million seeds but one can grow. All may make something of a struggle; a few fortunate individuals thrive. Not the fittest, but usually some among those most fit. The whole range of life from the *Bathybius Haeckelii* to the tailless Ape exhibits a grand struggle for perfect adaptation with a greater or less failure in store for every individual. The human race is carrying on the same enterprise with the same results. The instant we seem to be fitted for our environment there comes a change of affairs that leaves us confronted with a problem just as interesting and urgent as the old one we flattered ourselves we were able to solve.

REASONING POWERS OF BIRDS.

THERE is something very remarkable in the almost reasoning powers manifested occasionally by birds in eluding pursuit or in turning attention from their nests and young, but in few is this more noticeable than in the Duck tribes. In Capt. Black's narrative of his Arctic land expedition the following instance of this is given:

"One of his companions, Mr. King, having shot a female Duck, fired again, and, as he thought, disabled its male companion. Accordingly, leaving the dead bird, which he had the mortification of seeing shortly afterward carried off by one of the white-headed Eagles, he waded into the

water after the drake, which, far from being fluttered or alarmed, remained motionless, as if waiting to be taken up. Still, as he neared it, it glided easily away through innumerable little nooks and windings. Several times he reached out his hand to seize it, and having at last with great patience managed to coop it up in a corner, from which there appeared to be no escape, he was triumphantly bending down to take it, when, to his utter astonishment, it looked around at him, cried 'Quack!' and then flew away so strongly that he was convinced he had never hit it at all. The bird's object clearly was to draw the gunner away from its companion."

THE SQUIRREL'S ROAD.

It zigzags through the pastures brown,
And climbs old Pine Hill to its crown,
With many a broken stake and rail,
And gaps where beds of ivy trail.
In hollows of its mossy top
The pine-cone and the acorn drop;
While, here and there, aloft is seen
A timid, waving plume of green,
Where some shy seed has taken hold
With slender roots in moss and mold.

The squirrel, on his frequent trips
With corn and mast between his lips,
Glides in and out from rail to rail,
With ears erect and flashing tail.
Sometimes he stops, his spoil laid by,
To frisk and chatter merrily,
Or wash his little elfin face,
With many a flirt and queer grimace.
Anon he scolds a passing crow,
Jerking his pert tail to and fro,
Or scurries like a frightened thief
At shadow of a falling leaf.
All day along his fence-top road
He bears his harvest, load by load,
The acorn with its little hat;
The butternut, egg-shaped and fat;
The farmer's corn, from shock and wain;
Cheek-pouches-full of mealy grain;
Three-cornered beechnuts, thin of shell;
The chestnut, burred and armored well;
And walnuts, with their tight green coats
Close buttoned round their slender throats.

A busy little workman he,
Who loves his task, yet labors free,
Stops when he wills, to frisk and bark,
And never drudges after dark!
I love to hear his chirring cry,
When rosy sunrise stains the sky,
And see him flashing in his toil,
While frost like snow encrusts the soil.

With tail above his back, he sails
Along the angles of the rails,
Content to gain two rods in three,
And have sure highway from his tree.
Dear is the old-time squirrel way,
With mosses green and lichens gray,—
The straggling fence, that girds the hill,
And wanders through the pine woods still.
I loved it in my boyhood time,
I loved it in my manhood's prime,
Would in the corn-field I could lie,
And watch the squirrels zigzag by!

—JAMES BUCKHAM.



THE COMMON TERN.

ACCORDING to Colonel Goss, these birds are abundant on the Atlantic coast, decreasing in numbers west, and are rare and exceptional on the Pacific coast. They are migratory, arriving from the middle of April to the first of May, returning as early as the first of September. Their habitat is chiefly eastern temperate North America and various parts of the eastern hemisphere, breeding irregularly throughout the range. The nests have been found from the south coast of Florida to the Arctic circle, on the lakes in Wisconsin, and in large numbers in several of the Magdalen Isles, Gulf of St. Lawrence. Writers disagree as to the composition of their nests, some maintaining that they are made of seaweeds and grasses, others that they are without material of any kind, the eggs lying upon the bare ground in a slight depression in the sand. The eggs are three or four, of a pale blueish or greenish drab, thickly and rather evenly spotted and blotched with varying shades of light and dark brown, with shell markings of pale lilac, ovate in form.

Mr. George H. Mackay has described the Terns of Muskeget Island, Massachusetts, and in a recent article in the "Auk," he says: "Civilization is continually encroaching upon the places along the coast occupied by the Terns until there remain at the present time few localities adapted for such breeding resorts. I visited and remained on Muskegon Island July 3-5, 1897, and while there made, as has heretofore been my custom, an exhaustive examination of all the breeding grounds of the Terns. I found on visiting Gravelly Island a considerable falling off from the status of June, 1896, in both nests and eggs;

the occupants were also different, being now almost entirely Common Terns, its former possessors having to a large extent abandoned it." Mr. Mackay has been endeavoring to protect the Terns from the destructive encroachments of hunters and so-called "eggers." He says that this season the Terns arrived at Muskeget in large flocks, thousands dropping from the sky when they were first observed. The number of young birds was unusually large, larger than has been before noticed, which result is probably due to the protection which has been extended to them throughout the breeding season, a condition they have not before enjoyed.

This Tern enjoys a large assortment of names: Sea Swallow, Wilson's Tern, Red Shank, Mackerel Gull, and Summer Gull, are a few of them by which it is known in various localities. In several places on the Atlantic coast it breeds in company with other species, such as Forster's, Arctic, and Roseate Terns, the Laughing Gull, and others. Here they breed by thousands, fairly filling the air when disturbed. They place their nests all over the land above high water line, on the beach, on the sides of the bluffs, and even in the garden cultivated by the lighthouse keeper. At Gull Island fresh eggs can be obtained from the 10th of June to the middle of July, as eggling parties keep them cleaned off about as fast as they are laid. Public opinion is rapidly coming to the rescue of these beautiful birds, and we may reasonably hope that they may not be wholly exterminated. In connection with this article, we call the reader's attention to Vol. I, pages 103-104, where the Black Tern is depicted and described.

BIRDS AND ANIMALS IN THE PHILIPPINES.

I DOUBT if any islands have such a countless variety of animals and flying and creeping things as the Philippines. A stubby variety of horses, fat and furry ponies, is used in Manila and towns. Oxen and a species of Buffaloes are used for heavy draft purposes. The mountains teem with deer. Goats, Swine, Rabbits, and Sheep abound in the mountains and forests in all degrees of wildness. The wild hogs on Samar have sometimes killed natives. There are several hundred varieties of birds, and about twenty that are not known elsewhere. Parrots are more common in the backwoods than Robins are here. Among the forests close to the coasts are found peculiar birds of the Swallow tribe. They make a strange food that the Chinese are so fond of—the bird's nest. Hundreds of natives earn their sole livelihood by hunting at certain seasons for these birds' nests and selling them to the Chinese. Of Monkeys there are a dozen varieties. Bats are simply enormous. They are of the vampire variety. No wonder there is a vast deal of superstition and dread among people in the tropics concerning vampires. They are

frightfully uncanny. I have seen vampire bats with bodies as large as common house cats, and with wings that expand five feet from tip to tip. Let any one be seated or strolling along some moonlight night and have one of those black things come suddenly swooping down past him, and he will have some cause for nervous prostration. I knew one of those Bats to go sailing into the big hotel dining room at Manila one evening when dinner was serving. It came as a horrible apparition. Some women fainted and others shrieked as they went under the tables. The men ran out of the room.

“The seacoast is rich in many forms of fish. The natives, like the Hawaiians, know how to catch them, too. All the natives in the Philippines that I ever knew about (except the rich and aristocratic people in Manila) are fishers. They catch a species of mullet there that is delicious. When these fish come up the coast from the China Sea in schools, the natives will abandon any occupation and even leave a sick hammock to go out and angle off the coast.”

Ornithologists all over the world are much interested in the great exhibition of birds about to be opened at St. Petersburg. It is to be an international exhibition, in that it is the aim to exhibit the birds native to every country of the world. The czar has placed himself at its head, the Russian government will assist it with money and influence, and the European and

other governments which were invited to take part in the project have replied favorably. The exhibition has now assumed such gigantic proportions that it has been found necessary to postpone it from the summer of this year to the summer of next year to allow as many regions as possible on the earth to be represented.

BIRDS MENTIONED IN THE BIBLE.

Bittern, Cormorant, Cuckoo, Dove, Eagle, Hawk, Heron, Kite, Lapwing, Night-hawk, Osprey, Ostrich, Owl—

little and large—Peacock, Pelican, Quail, Raven, Sparrow, Stork, Swan, Swallow, and Vulture.



THE PRAIRIE WOLF.

THIS species is more commonly known in the western states by the name Coyote, where it makes night so hideous that novices unused to the "unearthly serenade" feel a dismal longing for other latitudes. It is in size about half way between the Red Fox (see p. 67) and Gray Wolf, of which we shall present a portrait in a subsequent number. Its color is similar to that of its larger relative of the plains, but is of a more yellowish cast.

The Prairie Wolf is an inhabitant of the plains and mountains west of the Missouri river, and is said to be found from the British possessions south into Mexico, whence it derived its common name, Coyote. It was formerly very numerous, but the increase of population and the disposition to hunt and destroy it, have greatly reduced its numbers. The Bison, which was formerly its prey, having become almost extinct, its food supply has been largely cut off. These Wolves subsist on any refuse they can pick up, and are always found on the outskirts of settlements or forts, slinking here and there, eking out what subsistence they may by snatching any stray morsels of food that come in their way. In the southern portion of its range, the Coyote is a miserable cur, scarcely larger than the common Fox.

While this Wolf is an arrant coward, it sometimes exhibits a good deal of sagacity. Near the south coast of San Francisco a farmer had been much annoyed by the loss of his Chickens. His Hounds had succeeded in capturing several of the marauding Coyotes, but one fellow constantly eluded the pursuers by making for the coast or beach, where all traces of him

would be lost. On one occasion the farmer divided his pack of Hounds and with two or three of the Dogs took a position near the shore. The Wolf soon approached the ocean with the other detachment of hounds in close pursuit. It was observed that as the waves receded from the shore he would follow them as closely as possible, and made no foot prints in the sand that were not quickly obliterated by the swell. When at last he had gone far enough, as he supposed, to destroy the scent, he turned inland.

Although members of the Dog tribe, Wolves are held in utter abhorrence by domesticated Dogs. The stronger pursue to destroy them, the weaker fly from them in terror. In the earlier part of English history Wolves are frequently mentioned as a common and dreaded pest. They are still found in parts of France, Russia, and the whole of western Asia. They are very wary and dislike approaching anything resembling a trap. While the Coyotes possess almost identically the same characteristics as other Wolves, man has no reason to dread them unless he meets them in hungry packs. Whoever has had the misfortune to have once been serenaded by these midnight prowlers can well understand the grudge every man in camp bears them. As soon as the camp is silent these beasts of prey prowl in small companies about the low shrubbery which surrounds the camp attracted by the appetizing smell of the campers' supper. The half jubilant long-drawn howl of the Coyote is soon followed by all the available vocal talent of his species in the vicinity, to the intense disgust of all creation except themselves.

A HOUSEHOLD PET.

He was named "Bushy" on account of his tail; no Squirrel, I am sure, ever had a finer one. He lived in a cage at first, but the door was always left open, so that Bushy did not feel he was a captive at all. He took great pleasure in running up the lace curtains of the drawing-room windows, upon the cornices of which he spent a great deal of his time, always taking his nuts up there to eat. At length he concluded to give up his cage and live up there altogether. He would build a nest, but where to find the twigs, wool, and feathers for it sorely puzzled Mr. Squirrel.

One day he scampered up to the top of the house, and in the attic found some cast-off finery of the housemaid. It was hard work for the little fellow to carry a night-cap, or an old pocket handkerchief, or an old stocking in his mouth down two sets of stairs, but it was the best material he could find, and Bushy was determined to build a nest. As well as he could, he jumped from one step to another all the way, with his mouth full, at one time a yard or more of ribbon streaming behind him. In this his feet got entangled,

tumbling him over and over, so he stopped and with his fore-paws neatly packed it into his mouth before going further. Sometimes, after all his hard work, Bushy would find the dining-room door closed, so he would have to sit outside very patiently till it was opened. The moment he was admitted, up the curtain he would climb with his material, often dropping it two or three times before reaching the top. It was a very wide, old-fashioned cornice, with a great space behind, and here the nest was built. The old caps, ribbons, and odds and ends were woven into a very large, long-shaped nest, lined with bits of the dining-room door-mat on which he had been so often compelled to wait. At last all was finished, and Bushy moved up into his new house, never again sleeping in his cage. During the day he would descend for his food, which he carried up to his house to eat, then down again to frisk and play about. I am sure Bushy's master was very glad he left the cage door open, for how could the little fellow have shown such intelligence, or been happy, cooped up behind wires all day long?



THE FOX SQUIRREL.

FALLOCK states that the migrations of Squirrels have never been satisfactorily explained. What instinct, he asks, brings together such immense droves of these animals from all parts of the country and causes them to move with solid phalanx to distant localities, overcoming all opposing obstacles? A few years since there was witnessed a wonderful sight by inhabitants of Pike County, Pa. An immense army of Squirrels arrived at the banks of the Delaware river late one night, and commenced its passage by swimming the next morning. The whole population turned out, and boys and men equipped with large grain sacks and clubs killed them by thousands. They kept coming in a continuous stream throughout the morning, and passed on to the woods beyond. Nothing could deflect them from their course, and they were evidently bound for a fixed point. A similar instance occurred some twenty-five years ago, where a vast assemblage crossed the Mississippi. While these migrations are obviously caused by a scarcity of food, it probably is not the only motive which induces them to undertake long journeys. The southern Fox Squirrel inhabits the Southern States from North Carolina to Texas. It is the largest and finest of our North American Squirrels. Its color is oftenest gray above and white below, but it is also found of all shades of fulvous, and sometimes a deep shining black; its ears and nose are always white. The Western Fox Squirrel occurs in the Mississippi valley; its

color is a rusty grey, and its ears and nose are never white.

Squirrels feed in the early morning, and disappear from eight to nine o'clock, remaining in their holes during the mid-day hours. They appear again in the late afternoon to feed. During the early morning and late evening the hunter secures his prey. The little fellows are very shy, but one may seat himself in full view and if he remains without motion little notice will be taken of him by the Squirrels. The season for hunting them is in fall and winter, although a great many are taken in August when young and tender.

An important factor in the pursuit of this animal is the small Cur-dog trained for the purpose. He will run ahead through bush and wood, tree a Squirrel, and after barking sharply, wait for the master to put in an appearance. A Squirrel thus treed will run up the trunk a short distance, and curling himself down on a limb, will watch his canine pursuer, unmindful of the approach of the two-legged animal bearing a gun. When quite young and inexperienced, a good bag can sometimes be made without a Dog. They are very skillful in secreting themselves from view, when treed by the hunter, but the presence of the Dog seems to utterly upset all calculations of concealment, for knowing the inability of the Cur to do them harm they will sit on a limb and not attempt to hide. The cruel method of smoking out, as practiced by the farmers' sons in winter, when the Squirrels are snugly curled up in their nests will not be described in this article.

THE FOX-SQUIRREL.

Squirrels vary in size and color according to the country in which they live. In Asia there is a Squirrel no larger than a Mouse, and in Africa there is one larger than a Cat.

I am a North American Squirrel, one of the "common" family, as they say. I eat all sorts of vegetables and fruits, as well as Mice, small Birds and eggs. I choose my mate in February or April, go to housekeeping like the birds, and raise a family of from three to nine little baby Squirrels.

Some of my little readers have seen me, perhaps, or one of my family, frisking among the branches, or running up and down the trunks of trees. My enemy the Hawk gets after me sometimes, and then I run up the tree "like a Squirrel," and hide behind one of the large branches, going from one to another till I tire him out.

Squirrels have to be "cunning as a Fox," as they say. When pursued—and oh, how often we are, by men and boys, as well as Hawks—we leap from branch to branch, or from tree to tree, altering our direction while in the air, our tails acting as rudders. At last we are driven into a solitary tree, so that we cannot leap into the branches of

another. Then a boy or man climbs up, tries to shake us from the limb, and at length succeeds in knocking us to the ground. Off we run again, give them a long chase, perhaps, but at last are caught, and probably carried home to be kept in a cage like a little prisoner, or maybe in a stuffy wooden box. How can we be happy or playful under such circumstances? I think it is a great shame to put any animal, bird or otherwise, in a *little* cage; don't you?

There are men who make a business of selling Squirrels for household pets. If you want a young Squirrel—and nobody wants to buy an *old* one—look at its teeth; if young, they will be almost white; if old, a light yellow.

"Oh, mama," cried Dorothy one day, "do look at this dear little tame Squirrel the good man wants to sell. See how tame it is. It will let me stroke it, and never tries to bite."

Mama, who desired her children to have four-footed, as well as two-footed friends, bought the tame squirrel for her little girl. Alas! the *good* man had dosed the poor little animal with laudunum to keep it quiet. It died the next day.



THE LOON.

IN ALL the lakes of the fur countries, says Nuttall, these birds abound, where, as well as in the interior of the most northern of the states, and probably in the inland seas of the St. Lawrence, along the whole Canadian line, they pass the period of reproduction. This species is the most common of its tribe in the United States and is a general inhabitant of cold and temperate climates throughout the whole northern hemisphere. They have been known to breed as far south as the Farne Isles, along with the Eider Ducks, with which they also associate on the shores of Labrador. In the United States from the severity of the winters, the young and even occasionally the old, are seen to migrate nearly, if not quite, to the estuary of the Mississippi.

Cautious, vigilant, and fond of the security attending upon solitude, the Loon generally selects, with his mate, some lonely islet, on the borders of a retired lake far from the haunts of men, where, on the ground, near the water, they build a rude and grassy nest. The Loons are, from the nature of their food, which consists almost wholly of fish, utterly rank and unedible, though in New England the following receipt is given for cooking one of the birds: Having dressed your Loon, stuff it with an iron wedge, then bake or boil. When you can stick a fork into the wedge the bird is ready for the table.

It is chiefly remarkable for the quickness with which it can dive, many observers maintaining that it can dodge a bullet or shot by diving at the flash of the gun. Mr. W. H. Porteous states that he once watched a man for more than an hour fire repeatedly at a Loon on a pond in Maine, the bird being frozen in by thin ice, a small circular space being

kept open by its movements. The ice was not strong enough to sustain the man and the open space not large enough to enable the bird to swim and rise, as a Loon cannot rise in flight from a stationary position in the water. The Loon dodged every shot, by diving, although within easy gunshot range from the shore. It was not killed until the next morning, when the ice had become strong enough to permit the man to go close up to the open space and shoot when the Loon came to the surface. "Under the circumstances," adds Mr. Porteous, "I think the man ought to have been shot instead of the Loon."

"In the fall," says Thoreau, "the Loon came, as usual, to moult and bathe in the pond, making the woods ring with his wild laughter before I had risen. At rumor of his arrival all the mill-dam sportsmen are on the alert, in gigs and on foot, two by two and three by three, with patent rifles and conical balls and spy glasses. They come rustling through the woods like autumn leaves, at least ten men to one loon. Some station themselves on this side of the pond, some on that for the poor bird cannot be omnipresent; if he dive here he must come up there. But now the kind October wind raises, rustling the surface of the water, so that no loon can be heard or seen. The waves generously rise and dash angrily, taking sides with all waterfowl, and our sportsman must beat a retreat to town and shop and unfinished jobs. But they were too often successful.

As I was paddling along the north shore one very calm October afternoon, for such days especially they settle on the lakes, like the milkweed down, a Loon, suddenly sailing out from the shore toward the middle a few rods in front of me, set up his wild laugh and betrayed himself. I pursued with a

paddle and he dived, but when he came up I was nearer than before. He dived again, but I miscalculated the direction he would take, and we were fifty rods apart when he came to surface this time, for I had helped to widen the interval; and again he laughed long and loud, and with more reason than before. He maneuvered so cunningly that I could not get within half a dozen rods of him. Each time, when he came to the surface, turning his head this way and that, he coolly surveyed the water and the land, and apparently chose his course so that he might come up where there was the widest expanse of water and at the greatest distance from the boat. It was surprising how quickly he made up his mind and put his resolve into execution. He led me at once to the widest part of the pond, and could not be driven from it. While he was thinking one thing, I was endeavoring to divine his thought. It was a pretty game, played on the smooth surface of the pond, man against a Loon. Some times he would come up unexpectedly on the other side of me, having apparently passed directly under the boat. So long-winded was he and so unweari-able, that when he had swum farthest he would immediately plunge again, nevertheless; and then no wit could divine where in the deep pond he might be speeding his way like a fish, for he had time and ability to visit the bottom of the pond in its

deepest part. It is said Loons have been caught in the New York lakes eighty feet beneath the surface, with hooks set for trout. I found that it was as well for me to rest on my oars and wait his reappearing; for again and again, when I was straining my eyes over the surface one way, I would be startled by his unearthly laugh behind me. He was indeed a silly Loon, I thought, for why, after displaying so much cunning did he betray himself the moment he came up by that loud laugh? Did not his white breast enough betray him? It was surprising to see how serenely he sailed off with unruffled breast when he came to the surface, doing all the work with his webbed feet beneath. His usual note was this demoniac laughter, yet somewhat like that of a water-fowl; but occasionally when he had balked me most successfully and he came up a long way off, he uttered a long-drawn, unearthly howl, probably more like that of a Wolf than any bird. This was his looning, perhaps the wildest sound that is ever heard here, making the woods ring far and wide. At length, having come up fifty rods off, he uttered one of those prolonged howls, as if calling on the Gods of Loons to aid him, and immediately there came a wind from the east, rippled the surface, and filled the whole air with misty rain. And so I left him disappearing far away on the tumultuous surface."

THE MOCKINGBIRD.

WISHING to verify a statement which we had seen in a contemporary, we wrote to Mr. R. F. Bettis, of Tampa, Florida, requesting, if it were true, that he would confirm it, although, from our acquaintance with the bird, we had no doubt of its substantial correctness. In response Mr. Bettis writes us as follows:

"Yours of June 24 received. Will say in regard to the Mockingbird, I live one and one fourth miles north of the courthouse in Tampa. I have a lot containing two acres of land, and it is grown up in live and water oak bushes which are very dense in foliage. It is a fine place for birds to nest and raise young. I do not allow any one to shoot or destroy the birds on my place, and it doesn't take the birds long to find out a place where they are protected. I think there are about twenty-five or thirty Mocking birds on my place, and they become very tame.

About two years ago one of the birds took to coming into the house, and sitting on the chairs and warbling in a low tone, and my wife and children began to talk to it and put bread crumbs on the window sill for it, and it soon began to come for something to eat. It would sit on the trellis in front of the window and sing for hours at a time, and on moonlight nights would sit on the chimney and sing for half the night. * * *

It would recognize the family, and when my wife and daughter would go from home, it would fly along and alight on the fence and give a chirping noise as though it did not want them to go, and on their return would meet them the same way, but the chirping would be in a different tone, as though glad to see them. When they were in the house it would sing some of the sweetest notes that ever came from a bird's throat. Every morning at about 5 o'clock it would peck on the window pane until we got up and opened up the house. About six months ago while all the family were away some Cuban and negro boys came by my place and shot it, and it seems as if something were missing from the place ever since. But I have three more that will come in on the back porch and eat crumbs. Two are on the back porch now about fifteen feet from me while I write, but they are not as gentle as the other one. There has been so much shooting about my place since the soldiers came that it frightens the birds some. The soldiers have a sham battle every day, around my house and sometimes in my yard.

Hoping you can cull out of this what you want for your magazine, I am

Yours truly,

R. F. BETTIS.

THE BOBOLINK'S SONG.

Suddenly from the dead weed stalks in the draw, where the Blackbirds had sung yesterday, there broke forth the most rollicking, tinkling, broken-up, crushed-glass kind of bird melody that he had ever heard—something in perfect accord with his mood again; and looking up he saw a flock of black and white birds all mingled in, some plain,

streaked, sparrow-like kinds—the former given to the utmost abandon of music. He had seen these birds before occasionally, but he never knew their names, and now he found there was more he had not known, for he had heard the Bobolink sing for the first time.—*From Baskett's "At You All's House."*

HOW BUTTERFLIES ARE PROTECTED.

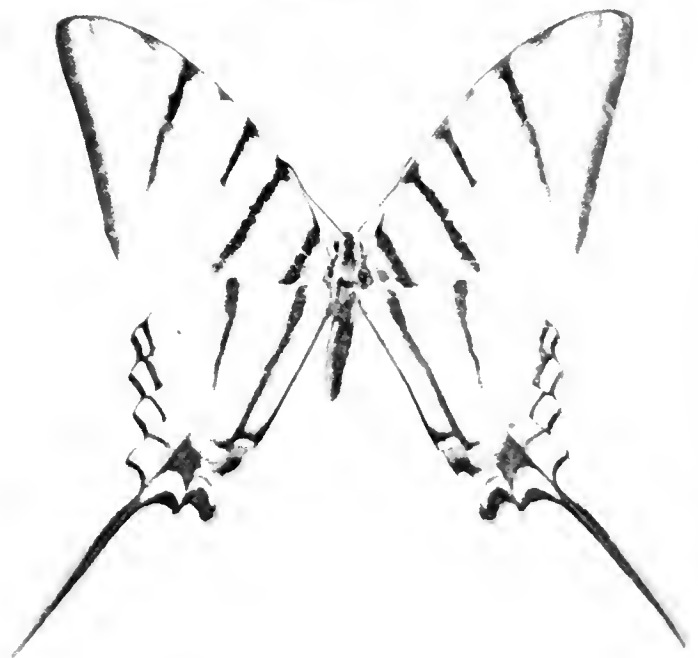
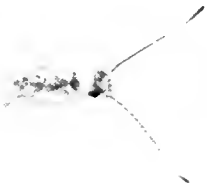
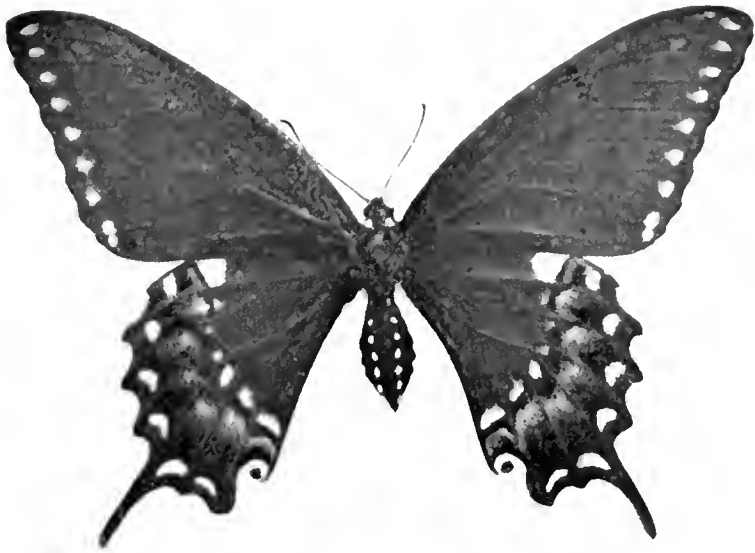
IN the July number of BIRDS AND ALL NATURE we quoted from an interesting article in the *Boston Transcript* some information concerning the commercial aspect of Butterflies. From this study of the remarkable collection of the Denton Brothers of Wellesley, we print another extract, which will indicate to our readers something of what they may expect to see in future numbers of BIRDS, as it is our purpose to present all of the remarkable specimens of these insects. Some of our subscribers tell us that they would rather have the pictures than the specimens themselves. In an early number we shall present a picture of the wonderful Butterfly *Cræsus*. It is an inhabitant of India, and even there is rarely seen and difficult to secure. It is of deep dead black, with broad splotches on the wings, which are exactly the color of new, untarnished gold, its name being given it for this characteristic. But, as the *Transcript* says, "perhaps the most interesting thing in looking over the Dentons' collection is to have them explain the wonderful ways in which they are protected from their natural enemies, the birds. Perhaps the most remarkable instance of the way in which this is done is the leaf butterfly, a native of India. The upper side of this insect's wings has the characteristically brilliant coloring of its country, but the under side is of a dull brown, the significance of which is not seen until the insect alights and closes its wings. When it is in this position it has exactly the appearance, in shape and color, of a dead leaf, and this is so exact that even the little dark spots caused by decaying fungi on the leaves are reproduced.

"What is most wonderful of all is that these spots vary, and in different

specimens have the appearance of different kinds of fungi, the imitation being invariably a perfect one.

"This characteristic is to be seen in nearly all kinds of butterflies, the under side of the wings of the most brilliantly colored species being of a dull color which does not readily attract attention. Almost the only variation to this is in certain species which ordinarily carry their wings erect, and droop them when they alight. In these the brilliant coloring is on the under side of the wing, and the dull color on the upper side. Perhaps the most remarkable single case known is that of a certain Indian moth, which is a heavy flyer, and found in the woods. When this moth alights, it leaves only the tip of its wings sticking out of the leaves, and this tip, in marking, color, and attitude, has exactly the appearance of the head of a cobra. The same general scheme may be observed in our native moths, and also in most other heavy flyers, in the sharply defined round markings, one on each wing. These have the appearance of an eye of some good-sized animal, and keep many birds from making any closer investigation.

"Another interesting instance of of the self-protecting instinct is found here in the habits of some kinds of our native butterflies. Some of these are naturally protected by having so strong and unpleasant taste that the birds will not eat them. The habits of these kinds are imitated by other kinds that have a strong resemblance to them, but which are not naturally protected, and this is so successfully done that the birds let them alone and prey upon other varieties that have just as strong a resemblance to, but do not imitate the actions of the protected ones."



Papilio asterias,
Catopsilia argante,
Papilio ajax.

Grapta coma,
BUTTERFLIES.
p. 110-117.

Papilio rutilus,
Papilio yemenus,
Papilio macrostheus.

MID-SUMMER.

The hills are sweet with the brier-rose.—WHITTIER.

Sweet is the rose, but grows upon a brier.—EDMUND SPENCER.

As though a rose should shut, and be a bud again.—KEATS.

What mortal knows Whence comes the tint and odor of the rose.

THOMAS BAILEY ALDRICH.

The rose saith in the dewy morn,
I am most fair;
Yet all my loveliness is born
Upon a thorn.—CHRISTINA G. ROSSETTI.

The roses grew so thickly, I never saw the thorn,
Nor deemed the stem was prickly until my hand was torn.

—PETER SPENCER.

Gather ye rosebuds while you may,
Old Time is still a-flying;
And this same flower that smiles to-day
To-morrow will be dying.—HERRICK.

If this fair rose offend thy sight,
Placed in thy bosom bare,
'Twill blush to find itself less white,
And turn Lancastrian there.—UNKNOWN.

I know a bank where the wild thyme blows,
Where ox-lips and the nodding violet grows,
Quite over-canopied with luscious woodbine,
With sweet musk-roses and with eglantine.—SHAKESPEARE.

The rose is fairest when 'tis budding new,
And hope is brightest when it dawns from fears;
The rose is sweetest washed with morning dew,
And love is loveliest when embalmed in tears.—SCOTT.

My life is like the summer rose
That opens to the morning sky,
But ere the shades of evening close,
Is scattered on the ground—to die!
Yet on the rose's humble bed
The sweetest dews of night are shed.

RICHARD HENRY WILDE.

THE RED FOX.

EXCEPT in South America and Australia, Foxes are distributed over all the great continents. There are known to be between twenty-five and thirty species. They differ from the dog family in the greater sharpness of the nose and the greater length and bushiness of the tail.

The Red Fox of eastern North America is closely allied to the common Fox of Europe, and is regarded by many naturalists as only a variety of the common species, an opinion which is somewhat confirmed by the fact that no remains of the Red Fox have been found in the cave deposits, although remains of the Grey Fox have been. It is larger than the common Fox of Europe, the fur longer and softer, and the color more brilliant. It is said that it does not possess the wind of the English Fox. It runs for about a hundred yards with great swiftness, but its strength is exhausted in the first burst, and it is soon overtaken by a wolf or a mounted horseman. In Canada and the United States it is largely hunted for its valuable fur, many thousands of skins being annually exported. The Fox is exceedingly shy and difficult of approach, owing probably to the persistency with which it is hunted by the fur traders. Only the Red and Grey Foxes are hunted. There are several permanent colors of this species similar to those found in our Squirrels, the young presenting a variety of colors in the same litter. In Ohio and others of the middle states, Foxes are said to be hunted as follows: On an appointed day, the whole of the population of the neighborhood turn out and inclose as large a tract of country as possible, all hands

leisurely advancing toward some point near the center of the circle; as they advance a great noise is made that the game may be driven before them. When the circle is quite small, and the Foxes are seen running about looking for an opening by which to escape, small boys are sent in with directions to catch the animals, a task which is not accomplished without much exertion and perhaps a few bites. When a Fox is caught, it is sold to pay the expenses of the hunt.

Fox hunting as practised in England was transported to this country as early as the middle of the eighteenth century. In the mother country it is one of the greatest pleasures accorded to the titled gentry; the Horses are bred for the purpose, and a first-class hunter commands a large price. Many Virginia planters of leisure and means were accustomed before the Civil War to keep a number of Hounds, and with the best riders of the neighboring county, frequently held their "meets," when, with horn and whipper-in, and all other accompaniments, according to true English Fox-hunting rules, they would start Reynard and follow him to the death. The wealthy and leisure class of New York pursue the sport in true English style in many places on Long Island.

When pursued, the Fox gives out a strong, disagreeable scent, which lies so long on the ground that it may be perceived for nearly an hour after he has passed. Of its cunning when pursued, many tales are related, such as driving another Fox out of its lair and forcing it to substitute itself as the chase; diving into a heap of manure, to throw the dogs off the scent; fording streams, doubling or its track, and so forth.



THE RED FOX.

Like the Squirrels, Foxes vary in size and color according to the countries in which they live. Their habits are mostly nocturnal, that is to say, they prowl around after dark.

By day the Fox lies concealed in his burrow—if he owns a house of that sort—or else in the depths of some thicket. Toward evening he goes out in search of something to eat—Hare, Rabbit, Pheasant, Mouse, or Bird.

Reynard, as the Fox is often called, does not attempt to chase the Hare, for it would be too swift for him, nor the Rabbit, for it would quickly dive into its hole, nor the Pheasant, for it would fly away. No, indeed! Mr. Fox is too cunning for that. He just quietly creeps to some place where Hares or Rabbits or Pheasants are likely to pass, and then as they run by him, out he pounces and secures his evening meal.

When the Rabbit has a nest full of little “Bunnies,” she takes good care to keep them at the end of the burrow. It is too small for the Fox to creep into, so she thinks they are safe. But Mr. Fox finds a way, a much better way, he thinks, to get at the little, soft, furry things, which will hardly make him a

meal anyway. He sniffs around, locates the spot right above the burrow, digs downward, and soon—well, when he gets through there are no “Bunnies” in the nest. Mr. Fox smiles, winks one eye, and trots off.

Sometimes he steals into a hen-roost, and woe to nearly every chicken in the roost. He eats all he can, carries some of them home, and the remainder he buries for future use.

“Cunning as a Fox.” That is an old saying, you know, and we apply it to persons who take advantage of their fellow beings.

However, no matter how great a rascal the Fox is, we must pity him when pursued for “sport” by a pack of hounds, as well as men and women. When irritated or alarmed, the Fox gives off a strong, disagreeable scent, which lies so long on the ground that it may be perceived for nearly an hour after he has passed. He has been known to dive into a heap of manure to throw the dogs off the scent; jumping over a wall, run a little way, come back again, lie under the wall until all the dogs had passed, then leap a second time over the same place where he had passed before, and make off on his old track.

THE LEAST SANDPIPER.

THIS lively, social little Sandpiper is common throughout America, nesting in the Arctic regions. It is migratory, arriving the last of March to the first of May, a few occasionally remaining till November. It has been found breeding as far south as Sable Island, Nova Scotia, but its usual breeding grounds are north from Labrador and Alaska to Greenland, wintering from California and the Gulf states southward. It is more restless and active than the larger Sandpipers, but in habits it differs little, if any, from them. It runs nimbly about, often with the large waders, feeding around and beneath them, apparently heedless of danger. While watching the birds, they will often pass close to the feet, but at the least motion the whole flock will spring into the air "like a flash, with a startled *Peep, peep*, and in a compact form swiftly sweep about in an uncertain manner, canting from side to side, showing rapidly the white beneath and the dark above, a wavy, pretty sight, the white at times fairly glistening in the sunlight." When migrating or going any distance their flight is steady and direct. Audubon, who observed the breeding habits of the birds in Labrador, says that at all periods, excepting those at which they have nests containing eggs, or young so small and feeble as to require all the care of their parents, the flight of this species resembles that of the Common Snipe (see BIRDS, Vol. IV., page 7); but when started from the nest, or from any place in the immediate vicinity, it rises and moves off low over the ground, with deeply incurved wings, and with a whirling motion thereof, which, if as rapid as those of a Partridge, would appear quite similar, but on such

occasions the Lesser Sandpiper moves slowly, and instead of uttering the note of independence, as it were, which it emits at other times, while freely and fearlessly traveling, it gives out sounds weakened by grief or anxiety, for the purpose of inducing the observers to follow it. If on the ground, it acts in a similar manner, moves off slowly, and limping as if crippled, and this at times quite as much as if one had come upon it while on its nest, or surprised it with its young.

The Sandpiper's nest is placed on the ground in a slight depression, scantily lined with leaves and grasses. The eggs are three or four, of ground color cream buff to light drab, spotted and blotched irregularly with varying shades of brown, thickest about the larger end.

The Least Sandpiper is always found associated with the Semi-palmated Sandpiper, which in the later summer throng our shores and form staple sport to the youthful and city tyros. Flocks of birds are often composed of both species. When this is the case, the latter, even if largely in the minority, take the lead, as they are of somewhat larger size, stronger in flight, and have a louder note. When not in company with other species, none of our shore birds are more confiding and unsuspecting than these, says Davie, large flocks continuing their search for food almost under the feet of the observer.

The black and white outlines which are often seen of this bird make it possible, perhaps, to recognize it, but the perfect likeness which we present will enable the observer to distinguish it at a glance from all others of the family, of which there are about a dozen well-known species.

INSTINCT AND REASON.

IN a recent issue of the *New York Evening Post*, Caroline H. Dall writes interestingly on this subject as follows:

"I wish to draw the attention of such of your readers as are interested in the discussion of the nature of instinct, to a curious example of it, as distinct from reason, which I have lately witnessed.

"Entering the parlor of a friend the other day, my attention was instantly attracted to a Florida Mockingbird. He was flying about in an eager manner, with something like a long black straw in his bill. My friend entering, I asked: 'What is your bird doing?' 'Building a nest,' she answered. 'Has he a mate?' 'No, he has never had one,' she replied, 'nor has he ever seen a nest. That black straw is a shaving of whalebone which lasts him better than anything else.' At this moment the bird flew into a corner of the cage, and, stooping, dropped the whalebone, waited a moment as if for some response, and then flew away to repeat the manoeuvre.

"Does he not want something soft?" I asked. 'I sometimes give him yarn or wool; he tears it all up, works it all over, and then carries it to that corner. He evidently thinks it his duty to provide material, but he does not undertake to use it.' 'And what will he do next?' I asked. 'He will, after a day or two, brood over that corner, sitting close and spreading his wings out as broadly as possible. He does this two or three times a day.' 'And after that?' 'Later the paternal instinct seems to be aroused in a different way. He goes to his food cup, takes some food in his mouth, and drops it into his corner. He repeats this several times, as if he were feeding his young. I do not know how many young birds he ought to expect, but I should like to know, to see if he counts right!'

"I have sometimes known a male canary to build a nest in the spring, carrying the process nearer to completion, but I have never heard of an instance like this, and think it may interest others than myself."

* * * *

IN spite of all the efforts that have been made in the interests of common sense and common humanity, there appears to be no doubt that the savage and indiscriminate slaughter of all birds of bright plumage is still going on for the gratification of feminine vanity. Indeed, the position of the unfortunate birds possessing the fatal gift of beauty seems to be worse than ever. There was sold the other day in London a consignment of nearly half a million birds, or parts of birds, as follows: Osprey plumes, 11,352 ounces; Vulture plumes, 186 pounds; Peacock feathers, 215,051 bundles; Birds of Paradise, 2,362 bundles; Indian Parrots, 228,289 bundles; Bronze Pigeons,

including the Goura, 1,677 bundles; Tanagers and sundry birds, 38,198 bundles; Humming birds, 116,490 bundles; Jays and Kingfishers, 48,759 bundles; Impeyan and other jungle fowl, 4,952 bundles; Owls and Hawks, 7,163 bundles. In one of the most widely circulated English papers the fashionable news from Paris begins: "Birds are worn more than ever, and blouses made entirely of feathers are coming into fashion." "Rare tropical feathers," ordered by specialists from abroad, are specified as those most likely to be in demand, but no bird of any kind is safe that has a feather capable of being used for feminine decoration.

THE MOUNTAIN SHEEP.

BIGHHORN is the name by which this interesting animal is chiefly known to western people, it being found in greater or less abundance from the Missouri River to the Pacific Ocean. It also occurs in New Mexico, Arizona, and Southern California, but it has not been discovered in any numbers south of the United States. It is more numerous in the Rocky Mountains, the Sierra Nevada Mountains, and the Coast Range, but it is by no means confined to the mountains, being also numerous along the *Mauvaises Terres* or the "Bad Lands" of the White River, the Little Missouri, Yellowstone, and Upper Missouri, in whose desolate and arid wastes it apparently delights. The Bighorn, in fact, finds in every rough country sufficient for its requirements, and it demands only that there shall be steep and difficult heights to which it may retreat when pursued. Every species of sheep would prefer a hilly habitat, but the Bighorn could scarcely exist on a level plain.

Somebody has said that Mountain Sheep would be aptly described as having the head of a sheep with the body of a deer. In size, however, it exceeds the largest deer, and a full-grown specimen will weigh from 300 to 350 pounds. Sir John Richardson gives the following measurements of an old male: Length to end of tail, 6 feet; height at shoulder, 3 feet 5 inches; length of tail, 2 inches; length of horn along the curve, 2 feet 10 inches; circumference of horn at the base, 1 foot 1 inch; distance from top of one horn to top of its fellow, 2 feet 3 inches. The coat is soft to the touch, the hair resembling that of the Caribou Deer, and, in some degree,

that of the Antelope. It is short, fine, and flexible in its first growth in the autumn, but becomes longer as the season advances, until in winter the hair is so thick and close set that it stands erect. As the winter advances the dark tips of the hair are rubbed off so that by spring the old males are quite white. Under the hair a fine wool covers the skin.

The movements of the Bighorn are quite graceful, and the agility and lightness with which it scales steep bluffs, runs along the narrowest edge on the face of a precipice, or leaps from rock to rock in its descent from some mountain-top, are excelled by no other animal. These Sheep feed early in the morning, and retire during the middle of the day to points high up on the bluffs or mountains where they rest until sundown, when they return to their feeding grounds. Except during the month of December the old rams are found in small bands by themselves, the females and young associating together in companies of from five to twenty. In a country where they have not been disturbed by man they are occasionally seen in much larger herds.

No animal is more shy and wary than the Bighorn, and it therefore requires in its successful pursuit the greatest patience and deliberation, as, if it receives the slightest hint of the enemy's presence, it immediately disappears. Many a hunter of experience has never killed a Mountain Sheep, as these vigilant mountain climbers are usually able to elude their enemies.

The instinct of self-preservation is remarkably developed in the Mountain Sheep, and only animals of equal agility and superior cunning can secure them. In their mountain fastnesses they are comparatively free from the



pursuit of man; the things they have most to fear are the avalanche and glaciers. The elements of danger, however, only serve to render its pursuit more attractive to the ardent sportsman, and when in a country where it abounds, deer, antelope, and even elk are likely to be neglected for the Mountain Sheep. The flesh, too, is most delicious, and is regarded as much superior to any wild meat which the west affords. Hallock says that he knows of no more delicate dish than is afforded by a yearling ewe in good order seasoned with that wonderful sauce furnished by the free, open-air life of the plains and mountains. "The glory of fat cow pales, and even elk and black-tailed deer meat hide their diminished heads before the rare toothsome-ness of a juicy saddle or the dripping ribs of a young and tender Bighorn."

"To hunt the Mountain Sheep successfully the candidate for honors should have some experience with large game, should have the patience and endurance possessed only by the most enthusiastic sportsman, and should be a fair shot with the rifle. In the gray of the morning, before attempting to look for his game, he should seek the highest ground in his vicinity whence a wide view of the surrounding country may be obtained, and from this point, with the good glass that is an indispensable part of a hunter's outfit, he should search the little ravines and grassy meadows running down from the hills. The sheep are always on the watch for enemies

upon the lower ground, but rarely turn their glances to the heights, which, if disturbed, they will seek for safety."

It is indeed marvelous that these animals should be able to descend with facility the most abrupt precipices and cross canons, the sides of which are almost vertical, and this has given rise to the idea that they can throw themselves from great heights, and striking on their horns, can rebound uninjured and alight on their feet. Indeed, this is somewhat imaginative as it is apparently unreasonable. It is on account of the vast size of the horns, and the fact that these are often battered and splintered that this statement has been accepted as worthy of belief. It has been suggested, however, that even if the animal's head could stand so great a shock, its neck would not. If it were true, how could females and young males, whose horns are little larger than those of the goat descend the cliffs, which they do as actively and successfully as the old males? The fact is that the splintered condition of the horns of the bucks is due to their battles and their play at all times of the year. The feet of Mountain Sheep are precisely adapted for their life among the crags, and they seem to be able to cling to any surface which presents the slightest inequality. Only the Wild Goat could pass over the same dangerous places. May or June are given in some of the best works on natural history as the time when the young are brought forth.

A SEMINARY FOR TEACHING BIRDS HOW TO SING.

BUYING and importing song birds, says the *Scientific American*, occupies the time and attention of several scores of people in New York, and as the distributing center of this peculiar trade, the city is often the home of considerable numbers of song birds gathered from all quarters of the globe. On the East side, in Fourth street, there are several remarkable aviaries where, without doubt, a study of one branch of ornithology can be pursued under conditions more favorable than elsewhere on this continent, and a visit to one of these bird conservatories of music is better than a trip to the fields or woods to listen to the songs of the wild warblers. The owner of the aviary is a German—more than probable from some little village in the Hartz Mountains, where bird-raising is the chief industry,—and he not only feeds and tends his little birds with loving care, but teaches them to whistle and sing in tune to the accompaniment of an old reed organ or flute.

There are several large importing houses of song birds in New York, and in the busy season they employ from twenty to forty travelers who go back and forth from Europe to purchase the pick of the Canaries, Bullfinches and other European songsters. The consignments come chiefly from Germany and England. Nearly all the Canaries raised in the world for cage purposes come from these two countries, and most of the German exporting houses have distributing branches in New York. The birds are sent over by steamer in large consignments under the charge of an expert care-tender, who does nothing else but feed and doctor the little pets placed under his charge. One experienced man can take charge of five large crates, each

one containing two hundred and ten cages of birds, or a little over a thousand in all. Sometimes during the rush season the care-tender has five hurricane deckers to watch, or fourteen hundred cages and birds to look after during the long hours of the days and nights.

That this work is not easy, any one who has had the privilege of looking after a single canary for a week can well understand. Feeding and watering over a thousand birds, and cleaning out their cages every day, makes up a routine of work on shipboard that begins at four o'clock in the morning and does not end until late in the afternoon. When seasickness makes life miserable for the passengers, the canaries are apt to be uncomfortable in their crowded quarters. Sometimes a disease known as "schnappen" breaks out among the Canaries at such times, and as this is fearfully contagious, it sweeps through the crowded bird quarters on shipboard and decimates the ranks at a terrible rate. Cases are known where only ten birds have survived out of an importation of eight hundred to a thousand, the disease performing its terrible work in a week's time. This is supposed to be caused as much by the over crowded and poorly ventilated condition of the birds' quarters as by the rolling of the ship. If you ask Fritz if his birds get seasick, he will answer emphatically "No;" but he will add softly to himself "schnappen." And in that word is conveyed much of meaning that the lay mind cannot appreciate.

When the imported birds arrive in port, they are hurried immediately to the importing houses, or to the different quiet aviaries in the German quarters, where experienced bird raisers take them in charge. It is at this latter place that one may make an

inspection of the singers which are destined to carry song and delight into so many homes. Most of them are trained birds and they whistle and sing to perfection, and all that their German attendant has to do is to feed and water them properly. If disease breaks out among them, he is supposed to know just what to do, and in most instances he does prove an expert bird doctor.

In the mating and breeding season, however, young birds appear in the great aviary which must be taught to sing and whistle accurately. Most people imagine that all the perfection of song cage-birds is inherited, and they would be surprised to learn the amount of labor bestowed upon them in order to make their tunes accurate. The young birds that have the proper voices for great artists are trained in the most careful manner. In the Hartz Mountains, where Canary training reaches its highest development, the throat and voice of each young Canary are tested, and those selected for the highest training are set apart by themselves. They are sent to a school of instruction that is unique in its methods. At the head of this school is probably a Canary of the St. Andreasberg type, which strikes the right note for all the youngsters to imitate. The young birds are taken into the room in their cages, with cloth draped over them to shut out the light until the proper time has come for singing. Then the light is admitted and the teacher begins her warbling. The young birds, which have probably never yet attempted to pipe, leave off their feeding and listen to the marvelous outburst of pure song. They become uneasy and enraptured, and in a short time they try to imitate the song; but they make miserable failures for many days. Eventually

some of them strike the right note, and at the end of the week the most promising ones are separated from the rest and placed in rooms with the best singers. In this way their voices are gradually cultivated, and new songs are taught them.

There are several such schools for canaries in New York, but they are devoted entirely to the comparatively few Canaries raised for the trade in this country. Most of those imported have already been trained to sing accurately, although after their long sea voyage they need a little extra training to bring their voices to perfection. The best trained Canaries are the St. Andreasberg Canaries, whose notes are considered the finest of any in existence. Originally these notes were obtained by placing a Nightingale in the breeding room of the young Canaries, and the natural, clear-toned voices quickly blended the song in with their natural notes. In time, by careful breeding and selection, the present type of the St. Andreasberg Canary was produced, but the pure, bracing air of the Hartz Mountains is considered necessary for the proper development of one of these superb singers. A true St. Andreasberg singer cannot, it is believed by bird trainers, be reared outside of the Hartz Mountains, and it is claimed that only about ten per cent of those raised in their native place ever pass the critical examination of the judges. They are sold according to the perfection of their song power, the best imported bringing as much as \$25 to \$50 apiece, and ordinary ones as little as \$4 to \$5. As a rule they are very small and insignificant looking birds, and not until they have opened their little throats to sing, does one comprehend their mission in life.

SUMMARY.

Page 46.

COMMON TERN.—*Sterna hirundo*. Other names: "Sea Swallow," "Wilson's Tern," "Red Shank," "Mackerel Gull," and "Summer Gull."

RANGE—The greater part of the northern hemisphere and Africa. In North America chiefly confined to the eastern province, breeding variously throughout its range.

NEST—Above high water line on the beach and on the sides of the bluffs; made of grass and sea weeds.

EGGS—Three, greenish to deep brown in color.

Page 50.

PRAIRIE WOLF.—*Canis latrans*. Other name: "Coyote."

Found in the western part of North America.

Page 54.

FOX SQUIRREL.—*Sciurus cinereus*. Other name: "Cat Squirrel."

A common North American species.

Page 58.

LOON.—*Urinator imber*.

RANGE—Northern part of northern hemisphere. In North America breeds from the

northern tier of states northward; in winter south to the Gulf of Mexico and lower California.

NEST—At or near the edge of the water on marshy or boggy grounds; they are quite bulky and made of water grasses with a mixture of moss and mud.

EGGS—Two, olive brown, more or less spotted and blotched with blackish brown.

Page 67.

AMERICAN RED FOX.—*Vulpes fulvus*. Common in the United States.

Page 71.

LEAST SANDPIPER.—*Tringa minutilla*. Other name: "Peep."

RANGE—The whole of North and South America, breeding north of the United States.

NEST—On the ground.

EGGS—Three or four.

Page 75.

MOUNTAIN SHEEP.—*Ovis Montana*. Other name: "Bighorn."

Inhabitant of the mountains of western America. Its northern range extends as far as Alaska.

Birds and All Nature

In future issues of **BIRDS AND ALL NATURE**, the publishers will eliminate all advertisements which will not bear the closest scrutiny; and we invite all persons who do not receive entire satisfaction from advertisements appearing in our magazine to write us frankly, that we may correct matters promptly. No impositions on the public will be allowed to appear in **BIRDS** after they are discovered.

BOOKS RECEIVED.

How to Name the Birds

(Chas. Scribner's Sons, 1898) is a pocket guide to all the land birds and to the principal water fowl found in the New England States, New York, Pennsylvania and New Jersey, for the use of field ornithologists, by H. E. Parkhurst. It is a new departure in bird classification to aid the field ornithologist in determining unknown species. As the introduction says, "it is in no sense a rival of the excellent annuals on the subject now extant, but is rather an introduction to their more general use." We should say that in conjunction with **BIRDS** it would be exceedingly helpful in making the acquisition of a knowledge of bird life prompt and effective. Too much time is commonly spent in the acquisition of almost every branch of knowledge, simply because the right means are not used, or improperly used, in obtaining it.

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By M. A. WILLCOX, Professor of Zoology, Wellesley College, containing full description, key and literary references.

Nothing is more indicative of the spread of popular culture in profitable and beneficent directions than the constantly increasing interest in the practical study of ornithology. Of the numerous volumes that have been published of late on bird lore, none is so practical or on the whole so well suited to the needs of the beginner as the "Pocket Guide to the Common Land Birds of New England." The book is the outcome of long experience in teaching college women how to study common birds, and the method of classification, based on the conspicuous colors or markings, is most ingeniously arranged, in such a way that with the aid of the artificial key the identity of any bird may be easily traced. In all, Professor Willcox describes eighty-nine different species, devoting a page or so of text to each, and giving references to collateral literature. Lee & Shepard, Boston.

Bird Tablet.

Josephine A. Clark, of the U. S. Department of Agriculture, has recently published a bird tablet for field use, which is as unique as it is useful. Several well known ornithologists, among them Mr. Brewster of Cambridge, Dr. Palmer and Miss Florence Merriam encouraged the publication, and recommend it as a handy device in connection with field work. The aim is to suggest the observations to be made, and to save writing. Of course it does not take the place of a manual, but serves as a convenient accompaniment. The notes made in the field are in shape to compare with a manual on returning home and for preservation without copying. Price, twenty-five cents.

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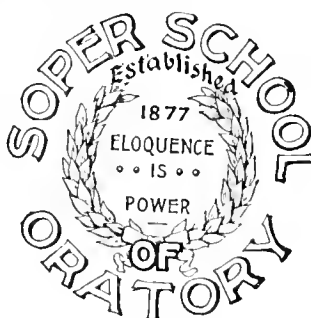
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A Big Cut.

The chief topic in the magazine world during this warm weather is the strong bid that *Current Literature* is making for circulation. The belief that *Current Literature* was strictly a class magazine became so prevalent that the publishers decided to give the reading public an opportunity to study the numerous departments and form their own conclusions. To this end, the Current Literature Publishing Company, 55 Liberty Street, New York, have extensively advertised that they will send *Current Literature* until January 1, 1899, for fifty cents. This hardly covers postage and cost of printing. The regular price of *Current Literature* is twenty-five cents a copy. This is an offer that should find ready acceptance.

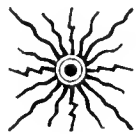
How to Know the Shore Birds.

One of the most interesting, as it is one of the most useful of books recently published on ornithology is that by Chas. B. Cory, entitled "How to Know the Shore Birds." It is fully illustrated in black and white, the illustrations being the work of Edward Knobel, and the accuracy of the drawings may be considered unquestionable.

The work is intended to meet the wants of sportsmen especially. It may be said to be a *key*, in which the species are arranged in groups according to size, and enables any one unfamiliar with birds to identify with comparative ease any species of North American shore birds. Instructions are given as to the measurement of birds, and there is a glossary of nearly all the terms used in describing them. Little, Brown & Co., Boston.

In Bird Land.

By Leander S. Keyser (A. C. McClurg & Co., Chicago) is one of the most attractive of recent books on this interesting subject. The chapters are made up of articles originally contributed to various periodicals, from observations made in and about Springfield, Ohio. "Wayside Rambles," "Bird Curios," "February Outings," "Bird Courtship," "Bird Nurseries," "Bird Work," "Bird Play," and "Bird Deaths," are the titles of a few of the chapters. It is a book to read in the house or out of doors, and we commend it especially for the wide sympathy with nature displayed by the author. Price \$1.25.



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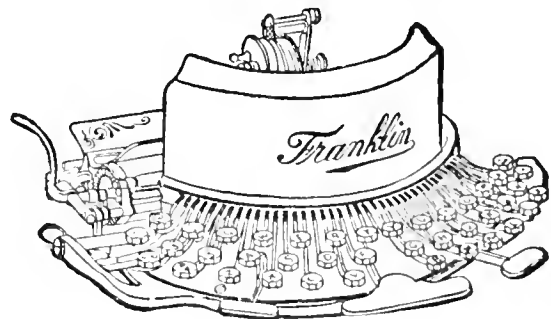
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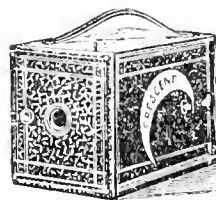
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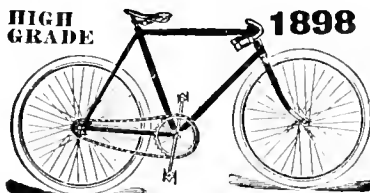
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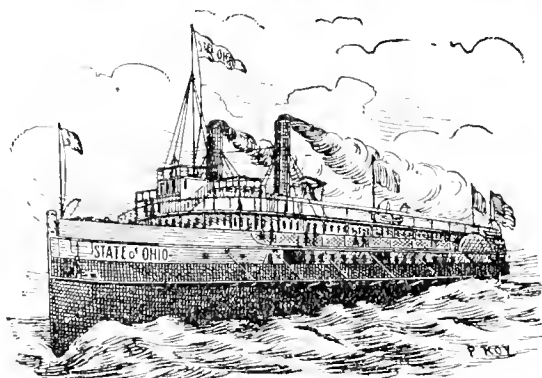
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- " 9 and 10, Swimming Birds.

Plate II, Birds of Peculiar Beauty.

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Oriole, Baltimore.	Partridge, Gambel's.	Pigeon, Passenger.
Oriole, Golden.	Phalarope, Wilson's.	Plover, Snowy.
Oriole, Orchard.	Pheasant, Ring-necked.	Prairie Hen, Lesser.
Owl Long-eared.	Phoebe	Rhea, South American.
Owl, Screech.	Plover, Belted-piping.	Sandpiper, Bartramian.
Owl, Snowy.	Plover, Simipalmated Ring.	Sparrow, English.
Paradise, Red Bird of.	Rail, Sora.	Sparrow, Fox.
Parrakeet, Australian.	Sapsucker, Yellow-bellied.	Spoonbill, Roseate.
Parrot, King.	Scoter, American.	Stilt, Black-necked.
Pheasant, Golden.	Skylark.	Swan, Black.
Pheasant, Japan.	Snake Bird.	Vireo, Red-eyed.
Red Bird, American.	Snow Flake.	Warbler, Baybreasted.
Robin, American.	Sparrow, English.	Warbler, Magnolia.
Roller, Swallow-tailed Indian.	Sparrow, Song.	Woodpecker, Arctic Three-toed.
Shrike, Logger-head.	Tanager, Summer.	Woodpecker, Downy.
Swallow, Barn.	Teal, Green-winged.	Woodpecker, Ivory-billed.
Tanager, Red-rumped.	Thrush, Hermit.	Woodpecker, Red-bellied.
Tanager, Scarlet.	Tropic Bird, Yellow-billed.	And three plates of eggs including
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Thrush, Brown.	Turnstone.	
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Trogon, Resplendent.	Vulture, Turkey.	
Vireo, Yellow-throated.	Warbler, Blackburnian.	
Warbler, Black and White Creeping.	Warbler, Cerulean.	
Warbler, Prothonotary.	Warbler, Kentucky.	
Wax Wing, Bohemian.	Warbler, Yellow.	
Woodpecker, California.	Woodcock, American.	
Woodpecker, Red headed.	Wren, House.	
Wren, Loug-billed Marsh.	Wood Pewee.	
	Yellow Legs.	

(ONE OF THE MANY LETTERS WE RECEIVE.)

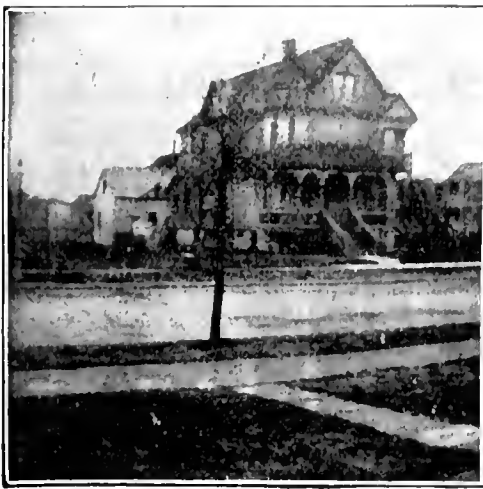
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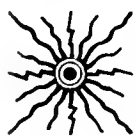
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BIRDS AND ALL NATURE.

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VOL. IV.

SEPTEMBER, 1898.

No. 3.

SOME ANIMAL PROPENSITIES.

IT is not quite agreeable to contemplate many of the shortcomings, from a moral point of view, of certain of the animal creation, and even less to be compelled to recognize the necessity of them. Thievery in nature is widely extended, and food is the excuse for it. Civilization has made the practice of the humanities possible among men, but the lower animals will doubtless remain, as they have ever been, wholly subject to the instincts with which nature originally endowed them.

Huber relates an anecdote of some Hive-bees paying a visit to a nest of Bumble-bees, placed in a box not far from their hive, in order to steal or beg the honey. The Hive-bees, after pillaging, had taken almost entire possession of the nest. Some Bumble-bees, which remained, went out to collect provisions, and bringing home the surplus after they had supplied their own immediate wants, the Hive-bees followed them and did not quit them until they had obtained the fruit of their labors. They licked them, presented to them their probosces, surrounded them, and thus at last persuaded them to part with the contents of their "honey-bags." The Bumble-bees did not seem to harm or sting them, hence it would seem to have been persuasion rather than force that produced this instance of self-denial. But it was systematic robbery, and was persisted in until the Wasps

were attracted by the same cause, when the Bumble-bees entirely forsook the nest.

Birds, notwithstanding their attractiveness in plumage and sweetness in song, are many of them great thieves. They are neither fair nor generous towards each other. When nest-building they will steal the feathers out of the nests of other birds, and frequently drive off other birds from a feeding ground even when there is abundance. This is especially true of the Robin, who will peck and run after and drive away birds much larger than himself. In this respect the Robin and Sparrow resemble each other. Both will drive away a Black-bird and carry away the worm it has made great efforts to extract from the soil.

Readers of Frank Buckland's delightful books will remember his pet Rat, which not infrequently terrified his visitors at breakfast. He had made a house for the pet just by the side of the mantel-piece, and this was approached by a kind of ladder, up which the Rat had to climb when he had ventured down to the floor. Some kinds of fish the Rat particularly liked, and was sure to come out if the savor was strong. One day Mr. Buckland turned his back to give the Rat a chance of seizing the coveted morsel, which he was not long in doing and in running up the ladder with it; but he had fixed it by the middle of the back,

and the door of the entrance was too narrow to admit of its being drawn in thus. But the Rat was equal to the emergency. In a moment he be-thought himself, laid the fish on the small platform before the door, and then entering his house he put out his mouth, took the fish by the nose and thus pulled it in and made a meal of it.

One of the most remarkable instances of carrying on a career of theft came under our own observation, says a writer in *Cassell's Magazine*. A friend in northeast Essex had a very fine Aberdeenshire Terrier, a female, and a very affectionate relationship sprang up between this Dog and a Tom-cat. The Cat followed the Dog with the utmost fondness, purring and running against it, and would come and call at the door for the Dog to come out. Attention was first drawn to the pair by this circumstance. One evening we were visiting our friend and heard the Cat about the door calling, and some one said to our friend that the cat was noisy. "He wants little Dell," said he—that being the Dog's name; we looked incredulous. "Well, you shall see," said he, and opening the door he let the Terrier out. At once the Cat bounded toward her, fawned round her, and then, followed by the Dog, ran about the lawn. But a change came. Some kittens were brought to the house, and the Terrier got much attached to them and they to her. The Tom cat became neglected, and soon appeared to feel it. By and by, to the surprise of every one, the Tom somehow managed to get, and to establish in the hedge of the garden, two kittens, fiery, spitting little things, and carried on no end of depredation on their account. Chickens went; the fur and remains of little Rabbits were often found round the nest, and pieces of meat disappeared from kitchen and larder. This went on for some time, when suddenly the Cat disappeared—had been shot in a wood near by, by a

game-keeper, when hunting to provide for these wild kittens, which were allowed to live in the hedge, as they kept down the Mice in the garden. This may be said to be a case of animal thieving for a loftier purpose than generally obtains, mere demand for food and other necessity.

That nature goes her own way is illustrated by these anecdotes of birds and animals, and by many others even more strange and convincing. The struggle for existence, like the brook, goes on forever, and the survival, if not of the fittest, at least of the strongest, must continue to be the rule of life, so long as the economical problems of existence remain unsolved. Man and beast must be fed. "Manna," to some extent, will always be provided by generous humanitarianism. There will always be John Howards. Occasionally a disinterested, self-abnegating soul like that of John Woolman will appear among us—doing good from love; and, it may be, men like Jonathan Chapman—Johnny Appleseed, he was called from his habit of planting apple seeds wherever he went, as he distributed tracts among the frontier settlers in the early days of western history. He would not harm even a Snake. His heart was right, though his judgment was little better than that of many modern sentimentalists who cannot apparently distinguish the innocuous from the venomous.

It does seem that birds and animals are warranted in committing every act of vandalism that they are accused of. They are unquestionably entitled by every natural right to everything of which they take possession. The farmer has no moral right to deny them a share in the product of his fields and orchards; the gardener is their debtor (at least of the birds), and the government, which benefits also from their industry, should give them its protection. —C. C. M.

THE PETRIFIED FERN.

IN a valley, centuries ago,
Grew a little fernleaf, green and slender,
Veining delicate and fibres tender,
Waving when the wind crept down so low ;
Rushes tall, and moss, and grass grew round it ;
Playful sunbeams darted in and found it,
Drops of dew stole in by night and crowned it ;
But no foot of man e'er came that way,
Earth was young and keeping holiday.

Monster fishes swam the silent main—
Mountains hurled their snowy avalanches,
Giant forests shook their stately branches,
Mammoth creatures stalked across the plain ;
Nature reveled in wild mysteries,
But the little fern was not of these,
Did not number with the hills and trees,
Only grew and waved its sweet wild way—
No one came to note it day by day.

Earth one day put on a frolic mood,
Moved the hills and changed the mighty motion
Of the deep, strong currents of the ocean,
Heaved the rocks, and shook the haughty wood,
Crushed the little fern in soft moist clay,
Covered it and hid it safe away.
Oh, the long, long centuries since that day !
Oh, the agony, Oh, life's bitter cost
Since that useless little fern was lost !

Useless ? Lost ? There came a thoughtful man
Searching Nature's secrets far and deep ;
From a fissure in a rocky steep
He withdrew a stone, o'er which there ran
Fairy pencilings, a quaint design,
Veining, leafage, fibres, clear and fine,
And the fern's life lay in every line.
So, methinks, God hides some souls away,
Sweetly to surprise us some sweet day.

—ANON.

WATER AND ANIMALS.

TO SHOW the importance of water to animal life, we give the opinions of several travelers and scientific men who have studied the question thoroughly.

The Camel, with his pouch for storing water, can go longer without drink than other animals. He doesn't do it from choice, any more than you in a desert would prefer to drink the water that you have carried with you, if you might choose between that and fresh spring water. Major A. G. Leonard, an English transport officer, claims that Camels "should be watered every day, that they can not be trained to do without water, and that, though they can retain one and a half gallons of water in the cells of the stomach, four or five days' abstinence is as much as they can stand, in heat and with dry food, without permanent injury."

Another distinguished English traveler, a Mr. Bryden, has observed that the beasts and birds of the deserts must have private stores of water of which we know nothing. Mr. Bryden, however, has seen the Sand-Grouse of South America on their flight to drink at a desert pool. "The watering process is gone through with perfect order and without overcrowding"—a hint to young people who are hungry and thirsty at their meals. "From eight o'clock to close on ten this wonderful flight continued; as birds drank and departed, others were constantly arriving to take their

places. I should judge that the average time spent by each bird at and around the water was half an hour."

To show the wonderful instinct which animals possess for discovering water an anecdote is told by a writer in the *Spectator*, and the article is republished in the *Living Age* of February 5. The question of a supply of good water for the Hague was under discussion in Holland at the time of building the North Sea Canal. Some one insisted that the Hares, Rabbits, and Partridges knew of a supply in the sand hills, because they never came to the wet "polders" to drink. At first the idea excited laughter. Then one of the local engineers suggested that the sand hills should be carefully explored, and now a long reservoir in the very center of those hills fills with water naturally and supplies the entire town.

All this goes to prove to our mind that if Seals do not apparently drink, if Cormorants and Penguins, Giraffes, Snakes, and Reptiles seem to care nothing for water, some of them do eat wet or moist food, while the Giraffe, for one, enjoys the juices of the leaves of trees that have their roots in the moisture. None of these animals are our common, everyday pets. If they were, it would cost us nothing to put water at their disposal, but that they never drink in their native haunts "can not be proved until the deserts have been explored and the total absence of water confirmed."—*Ex.*



THE HERRING GULL.

JUST how many species of Gulls there are has not yet been determined, but the habits and locations of about twenty-six species have been described. The American Herring Gull is found throughout North America, nesting from Maine northward, and westward throughout the interior on the large inland waters, and occasionally on the Pacific; south in the winter to Cuba and lower California. This Gull is a common bird throughout its range, particularly coast-wise.

Col. Goss in his "Birds of Kansas," writes as follows of the Herring Gull:

"In the month of June, 1880, I found the birds nesting in large communities on the little island adjacent to Grand Manan; many were nesting in spruce tree tops from twenty to forty feet from the ground. It was an odd sight to see them on their nests or perched upon a limb, chattering and scolding as approached.

"In the trees I had no difficulty in finding full sets of their eggs, as the egg collectors rarely take the trouble to climb, but on the rocks I was unable to find an egg within reach, the 'eggers' going daily over the rocks. I was told by several that they yearly robbed the birds, taking, however, but nine eggs from a nest, as they found that whenever they took a greater number, the birds so robbed would forsake their nests, or, as they expressed it, cease to lay, and that in order to prevent an over-collection they invariably drop near the nest a little stone or pebble for every egg taken."

The young Gulls grow rapidly. They do not leave their nesting grounds until able to fly, though half-grown birds are sometimes seen on the water that by fright or accident have fallen. The nests are composed of grass and moss. Some of them are large and elaborately made, while

others are merely shallow depressions with a slight lining. Three eggs are usually laid, which vary from bluish-white to a deep yellowish brown, spotted and blotched with brown of different shades. In many cases where the Herring Gull has suffered persecution, it has been known to depart from its usual habit of nesting on the open seashore.

It is a pleasure to watch a flock of Gulls riding buoyantly upon the water. They do not dive, as many suppose, but only immerse the head and neck. They are omnivorous and greedy eaters; "scavengers of the beach, and in the harbors to be seen boldly alighting upon the masts and flying about the vessels, picking up the refuse matter as soon as it is cast overboard, and often following the steamers from thirty to forty miles from the land, and sometimes much farther. They are ever upon the alert, with a quick eye that notices every floating object or disturbance of the water, and as they herald with screams the appearance of the Herring or other small fishes that often swim in schools at the surface of the water, they prove an unerring pilot to the fishermen who hastily follow with their lines and nets, for they know that beneath and following the valuable catch in sight are the larger fishes that are so intent upon taking the little ones in out of the wet as largely to forget their cunning, and thus make their capture an easy one.

Very large flocks of Gulls, at times appearing many hundreds, are seen on Lake Michigan. We recently saw in the vicinity of Milwaukee a flock of what we considered to be many thousands of these birds, flying swiftly, mounting up, and falling, as if to catch themselves, in wide circles, the sun causing their wings and sides to glisten like burnished silver.

USEFUL BIRDS OF PREY.

IT is claimed that two hundred millions of dollars that should go to the farmer, the gardner, and the fruit grower in the United States are lost every year by the ravages of insects—that is to say, one-tenth of our agricultural product is actually destroyed by them. The Department of Agriculture has made a thorough investigation of this subject, and its conclusions are about as stated. The ravages of the Gypsy Moth in three counties in Massachusetts for several years annually cost the state \$100,000. “Now, as rain is the natural check to drought, so birds are the natural check to insects, for what are pests to the farmer are necessities of life to the bird. It is calculated that an average insectivorous bird destroys 2,400 insects in a year; and when it is remembered that there are over 100,000 kinds of insects in the United States, the majority of which are injurious, and that in some cases a single individual in a year may become the progenitor of several billion descendants, it is seen how much good birds do ordinarily by simple prevention.” All of which has reference chiefly to the indispensableness of preventing by every possible means the destruction of the birds whose food largely consists of insects.

But many of our so-called birds of prey, which have been thought to be the enemies of the agriculturist and have hence been ruthlessly destroyed, are equally beneficial. Dr. Fisher, an authority on the subject, in referring to the injustice which has been done to many of the best friends of the farm and garden, says:

“The birds of prey, the majority of which labor night and day to destroy the enemies of the husbandman, are persecuted unceasingly. This has especially been the case with the Hawk family, only three of the common in-

land species being harmful. These are the Goshawk, Cooper’s Hawk, and the Sharp-shinned Hawk, the first of which is rare in the United States, except in winter. Cooper’s Hawk, or the Chicken Hawk, is the most destructive, especially to Doves. The other Hawks are of great value, one of which, the Marsh Hawk, being regarded as perhaps more useful than any other. It can be easily distinguished by its white rump and its habit of beating low over the meadows. Meadow Mice, Rabbits, and Squirrels are its favorite food. The Red-tailed Hawk, or Hen Hawk, is another. It does not deserve the name, for according to Dr. Fisher, while fully sixty-six per cent of its food consists of injurious mammals, not more than seven per cent consists of poultry, and that it is probable that a large proportion of the poultry and game captured by it and the other Buzzard Hawks is made up of old, diseased, or otherwise disabled fowls, so preventing their interbreeding with the sound stock and hindering the spread of fatal epidemics. It eats Ground Squirrels, Rabbits, Mice, and Rats.

The Red-shouldered Hawk, whose picture we present to our readers, is as useful as it is beautiful, in fact ninety per cent. of its food is composed of injurious mammals and insects.

The Sparrow Hawk (See BIRDS, vol. 3, p. 107) is another useful member of this family. In the warm months Grasshoppers, Crickets, and other insects compose its food, and Mice during the rest of the year.

Swainson’s Hawk is said to be the great Grasshopper destroyer of the west, and it is estimated that in a month three hundred of these birds save sixty tons of produce that the Grasshopper would destroy.



THE RACCOON.

AN ACCOUNT of the value of its skin, this interesting animal is much sought after by those who take pride in their skill in securing it. It is commonly known by its abbreviated name of Coon, and as it is of frequent occurrence throughout the United States, every country boy is more or less acquainted with its habits. As an article of food there is much diversity of opinion respecting its merits. It is hunted by some for the sport alone, which is doubtless to be lamented, and by others who enjoy also the pleasure of a palatable stew. As a pet it is also much prized.

The food of the Raccoon consists in the main of small animals and insects. The succulent Oyster also is a favorite article of its diet. It bites off the hinge of the Oyster and scrapes out the animal in fragments with its paws. Like the Squirrel when eating a nut, the Raccoon usually holds its food between its fore paws pressed together and sits upon its hind quarters when it eats. Poultry is also enjoyed by it, and it is said to be as destructive in the farm yard as the Fox, as it only devours the heads of the fowl.

When taken young the Coon is easily tamed, but often becomes blind soon after its capture. This is believed to be produced by the sensitiveness of its eyes, which are intended only to be used by night. As it is frequently awakened by day it suffers so much from the glare of light that its eyes gradually lose their vision. If it must be confined at all it should be in a darkened place. In zoological gardens we have frequently seen several of these animals exposed to the glaring sunlight, the result of ignorance or cruelty, or both.

Unlike the Fox, the Raccoon is at home in a tree, which is the usual refuge when danger is near, and not

being very swift of foot, it is well that it possesses this climbing ability. According to Hallock, the Coons' abode is generally in a hollow tree, oak or chestnut, and when the "juvenile farmer's son comes across a *Coon tree*, he is not long in making known his discovery to friends and neighbors, who forthwith assemble at the spot to secure it." The "sport" is in no sense agreeable from a humane point of view, and we trust it will cease to be regarded as such by those who indulge in it. "The Raccoon makes a heroic struggle and often puts many of his assailants *hors de combat* for many a day, his jaws being strong and his claws sharp."

The young ones are generally from four to eight, pretty little creatures at first and about as large as half-grown Rats. They are very playful, soon become docile and tame, but at the first chance will wander off to the woods and not return. The Coon is a night animal and never travels by day; sometimes it is said, being caught at morning far from its tree and being unable to return thither, it will spend the hours of daylight snugly coiled up among the thickest foliage of some lofty tree-top. It is adroit in its attempts to baffle Dogs, and will often enter a brook and travel for some distance in the water, thus puzzling and delaying its pursuers.

A good sized Raccoon will weigh from fifteen to twenty pounds.

The curiosity of the Raccoon is one of its most interesting characteristics. It will search every place of possible concealment for food, examine critically any object of interest, will rifle a pocket, stand upright and watch every motion of man or animal, and indeed show a marked desire for all sorts of knowledge. Raccoons are apparently happy in captivity when properly cared for by their keepers.

WILD BIRDS IN LONDON.

Their Number and Variety is Increasing Instead of Diminishing.

WHETHER in consequence of the effective working of the Wild Birds' Charter or of other unknown causes, there can be no doubt in the minds of observant lovers of our feathered friends that of late years there has been a great and gratifying increase in their numbers in and around London, especially so, of course, in the vicinity of the beautiful open spaces which do such beneficent work silently in this province of houses. But even in long, unlovely streets, far removed from the rich greenery of the parks, the shabby parallelograms, by courtesy styled gardens, are becoming more and more frequently visited by such pretty shy songsters as Linnets, Blackbirds, Thrushes, and Finches, who, though all too often falling victims to the predatory Cat, find abundant food in these cramped enclosures. Naturally some suburbs are more favored than others in this respect, notably Dulwich, which, though fast losing its beautiful character under the ruthless grip of the builder, still retains some delightful nooks where one may occasionally hear the Nightingale's lovely song in its season.

But the most noticable additions to the bird population of London have been among the Starlings. Their quaint gabble and peculiar minor

whistle may now be heard in the most unexpected localities. Even the towering mansions which have replaced so many of the slums of Westminster find favor in their eyes, for among the thick clustering chimneys which crown these great buildings their slovenly nests may be found in large numbers. In some districts they are so numerous that the irrepressible Sparrow, true London gamin that he is, finds himself in considerable danger of being crowded out. This is perhaps most evident on the sequestered lawns of some of the inns of the court, Gray's Inn Square, for instance, where hundreds of Starlings at a time may now be observed busily trotting about the greensward searching for food. Several long streets come to mind where not a house is without its pair or more of Starlings, who continue faithful to their chosen roofs, and whose descendants settle near as they grow up, well content with their surroundings. House Martins, too, in spite of repeated efforts on the part of irritated landlords to drive them away by destroying their nests on account of the disfigurement to the front of the dwelling, persist in returning year after year and rebuilding their ingenious little mud cells under the eaves of the most modern suburban villas or terrace houses.

—*Pall Mall Gazette.*



THE PIGMY ANTELOPE.

THE Pigmy Antelopes present examples of singular members of the family, in that they are of exceedingly diminutive size, the smallest being no larger than a large Rat, dainty creatures indeed. The Pigmy is an inhabitant of South Africa, and its habits are said to be quite similar to those of its brother of the western portion of North America.

The Antelope is a very wary animal, but the sentiment of curiosity is implanted so strongly in its nature

that it often leads it to reconnoitre too closely some object which it cannot clearly make out, and its investigations are pursued until "the dire answer to all inquiries is given by the sharp 'spang' of the rifle and the answering 'spat' as the ball strikes the beautiful creatures flank." The Pigmy Antelope is not hunted, however, as is its larger congener, and may be considered rather as a diminutive curiosity of Nature's delicate workmanship than as the legitimate prey of man.

BIRDS OF ALASKA.

No sooner had the twilight settled over the island than new bird voices called from the hills about us. The birds of the day were at rest, and their place was filled with the night denizens of the island. They came from the dark recesses of the forests, first single stragglers, increased by midnight to a stream of eager birds, passing to and fro from the sea. Many, attracted by the glow of the burning logs, altered their course and circled about the fire a few times and then sped on. From their notes we identified the principal night prowlers as the Cassin's Auklet, Rhinoceros Auk, Murrelet, and varieties of Petrel. All through the night our slumbers were frequently disturbed by birds alighting on the sides of the tent, slipping down with great scratching into the grass below, where our excited Dog took a hand in the matter, daylight often finding our tent strewn with birds he had captured during the night. When he found time to sleep I do not know. He was after birds the entire twenty-four hours.

In climbing over the hills of the island we discovered the retreats of these night birds, the soil everywhere

through the deep wood being fairly honeycombed with their nesting burrows. The larger tunnels of the Rhinoceros Auks were, as a rule, on the slopes of the hill, while the little burrows of the Cassin's Auklet were on top in the flat places. We opened many of their queer abodes that ran back with many turns to a distance of ten feet or more. One or both birds were invariably found at the end, covering their single egg, for this species, like many other sea birds, divide the duties of incubation, both sexes doing an equal share, relieving each other at night.

The Puffins nested in burrows also, but lower down—often just above the surf. One must be very careful, indeed, how he thrusts his hand into their dark dens, for should the old bird chance to be at home, its vise-like bill can inflict a very painful wound. The rookeries of the Murres and Cormorants were on the sides of steep cliffs overhanging the sea. Looking down from above, hundreds of eggs could be seen, gathered along the narrow shelves and chinks in the rocks, but accessible only by means of a rope from the top.—*Outing.*

THE RED-SHOULDERED HAWK.

You have heard of me before. I am the Hawk whose cry Mr. Blue Jay imitated, as you will remember, in the story "The New Tenants," published in BIRDS.

Kee-oe, kee-oe, kee-oe, that is my cry, very loud and plaintive; they say I am a very noisy bird; perhaps that is the reason why Mr. Blue Jay imitates me more than he does other Hawks.

I am called Chicken Hawk, and Hen Hawk, also, though I don't deserve either of those names. There are members of our family, and oh, what a lot of us there are—as numerous as the Woodpeckers—who do drop down into the barnyards and right before the farmer's eyes carry off a Chicken. Red Squirrels, to my notion, are more appetizing than Chickens; so are Mice, Frogs, Centipedes, Snakes, and Worms. A bird once in a while I like for variety, and between you and me, if I am hungry, I pick up a chicken now and then, that has strayed outside the barnyard. But only *occasionally*, remember, so that I don't deserve the name of Chicken Hawk at all, do I?

Wooded swamps, groves inhabited by Squirrels, and patches of low timber are the places in which we make our

homes. Sometimes we use an old crow's nest instead of building one; we retouch it a little and put in a soft lining of feathers which my mate plucks from her breast. When we build a new nest, it is made of husks, moss, and strips of bark, lined as the building progresses with my mate's feathers. Young lady Red-shouldered Hawks lay three and sometimes four eggs, but the old lady birds lay only two.

Somehow Mr. Blue Jay never sees a Hawk without giving the alarm, and on he rushes to attack us, backed up by other Jays who never fail to go to his assistance. They often assemble in great numbers and actually succeed in driving us out of the neighborhood. Not that we are afraid of them, oh no! We know them to be great cowards, as well as the crows, who harass us also, and only have to turn on our foes to put them to rout. Sometimes we do turn, and seizing a Blue Jay, sail off with him to the nearest covert; or in mid air strike a Crow who persistently follows us. But as a general thing we simply ignore our little assailants, and just fly off to avoid them.



THE RED-SHOULDERED HAWK.

THE Hawk family is an interesting one and many of them are beautiful. The Red-shouldered Hawk is one of the finest specimens of these birds, as well as one of the most useful. Of late years the farmer has come to know it as his friend rather than his enemy, as formerly. It inhabits the woodlands where it feeds chiefly upon Squirrels, Rabbits, Mice, Moles, and Lizards. It occasionally drops down on an unlucky Duck or Bob White, though it is not quick enough to catch the smaller birds. It is said to be destructive to domestic fowls raised in or near the timber, but does not appear to search for food far away from its natural haunts. As it is a very noisy bird, the birds which it might destroy are warned of its approach, and thus protect themselves.

During the early nesting season its loud, harsh *kce-oo* is heard from the perch and while in the air, often keeping up the cry for a long time without intermission. Col. Goss says that he collected at Neosho Falls, Kansas, for several successive years a set of the eggs of this species from a nest in the forks of a medium sized oak. In about nine days after each robbery the birds would commence laying again, and he allowed them to hatch and rear their young. One winter during his absence the tree was cut down, but this did not discourage the birds, or cause them to forsake the place, for on approach of spring he found them building a nest not over ten rods from

the old one, but this time in a large sycamore beyond reach. This seemed to him to indicate that they become greatly attached to the grounds selected for a home, which they vigilantly guard, not permitting a bird of prey to come within their limits.

This species is one of the commonest in the United States, being especially abundant in the winter, from which it receives the name of Winter Falcon. The name of Chicken Hawk is often applied to it, though it does not deserve the name, its diet being of a more humble kind.

The eggs are usually deposited in April or May in numbers of three or four — sometimes only two. The ground color is bluish, yellowish-white or brownish, spotted, blotched and dotted irregularly with many shades of reddish brown. Some of them are strikingly beautiful. According to Davie, to describe all the shades of reds and browns which comprise the variation would be an almost endless task, and a large series like this must be seen in order to appreciate how much the eggs of this species vary.

The flight of the Red-shouldered Hawk is slow, but steady and strong with a regular beat of the wings. They take delight in sailing in the air, where they float lightly and with scarcely a notable motion of the wings, often circling to a great height. During the insect season, while thus sailing, they often fill their craws with grass-hoppers, that, during the after part of the day, also enjoy an air sail.

THE DOVES OF VENICE.

VENICE, the pride of Italy of old, aside from its other numerous curiosities and antiquities, has one which is a novelty indeed. Its Doves on the San Marco Place are a source of wonder and amusement to every lover of animal life. Their most striking peculiarity is that they fear no mortal man, be he stranger or not. They come in countless numbers, and, when not perched on the far-famed bell tower, are found on the flags of San Marco Square. They are often misnamed Pigeons, but as a matter of fact they are Doves of the highest order. They differ, however, from our wild Doves in that they are fully three times as large, and twice as large as our best domestic Pigeon. Their plumage is of a soft mouse color relieved by pure white, and occasionally one of pure white is found, but these are rare. Hold out to them a handful of crumbs and without fear they will come, perch on your hand or shoulder and eat with thankful coos. To strangers this is indeed a pleasing sight, and demonstrates the lack of fear of animals when they are treated humanely, for none would dare to injure the doves of San Marco. He would probably forfeit his life were he to injure one intentionally. And what beggars these Doves of San Marco are! They will crowd around, and push and coo with their soft soothing voices, until you can withstand them no longer, and invest a few centimes in bread for their benefit. Their bread, by the way, is sold by an Italian, who must certainly be in collusion with the Doves, for whenever a stranger makes his appearance, both Doves and bread vender are at hand to beg.

The most remarkable fact in connection with these Doves is that they will collect in no other place in large

numbers than San Marco Square, and in particular at the vestibule of San Marco Church. True, they are found perched on buildings throughout the entire city, and occasionally we will find a few in various streets picking refuse, but they never appear in great numbers outside of San Marco Square. The ancient bell tower, which is situated on the west side of the place, is a favorite roosting place for them, and on this perch they patiently wait for a foreigner, and proceed to bleed him after approved Italian fashion.

There are several legends connected with the Doves of Venice, each of which attempts to explain the peculiar veneration of the Venetian and the extreme liberty allowed these harbingers of peace. The one which struck me as being the most appropriate is as follows:

Centuries ago Venice was a free city, having her own government, navy, and army, and in a manner was considered quite a power on land and sea. The city was ruled by a Senate consisting of ten men, who were called Doges, who had absolute power, which they used very often in a despotic and cruel manner, especially where political prisoners were concerned. On account of the riches the city contained, and also its value as a port, Venice was coveted by Italy and neighboring nations, and, as a consequence, was often called upon to defend itself with rather indifferent success. In fact, Venice was conquered so often, first by one and then another, that Venetians were seldom certain of how they stood. They knew not whether they were slave or victor. It was during one of these sieges that the incident of the Doves occurred. The city had been besieged for a long time by Italians, and matters were coming to such a pass that a surrender was abso-

lutely necessary on account of lack of food. In fact, the Doges had issued a decree that on the morrow the city should surrender unconditionally.

All was gloom and sorrow, and the populace stood around in groups on the San Marco discussing the situation and bewailing their fate, when lo! in the eastern sky there appeared a dense cloud rushing upon the city with the speed of the wind. At first consternation reigned supreme, and men asked each other: "What new calamity is this?" As the cloud swiftly approached it was seen to be a vast number of Doves, which, after hovering over the San Marco Place for a moment, gracefully settled down upon the flagstones and approached the men without fear. Then there arose a queer cry, "The Doves! The Doves of San Marco!" It appears that some years before this a sage had predicted stormy times for Venice, with much suffering and strife, but, when all seemed lost, there would appear a multitude of Doves, who would bring Venice peace and happiness. And so it came to pass that the next day, instead of attacking, the besiegers left, and Venice was free again. The prophet also stated that, so long as the Doves remained at Venice prosperity would reign supreme, but that there would come a day when the Doves would leave just as they had

come, and Venice would pass into oblivion. That is why Venetians take such good care of their Doves.

You will not find this legend in any history, but I give it just as it was told me by a guide, who seemed well versed in hair-raising legends. Possibly they were manufactured to order by this energetic gentleman, but they sounded well nevertheless. Even to this day the old men of Venice fear that some morning they will awake and find their Doves gone.

There in the shadow of the famous bell-tower, with the stately San Marco church on one side and the palace of the cruel and murderous Doges on the other, we daily find our pretty Doves coaxing for bread. Often you will find them peering down into the dark passage-way in the palace, which leads to the dungeons underneath the Grand Canal. What a boon a sight of these messengers of peace would have been to the doomed inmates of these murder-reeking caves. But happily they are now deserted, and are used only as a source of revenue, which is paid by the inquisitive tourist.

Venice still remains as of old. She never changes, and the Doves of San Marco will still remain. May we hope, with the sages of Venice, that they may remain forever.—*Lebert, in Cincinnati Commercial Gazette.*

BUTTERFLIES.

IT may appear strange, if not altogether inappropriate to the season, that "the fair fragile things which are the resurrection of the ugly, creeping caterpillars" should be almost as numerous in October as in the balmy month of July. Yet it is true, and early October, in some parts of the country, is said to be perhaps the best time of the year for the investigating student and observer of Butterflies. While not quite so numerous, perhaps, many of the species are in more perfect condition, and the variety is still intact. Many of them come and remain until frost, and the largest Butterfly we have, the Archippus, does not appear until the middle of July, but after that is constantly with us, floating and circling on the wing, until October. How these delicate creatures can endure even the chill of autumn days is one of the mysteries.

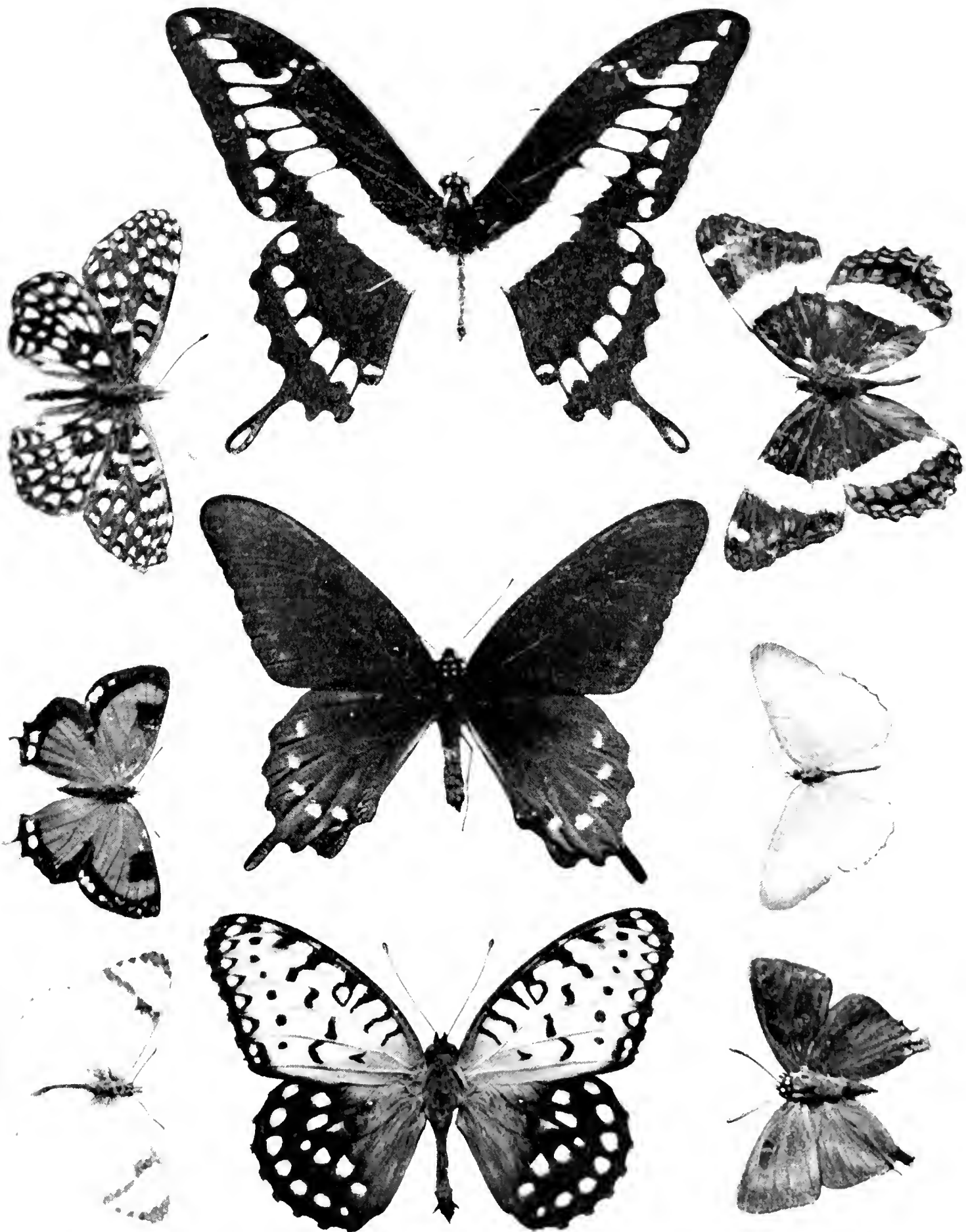
Very curious and interesting are the Skippers, says *Current Literature*. They are very small insects, but their bodies are robust, and they fly with great rapidity, not moving in graceful, wavy lines as the true Butterflies do, but skipping about with sudden, jerky motions. Their flight is very short, and almost always near the ground. They can never be mistaken, as their peculiar motion renders their identification easy. They are seen at their best in August and September. All June and July Butterflies are August and September Butterflies, not so numerous in some instances, perhaps, but still plentiful, and vying with the rich hues of the changing autumnal foliage.

The "little wood brownies," or Quakers, are exceedingly interesting.

Their colors are not brilliant, but plain, and they seek the quiet and retirement of the woods, where they flit about in graceful circles over the shady beds of ferns and woodland grasses.

Many varieties of the Vanessa are often seen flying about in May, but they are far more numerous and perfect in July, August, and September. A beautiful Azure-blue Butterfly, when it is fluttering over flowers in the sunshine, looks like a tiny speck of bright blue satin. Several other small Butterflies which appear at the same time are readily distinguished by the peculiar manner in which their hind wings are tailed. Their color is a dull brown of various shades, marked in some of the varieties with specks of white or blue.

"Their presence in the gardens and meadows," says a recent writer, "and in the fields and along the river-banks, adds another element of gladness which we are quick to recognize, and even the plodding wayfarer who has not the honor of a single intimate acquaintance among them might, perhaps, be the first to miss their circlings about his path. As roses belong to June, and chrysanthemums to November, so Butterflies seem to be a joyous part of July. It is their gala-day, and they are everywhere, darting and circling and sailing, dropping to investigate flowers and overripe fruit, and rising on buoyant wings high into the upper air, bright, joyous, airy, ephemeral. But July can only claim the larger part of their allegiance, for they are wanderers into all the other months, and even occasionally brave the winter with torn and faded wings."



BUTTERFLIES. — Lite-size

Melitaea chalcidon,
Thecla crysalus,
Anthocharis sara.

Papilio thonis,
Papilio philenor,
Argynis idalia

Limenitis arthemis var. *lunata*,
Cystiobora dorcus,
Thecla halesus.

THE FOX.

“A sly dog.”

Somehow people always say that when they see a Fox. I'd rather they would call me that than stupid, however. Do I look stupid in my picture?

“Look pleasant,” said the man when taking my photograph for BIRDS, and I flatter myself I did—and intelligent, too. Look at my brainy head, my delicate ears—broad below to catch every sound, and tapering so sharply to a point that they can shape themselves to every wave of sound. Note the crafty calculation and foresight of my low, flat brow, the resolute purpose of my pointed nose; my eye deep set—like a robber's—my thin cynical lips, and mouth open from ear to ear. You couldn't find a better looking Fox if you searched the world over.

I can leap, crawl, run, and swim, and walk so noiselessly that even the dead leaves won't rustle under my feet. It takes a deal of cunning for a Fox to get along in this world, I can tell you. I'd go hungry if I didn't plan and observe the habits of other creatures. For instance: I love Fish. When I want one for my supper off I trot to the nearest stream, and standing very quiet, watch till I spy a nice, plump trout in the

clear water. A leap, a snap, and it is all over with Mr. Trout.

Another time I feel as though I'd like a crawfish. I see one snoozing by his hole near the water's edge. I drop my fine, bushy tail into the water and tickle him on the ear. That makes him furious—nobody likes to be wakened from a nap that way—and out he darts at the tail; snap go my jaws, and Mr. Crawfish is crushed in them, shell and all.

Between you and me, I consider that a very clever trick, too. Don't you?

Summer is my favorite season of the year. How I love the green fields, the ripening grain, the delicious fruits, for then the Rabbits prick up their long ears, and thinking themselves out of danger, run along the hillside; then the quails skulk in the wheat stubble, and the birds hop and fly about the whole day long. I am very fond of Rabbits, Quails, and other Birds. They make a very satisfactory meal. For dessert I have only to sneak into an orchard and eat my fill of apples, pears, and grapes. You perceive I have very good reason for liking the summer. Its the merriest time of the year for me, and my cubs. They grow fat and saucy, too.

THE GRAY FOX.

THE only Foxes that are hunted (the others only being taken by means of traps or poison) are the Red and Gray species

The Gray Fox is a more southern species than the Red and is rarely found north of the state of Maine. Indeed it is said to be not common anywhere in New England. In the southern states, however, it wholly replaces the Red Fox, and, according to Hallock, one of the best authorities on game animals in this country, causes quite as much annoyance to the farmer as does that proverbial and predatory animal, the terror of the hen-roost and the smaller rodents. The Gray Fox is somewhat smaller than the Red and differs from him in being wholly dark gray "mixed hoary and black." He also differs from his northern cousin in being able to climb trees. Although not much of a runner, when hard pressed by the dog he will often ascend the trunk of a leaning tree, or will even climb an erect one, grasping the trunk in his arms as would a Bear. Nevertheless the Fox is not at home among the branches, and looks and no doubt feels very much out of place while in this predicament. The ability to climb, however, often saves him from the hounds, who are thus thrown off the scent and Reynard is left to trot home at his leisure.

Foxes live in holes of their own making, generally in the loamy soil of a side hill, says an old Fox hunter, and the she-Fox bears four or five cubs at a litter. When a fox-hole is discovered by the Farmers they assemble and proceed to dig out the inmates who have lately, very likely, been making havoc among the hen-roosts. An amusing incident, he relates, which came under his observation a few years ago will bear relating. A farmer

discovered the lair of an old dog Fox by means of his hound, who trailed the animal to his hole. This Fox had been making large and nightly inroads into the poultry ranks of the neighborhood, and had acquired great and unenviable notoriety on that account. The farmer and two companions, armed with spades and hoes, and accompanied by the faithful hound, started to dig out the Fox. The hole was situated on the sandy slope of a hill, and after a laborious and continued digging of four hours, Reynard was unearthed and he and Rep, the dog, were soon engaged in deadly strife. The excitement had waxed hot, and dog, men, and Fox were all struggling in a promiscuous melee. Soon a burly farmer watching his chance strikes wildly with his hoe-handle for Reynard's head, which is scarcely distinguishable in the maze of legs and bodies. The blow descends, but alas! a sudden movement of the hairy mass brings the fierce stroke upon the faithful dog, who with a wild howl relaxes his grasp and rolls with bruised and bleeding head, faint and powerless on the hillside. Reynard takes advantage of the turn affairs have assumed, and before the gun, which had been laid aside on the grass some hours before, can be reached he disappears over the crest of the hill.

Hallock says that an old she-Fox with young, to supply them with food, will soon deplete the hen-roost and destroy both old and great numbers of very young chickens. They generally travel by night, follow regular runs, and are exceedingly shy of any invention for their capture, and the use of traps is almost futile. If caught in a trap, they will gnaw off the captured foot and escape, in which respect they fully support their ancient reputation for cunning.



MISCELLANY.

RURAL BIRD LIFE IN INDIA.—“Nothing gives more delight,” writes Mr. Caine, “in traveling through rural India than the bird-life that abounds everywhere; absolutely unmolested, they are as tame as a poultry yard, making the country one vast aviary. Yellow-beaked Minas, Ring-doves, Jays, Hoopoes, and Parrots take dust baths with the merry Palm-squirrel in the roadway, hardly troubling themselves to hop out of the way of the heavy bull-carts; every wayside pond and lake is alive with Ducks, Wild Geese, Flamingoes, Pelicans, and waders of every size and sort, from dainty red-legged beauties the size of Pigeons up to the great unwieldy Cranes and Adjutants five feet high. We pass a dead Sheep with two loathsome vultures picking over the carcass, and presently a brood of fluffy young Partridges with father and mother in charge look at us fearlessly within ten feet of our whirling carriage. Every village has its flock of sacred Peacocks pacing gravely through the surrounding gardens and fields, and Woodpeckers and Kingfishers flash about like jewels in the blazing sunlight.”

WARNING COLORS.—Very complete experiments in support of the theory of warning colors, first suggested by Bates and also by Wallace, have been made in India by Mr. Finn, says *The Independent*. He concludes that there is a general appetite for Butterflies among insectivorous birds, though they are rarely seen when wild to attack them; also that many, probably most birds, dislike, if not intensely, at any rate in comparison with other Butterflies, those of the Danais genus and three other kinds, including a species of Papilio, which is the most distasteful. The mimics of these Butterflies are relatively palatable. He

found that each bird has to separately acquire its experience with bad-tasting Butterflies, but well remembers what it learns. He also experimented with Lizards, and noticed that, unlike the birds, they ate the nauseous as well as other Butterflies.

INCREASE IN ZOOLOGICAL PRESERVES IN THE UNITED STATES—The establishment of the National Zoological Park, Washington, has led to the formation of many other zoological preserves in the United States. In the western part of New Hampshire is an area of 26,000 acres, established by the late Austin Corbin, and containing 74 Bison, 200 Moose, 1,500 Elk, 1,700 Deer of different species, and 150 Wild Boar, all of which are rapidly multiplying. In the Adirondacks, a preserve of 9,000 acres has been stocked with Elk, Virginia Deer, Muledeer, Rabbits, and Pheasants. The same animals are preserved by W. C. Whitney on an estate of 1,000 acres in the Berkshire Hills, near Lenox, Mass., where also he keeps Bison and Antelope. Other preserves are Nelhasane Park, in the Adirondacks, 8,000 acres; Tranquillity Park, near Allamuchy, N. J., 4,000 acres; the Alling preserve, near Tacoma, Washington, 5,000 acres; North Lodge, near St. Paul, Minn., 400 acres; and Furlough Lodge, in the Catskills, N. Y., 600 acres.

ROBINS ABUNDANT—Not for many years have these birds been so numerous as during 1898. Once, under some wide-spreading willow trees, where the ground was bare and soft, we counted about forty Red-breasts feeding together, and on several occasions during the summer we saw so many in flocks, that we could only guess at the number. When unmolested, few birds become so tame and none are more interesting.

THE GRAY SQUIRREL.

EAST of the Missouri River the Gray Squirrel is found almost everywhere, and is perhaps the most common variety. Wherever there is timber it is almost sure to be met with, and in many localities is very abundant, especially where it has had an opportunity to breed without unusual disturbance. Its usual color is pale gray above and white or yellowish white beneath, but individuals of the species grade from this color through all the stages to jet black. Gray and black Squirrels are often found associating together. They are said to be in every respect alike, in the anatomy of their bodies, habits, and in every detail excepting the color, and by many sportsmen they are regarded as distinct species, and that the black form is merely due to melanism, an anomaly not uncommon among animals. Whether this be the correct explanation may well be left to further scientific observation.

Like all the family, the Gray Squirrels feed in the early morning just after sunrise and remain during the middle of the day in their hole or nest. It is in the early morning or the late afternoon, when they again appear in search of the evening meal, that the wise hunter lies in wait for them. Then they may be heard and seen playing and chattering together till twilight. Sitting upright and motionless on a log the intruder will rarely be discovered by them, but at the slightest movement they scamper away, hardly to return. This fact is taken advantage of by the sportsmen, and, says an observer, be he at all familiar with the runways of the Squirrels at any particular locality he may sit by the path and bag a goodly number. Gray and Black Squirrels generally breed twice during the spring and summer, and have several young

at a litter. The young mature in August and September.

We have been told that an incident of migration of Squirrels of a very remarkable kind occurred a good many years ago, caused by lack of mast and other food, in New York State. When the creatures arrived at the Niagara river, their apparent destination being Canada, they seemed to hesitate before attempting to cross the swift running stream. The current is very rapid, exceeding seven miles an hour. They finally ventured in the water, however, and with tails spread for sails, succeeded in making the opposite shore, but more than a mile below the point of entrance. They are better swimmers than one would fancy them to be, as they have much strength and endurance. We remember when a boy seeing some mischievous urchins repeatedly throw a tame Squirrel into deep water for the cruel pleasure of watching it swim ashore. The "sport" was soon stopped, however, by a passerby, who administered a rebuke that could hardly be forgotten.

Squirrels are frequently domesticated and become as tame as any household tabby. Unfortunately Dogs and Cats seem to show a relentless enmity toward them, as they do toward all rodents. The Squirrel is willing to be friendly, and no doubt would gladly affiliate with them, but the instinct of the canine and the feline impels them to exterminate it. We once gave shelter and food to a strange Cat and was rewarded by seeing it fiercely attack and kill a beautiful white Rabbit which until then had had the run of the yard and never before been molested. Until we shall be able to teach the beasts of the field something of our sentimental humanitarianism we can scarcely expect to see examples of cruelty wholly disappear.



GRAY SQUIRREL,
by J. Audubon

From col. Chas. Acad. Sciences

AH ME!

I killed a Robin—the little thing,
With scarlet breast on a glossy wing,
That comes in the apple tree to sing.

I flung a stone as he twittered there,
I only meant to give him a scare,
But off it went—and hit him square.

A little flutter—a little cry—
Then on the ground I saw him lie.
I didn't think he was going to die.

But as I watched him I soon could see
He never would sing for you or me
Any more in the apple tree.

Never more in the morning light,
Never more in the sunshine bright,
Trilling his song in gay delight.

And I'm thinking, every summer day,
How never, never, I can repay
The little life that I took away.

—SYDNEY DAYRE, in *The Youth's Companion*.

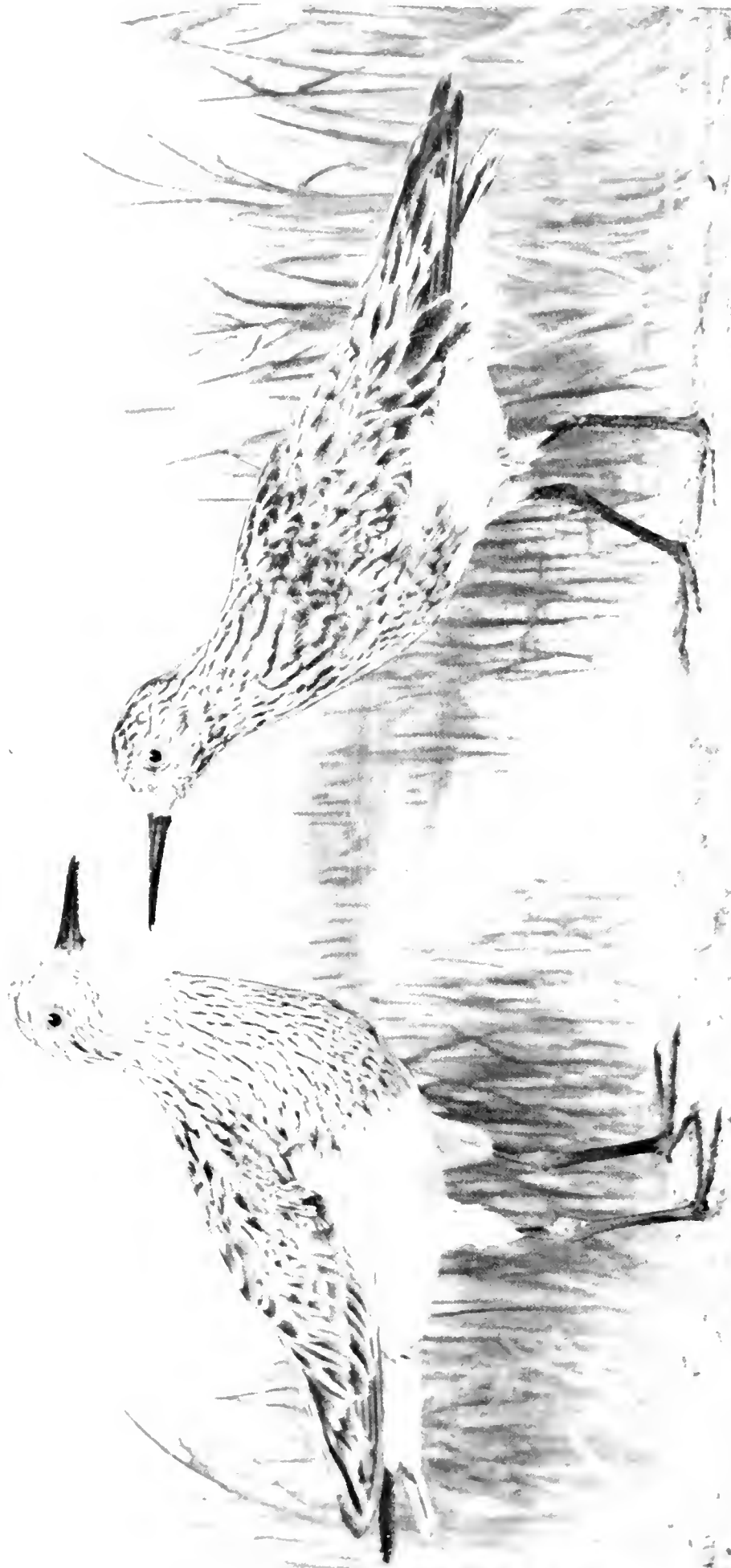
THE PECTORAL SANDPIPER.

MORE than a score of Sandpipers are described in the various works on ornithology. The one presented here, however, is perhaps the most curious specimen, distributed throughout North, Central, and South America, breeding in the Arctic regions. It is also of frequent occurrence in Europe. Low, wet lands, muddy flats, and the edges of shallow pools of water are its favorite resorts. The birds move in flocks, but, while feeding, scatter as they move about, picking and probing here and there for their food, which consists of worms, insects, small shell fish, tender rootlets, and birds; "but at the report of a gun," says Col. Goss, "or any sudden fright, spring into the air, utter a low whistling note, quickly bunch together, flying swift and strong, usually in a zigzag manner, and when not much hunted often circle and drop back within shot; for they are not naturally a timid or suspicious bird, and when quietly and slowly approached, sometimes try to hide by squatting close to the ground."

Of the Pectoral Sandpiper's nesting habits, little has been known until recently. From Mr. Nelson's interesting description, in his report upon "Natural History Collections in Alaska," we quote as follows: "The night of May 24, 1889, I lay wrapped in my blanket, and from the raised flap of the tent looked out over as dreary a cloud-covered landscape as can be imagined. As my eyelids began to droop and the scene to become indistinct, suddenly a low, hollow, booming note struck my ear and sent

my thoughts back to a spring morning in northern Illinois, and to the loud vibrating tones of the Prairie Chickens. [See BIRDS AND ALL NATURE, Vol. IV, p. 18.] Again the sound arose, nearer and more distinct, and with an effort I brought myself back to the reality of my position, and, resting upon one elbow, listened. A few seconds passed, and again arose the note; a moment later I stood outside the tent. The open flat extended away on all sides, with apparently not a living creature near. Once again the note was repeated close by, and a glance revealed its author. Standing in the thin grass ten or fifteen yards from me, with its throat inflated until it was as large as the rest of the bird, was a male Pectoral Sandpiper. The succeeding days afforded opportunity to observe the bird as it uttered its singular notes, under a variety of situations, and at various hours of the day, or during the light Arctic night. The note is deep, hollow, and resonant, but at the same time liquid and musical, and may be represented by a repetition of the syllables *too-u, too-u, too-u, too-u, too-u.*" The bird may frequently be seen running along the ground close to the female, its enormous sac inflated.

Mr. Murdock says the birds breed in abundance at Point Barrow, Alaska, and that the nest is always built in the grass, with a preference for high and dry localities. The nest was like that of the other waders, a depression in the ground, lined with a little dry grass. The eggs are four, of pale purplish-gray and light neutral tint. It is sometimes called Grass Snipe.



EYES.

By W. E. WATT.

Why was the sight
To such a tender ball as th' eye confined,
So obvious and so easy to be quenched,
And not, as feeling, through all parts diffused;
That she might look at will through every pore?—MILTON.

“But bein' only eyes, you see, my wision's limited.”—SAM WELLER.

THE REASON we know anything at all is that various forms of vibration are capable of affecting our organs of sense. These agitate the brain, the mind perceives, and from perception arise the higher forms of thought. Perhaps the most important of the senses is sight. It ranges in power from the mere ability to perceive the difference between light and darkness up to a marvelous means of knowing the nature of objects of various forms and sizes, at both near and remote range.

One the simplest forms of eyes is found in the Sea-anemone. It has a colored mass of pigment cells and refractive bodies that break up the light which falls upon them, and it is able to know day and night. An examination of this simple organ leads one to think the scientist not far wrong who claimed that the eye is a development from what was once merely a particular sore spot that was sensitive to the action of light. The protophyte, *Euglena varidis*, has what seems to be the least complicated of all sense organs in the transparent spot in the front of its body.

We know that rays of light have power to alter the color of certain substances. The retina of the eye is changed in color by exposure to continued rays of light. Frogs in whose eyes the color of the retina has

apparently been all changed by sunshine are still able to take a fly accurately and to recognize certain colors

Whether the changes produced by light upon the retina are all chemical or all physical or partly both remains open to discussion.

An interesting experiment was performed by Professor Tyndall proving that heat rays do not affect the eye optically. He was operating along the line of testing the power of the eye to transmit to the sensorium the presence of certain forms of radiant energy. It is well known that certain waves are unnoticed by the eye but are registered distinctly by the photographic plate, and he first showed beyond doubt that heat waves as such have no effect upon the retina. By separating the light and heat rays from an electric lantern and focusing the latter, he brought their combined energy to play where his own eye could be placed directly in contact with them, first protecting the exterior of his eye from the heat rays. There was no sensation whatever as a result, but when, directly afterward, he placed a sheet of platinum at the convergence of the dark rays it quickly became red hot with the energy which his eye was unable to recognize.

The eye is a camera obscura with a very imperfect lens and a receiving plate irregularly sensitized; but it has marvelous powers of quick adjust

ment. The habits of the animal determine the character of the eye. Birds of rapid flight and those which scan the earth minutely from lofty courses are able to adjust their vision quickly to long and short range. The eye of the Owl is subject to his will as he swings noiselessly down upon the Mouse in the grass. The nearer the object the more the eye is protruded and the deeper its form from front to rear.

The human eye adjusts its power well for small objects within a few inches and readily reaches out for those several miles away. A curious feature is that we are able to adjust the eye for something at long range in less time than for something close at hand. If we are reading and someone calls our attention to an object on the distant hillside, the eye adjusts itself to the distance in less than a second, but when we return our vision to the printed page several seconds are consumed in the re-adjustment.

The Condor of the Andes has great powers of sight. He wheels in beautiful curves high in the air scrutinizing the ground most carefully and all the time apparently keeping track of all the other Condors within a range of several miles. No sooner does one of his kind descend to the earth than those near him shoot for the same spot hoping the find may be large enough for a dinner party. Others soaring at greater distances note their departure and follow in great numbers so that when the carcass discovered by one Condor proves to be a large one, hundreds of these huge birds congregate to enjoy the feast. The Condor's eyes have been well compared to opera glasses, their extension and contraction are so great.

The Eagle soars towards the sun with fixed gaze and apparent fullness of enjoyment. This would ruin his sight were it not for the fact that he and all other birds are provided with

an extra inner eyelid called the nictitating membrane which may be drawn at will over the eye to protect it from too strong a light. Cuvier made the discovery that the eye of the Eagle, which had up to his time been supposed of peculiarly great strength to enable it to feast upon the sun's rays, is closed during its great flights just as the eye of the barnyard fowl is occasionally rested by the use of this delicate semi-transparent membrane. Several of the mammals, among them being the horse, are equipped with such an inner eyelid.

One of my most striking experiences on the ocean was had when I pulled in my first Flounder and found both of his eyes on the same side of his head. All Flat-fish are similarly equipped. On the side which glides over the bottom of the sea, the Halibut, Turbot, Plaice, and Sole are almost white, the upper side being dark enough to be scarcely distinguishable from the ground. On the upper side are the two eyes, while the lower side is blind.

When first born the fish swims upright with a slight tendency to favor one side ; its eyes are on opposite sides of the head, as in most vertebrates and the head itself is regular. With age and experience in exploring the bottom on one side, the under eye refuses to remain away from the light and gradually turns upward, bringing with it the bones of the skull to such an extent that the adult Flatfish becomes the apparently deformed creature that appears in our markets as a regular product of the deep.

The eyeless inhabitant of the streams in Mammoth Cave presents a curious instance of the total loss of a sense which remains unused. These little fishes are not only without sight but are also almost destitute of color and markings, the general appearance being much like that of a fish with the skin taken off for the frying pan.

The eyes of fishes generally are so nearly round that they may be used with good effect as simple microscopes and have considerable magnifying power. Being continually washed with the element in which they move, they have no need for winking and the lachrymal duct which supplies tears to the eyes of most of the animal kingdom is entirely wanting. Whales have no tear glands in their eyes, and the whole order of Cetacea are tearless.

Among domestic animals there is considerable variety of structure in the eye. The pupil is usually round, but in the small Cats it is long vertically, and in the Sheep, in fact, in all the cud chewers and many other grass eaters, the pupil is long horizontally.

Insects present a wonderful array of eyes. These are not movable, but the evident purpose is that there shall be an eye in readiness in whatever direction the insect may have business. The common Ant has fifty six-cornered jewels set advantageously in his little head and so arranged as to take in everything that pertains to the pleasure of the industrious little creature. As the Ant does not move about with great rapidity he is less in need of many eyes than the House-fly which calls into play four thousand brilliant facets, while the Butterfly is supplied with about seventeen thousand. The most remarkable of all is the blundering Beetle which bangs his head against the wall with twenty-five thousand eyes wide open.

THE HUNTED SQUIRREL.

THEN as a nimble Squirrel from the wood
Ranging the hedges for his filbert food
Sits pertly on a bough, his brown nuts cracking
And from the shell the sweet white kernel taking ;
Till with their crooks and bags a sort of boys
To share with him come with so great a noise
That he is forced to leave a nut nigh broke,
And for his life leap to a neighbor oak,
Thence to a beech, thence to a row of ashes ;
Whilst through the quagmires and red water splashes
The boys run dabbling through thick and thin.
One tears his hose, another breaks his shin ;
This, torn and tattered, hath with much ado
Got by the briars ; and that hath lost his shoe ;
This drops his band ; that headlong falls for haste ;
Another cries behind for being last ;
With sticks and stones and many a sounding holloa
The little fool with no small sport they follow,
Whilst he from tree to tree, from spray to spray
Gets to the woods and hides him in his dray.

—WILLIAM BROWNE,

Old English Poet

SUMMARY.

Page 86.

AMERICAN HERRING GULL.—*Larus argentatus smithsonianus*.

RANGE—North America generally. Breeds on the Atlantic coast from Maine northward.

NEST—On the ground, on merely a shallow depression with a slight lining; occasionally in trees, sixty or seventy-five feet from the ground

EGGS—Three, varying from bluish white to deep yellowish brown, irregularly spotted and blotched with brown of different shades.

Page 90.

AMERICAN RACCOON.—*Procyon lotor*.
Other name: Coon.

RANGE—North America.

Page 94.

PIGMY ANTELOPE.—*Antelope pigmæa*.

RANGE—South Africa.

Page 98.

RED - SHOULDERED HAWK.—*Buteo lineatus*.

RANGE—Eastern North America, north to Nova Scotia, west to the edge of the Great Plains.

NEST—In the branches of lofty oaks, pines, and sycamores. In mountainous regions the nest is often placed on the narrow ledges of cliffs.

EGGS—Three or four; bluish, yellowish white, or brownish, spotted, blotched, and dotted irregularly with many shades of reddish brown.

Page 107.

AMERICAN GRAY FOX.—*Vulpes virginianus*.

RANGE—Throughout the United States.

Page 111.

AMERICAN GRAY SQUIRREL.—*Sciurus carolinensis*.

RANGE—United States generally.

Page 115.

PECTORAL SANDPIPER.—*Tringa maculata*.

RANGE—North, Central, and South America, breeding in the Arctic regions. Of frequent occurrence in Europe.

NESTS—In tufts of grass.

EGGS—Four, of a drab ground color, with a greenish shade in some cases, and are spotted and blotched with umber brown, varying in distribution on different specimens, as is usual among waders' eggs.

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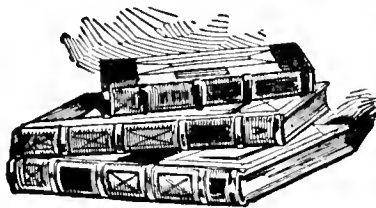
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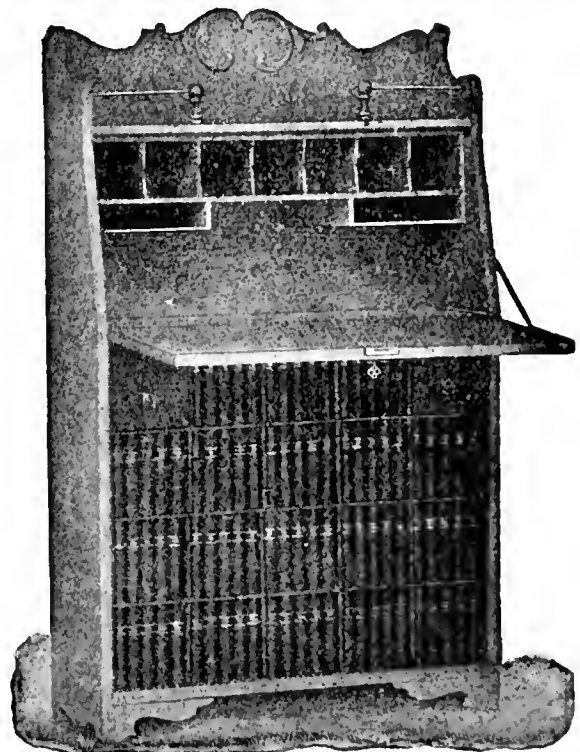
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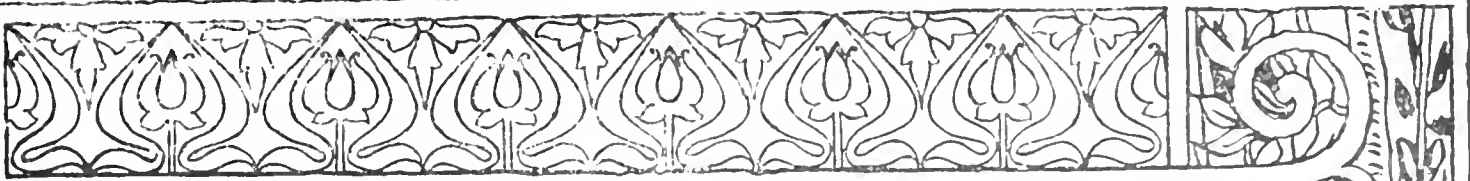


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CHICAGO, ILLIF



AND ALL

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Edited By C. C. MARBLE.



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NATURE STUDY PUBLISHING COMPANY
CHICAGO

BIRDS

AND ALL NATURE.

A MONTHLY MAGAZINE

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WE desire to call the attention to the subjects selected for the November number of BIRDS AND ALL NATURE. They are as follows:

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The Golden Plover,
The Caspian Tern,
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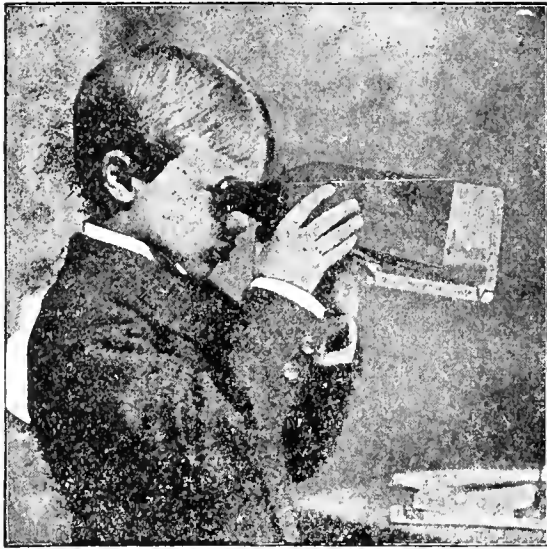
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BIRDS AND ALL NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. IV.

OCTOBER, 1898.

No. 4.

EARS.

BY W. E. WATT.

THE air is an elastic fluid surrounding the earth. The motions of things whether alive or not, set it in a state of vibration that rarely ceases. At all times and in all places it is pulsing responsively to all that is going on.

Animals are interested in what is moving about them. It may mean life or death, pleasure or agony, and most animals are keen to know which is for them at any given period. They are therefore equipped with organs that respond to these waves of the air. They are variously equipped, some hearing certain sounds feebly where others are acute to them and deeply moved. Some sounds are full of moment to one organism arousing it to nervous activity while another organism knows nothing of what is so distinctly heard by the first.

Can a Mule hear more than a Mouse is a question which has agitated many young people who have considered the length of the former's ear and its versatility. A series of experiments once conducted in youthful sport by the writer, seemed to settle the matter that each can hear sounds which are unnoticed by the other, and that the ear of the Mouse is much better adapted in hearing powers to the occupation of the Mouse than is that of his long eared neighbor. Certain shrill sounds of whatever degree

of loudness, cannot be heard by the Mule even when oats might be secured by attending to them, while distant sounds of a heavy character seem to fail to affect the ear of the Mouse.

The same is noticeable in the hearing of people. To some persons a note one octave higher than the highest note of a piano, cannot be heard. Others can hear such a tone, and yet others are made painfully nervous by it without knowing quite what the trouble is. To some the chirp of the Sparrow is the upper limit of hearing, others can hear the voice of the Bat, yet others are able to hear the notes of insects that range higher in pitch than the voice of the Bat. Dr. Wollaston says, "As there is nothing in the nature of the atmosphere to prevent the existence of vibrations incomparably more frequent than any of which we are conscious, we may imagine that animals like the Grilli (Grasshoppers) whose powers appear to commence nearly where ours terminate, may have the faculty of hearing still sharper sounds which we do not know to exist; and that there may be other insects, hearing nothing in common with us, but endowed with a power of exciting, and a sense which perceives vibrations of the same nature, indeed, as those which constitute our ordinary sounds, but so remote that the animals who perceive them may be

said to possess another sense agreeing with our own solely in the medium by which it is excited."

The human ear is capable of hearing musical sounds produced by vibrations ranging from twenty-four in a second of time to forty thousand. This indicates that humanity is confined in interest to the motions of the atmosphere within these limits. The possibilities of higher and lower fields of music are such that one writer has said that it may be that the air about us is constantly resounding to the music of the heavenly hosts while our dull ears with their limited powers are unable to catch the poorest note in that celestial harmony.

Sound travels about one thousand ninety feet in a second in the air. Through other elastic mediums it varies in speed. The beholder of an explosion of dynamite in a harbor, receives three shocks, one coming by way of the air, another by water, and the third through the earth, all arriving at different times.

It is a fortunate thing that low sounds travel as rapidly as high ones and loud sounds no faster than soft ones. Thus the playing of a band upon the water, at a distance, is beautiful, because all the tones powerful enough to reach the listener do so at the right time to preserve harmony. If it were not for this equality in traveling power, no music on a grand scale could be possible, for those sitting at a distance from the performers would be in a sea of discord from the late arrival of tones which should have blended with those gone before. In spite of the fact that our highest appreciable note is but one-third of an inch in length of wave and the wave of our lowest note exceeds forty feet in length, all sounds produced in harmony travel in harmony till exhausted in space.

The ears of various animals are beautifully adapted to their respective habits. The watch of the Dog is most

valuable because distant noises are so readily detected by his faithful ear. The Thrush has been observed hopping along the ground with frequent stops to listen. So keen is his hearing that the presence of a Worm below the surface is detected by the sound of the Worm's occupation. By judiciously beating the ground he brings the Worm toward the surface as if to escape its enemy, the Mole. At the proper instant the turf is torn up and nearly always the Worm secured.

The form of the outer ear is adapted to the needs of the animal. Most grass eating animals have ears that turn readily in all directions to listen for enemies, but the ears of flesh eating animals that pursue their prey are set only to reach forward to hear the sounds of escaping prey.

Many insects and lower orders of animals are looked upon by man as incapable of the pleasures of hearing. But this is often a mistake. Snails have been known to enjoy the voice of their human friends and come forth when called by familiar voices.

The fondness of the Cobra for music and the powers of charming this hideous animal partly by appealing to his esthetic hearing are well known. Moths have good hearing as one may observe while walking in the woods where the crackling of dry sticks alarms them so they fly up from their noonday slumbers in great numbers. The antennae of the Butterfly are supposed to act as hearing organs. Crabs and Shrimps hear with their inner antennae, Clams with their feet, and some of the crustacea with the bases of the lobe of the tail.

Many animals seem to enjoy the voice of man and the sounds of the various musical instruments which he uses. Frogs and Toads may be taught to know their master's voice. Canaries, Parrots, and Doves enjoy human singing and instrumental music as well. A Woodchuck has been known to

manifest his refinement of soul by coming forth from his hole at the sound of a piano and to sit with the air of a connoisseur criticising the selections with which he was being favored.

Not only is the ability to hear different in different persons, but the thoroughness with which they hear varies largely. Few sounds consist of simple waves of air. As the waves of the sea are noticed to bear smaller waves upon them and these in turn to carry wavelets, so the waves of sound are rarely smooth, simple waves. There are many more waves upon waves in sound production than can be observed on the surface of the sea. A note from the piano not only sounds the note which the key struck represents, but also a great many tones that chord with this tone higher up the scale. These overtones are not so loud as the fundamental tone and cannot readily be detected by the uncultivated ear. But they give character to the tone. The overtones make the note of the violin and the cornet differ. No two voices have the same overtones, and while we are unable to hear these overtones by themselves, yet we are able to distinguish the voices of our friends instantly by means of them.

As voices differ in the overtones they carry, so do ears differ in the number of overtones they are able to receive. Some people enjoy hearing high voices only. For them the soprano or tenor is always in demand. Others prefer deep voices and admire altos and basses. I have stood beside a friend at a concert where a first class artist was pouring forth a baritone song with the most delicate and artistic tone and finish, and had my friend turn to me and say: "What on earth do people find in that man's voice to pay money to hear?" The singer's voice was full of rich overtones which made it valuable to the average cultured listener, but in the ear of my

friend they produced a jarring that was decidedly unpleasant to him, although he was fond of the singing of the untrained voices of the members of the choir where he attended church.

A large part of the business of the voice culture expert is the adjustment of the vocal organs in singing so as to produce the right sets of overtones to give the voice a carrying quality and the richness we enjoy in the finished artist. One notable example of the production of too much of a good thing was instanced in the fate of a soprano who came to America a few years ago with an extensive operatic repertoire and a voice that could not be drowned by a full orchestra as it soared to the greatest heights and displayed a flexibility most remarkable. But she failed to please us. A neighbor of mine said to her friend: "Just wait till you hear Madame Blank begin. She has a voice that will cut you like a knife."

Both the inner and outer ear formations are responsible for the differences in hearing in different people. Cultivation does much for any sense, but for him that has no ear for music cultivation will not construct an ear. It is easy to see what a difference in hearing will be produced by a slight change in the position of the outer ear. While listening to a steady sound, draw the ear forward with one finger, relax it to its normal position, then push it back against the head. The quality of the sound heard and its intensity will be varied in each instance.

So we may be lenient with our friends who do not enjoy the same sort of music with ourselves. And the same music will not always be the very same. A pistol shot upon a mountain top sounds much like a fire cracker in a valley, and the condition of the atmosphere frequently modifies music almost as much as the shape of the room in which it is produced.

THE KINGBIRD OF PARADISE.

Wouldn't you little folks like to see a number of us brilliant, gem-like Birds of Paradise flitting among the trees as do your Robins and Woodpeckers and Jays? To see us spreading our wings in the sun, and preening our ruby and emerald and topaz and amethyst-tinted plumes, ribbons, and streamers?

Ah, that would be an astonishing sight, but you will have to journey to an island in the South Pacific Ocean to see that; an island whose shores are bathed by a warm sea, and where the land is covered with the most luxuriant tropical vegetation.

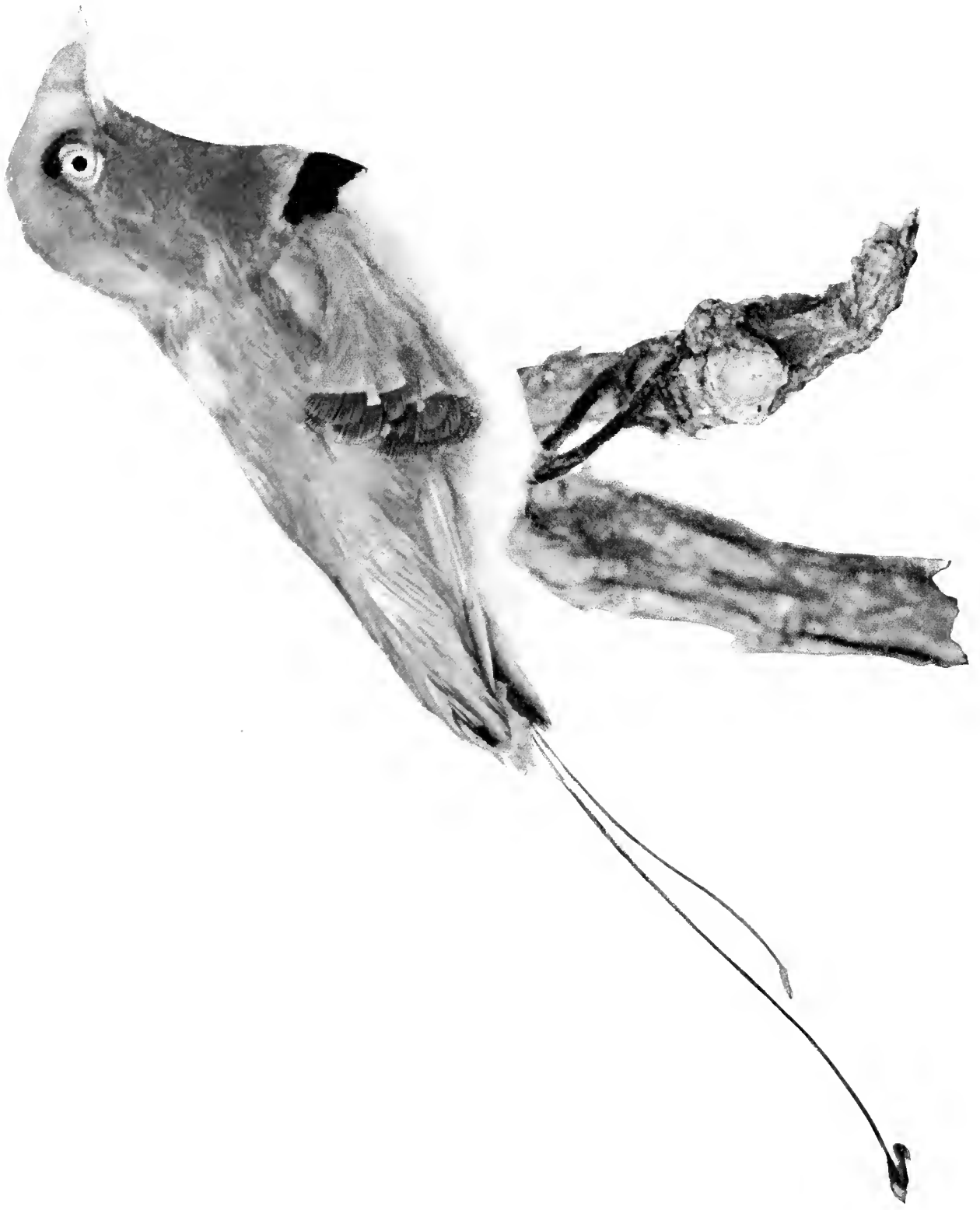
It was about three hundred years ago that the people of Europe first knew that such superb birds existed on this earth. Traders visited one of the Malayan islands in search of cloves and nutmegs, and upon leaving, the natives presented them with a few dried skins of a wonderfully beautiful bird. The natives called them "God's Birds," and in order to propitiate heaven for killing them, cut off the feet of the dead birds and buried them beneath the tree upon which they were found.

The dried bodies of the birds were exported as time went on, and as the people of Europe had never seen one alive, but always

the skin without legs and feet, they came to consider them as heavenly birds, indeed, formed to float in the air as they dwelt in the Garden of Eden, resting occasionally by suspending themselves from the branches of trees by the feathers of their tails, and feeding on air, or the soft dews of heaven. Hence they called us the BIRDS OF PARADISE.

It was not till one hundred years after, when a writer and collector of birds visited the island, and spent years in watching and studying us, that the truth became known. Certainly, the gentleman must have laughed, when, instead of heavenly dew, he saw a BIRD OF PARADISE catch a Grasshopper and holding it firmly by his claws, trim it of wings and legs, then devour it, head first. Fruit and insects of all kinds we eat instead of dew and air.

He also saw a party of twenty or thirty males dancing on the branches of huge trees, raising their wings, stretching out their necks and elevating their plumes all for the purpose of admiring themselves or being admired. Some of them have finer plumage than I, but only the KINGBIRDS OF PARADISE have those two dear little rings which you see in my picture.



From col. Mr. F. Kaempfer.

KING BIRD OF PARADISE.
 $\frac{3}{4}$ Life-size.

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Nature Study Pub. Co., 1888, Chicago.

THE KINGBIRD OF PARADISE.

THE sublime is no nearer the ridiculous in literature than in the things of nature. An instance of this is the close relation of the common Crow to the most glorious bird of them all. Not only are they very much alike in general form, including shape of feet, bill, bones, and ordinary feathering, but also in habit. They seem to delight in the same sorts of food and secure it in much the same manner. When they are happiest and attempt to pour forth their songs of joy the voice of the Crow is fully as melodious and satisfactory to the human ear as is that of the Bird of Paradise.

The old fable in regard to their having no feet and living only on the dews of heaven and the delicacies which they were supposed to be able to collect from the atmosphere as they floated perpetually free from the earth and its contaminations was so grateful to Europeans that when Antony Pigafetta, who accompanied Magellan around the world and secured a great deal of information at first hand, described them as birds with very ordinary, in fact, almost ugly, feet and legs, he was not believed, and Aldrovandus publicly brought accusations against him for audacious falsehood.

While the males have not only a splendid growth of delicate floating feathers of very unusual length and glossy fineness of texture, the females have but little more to boast of than our American Crow, and they even lack the degree of lustre which our black friend frequently exhibits. But the males are adorned with a wealth of color display, rich in velvety softness and blazing with metallic lustre. This lustre cannot be appreciated from the appearance of the faded specimens so often seen in the museums which may have suffered, not alone from dust and exposure for years to the

chemical action of light but have also been sadly diminished in glory by the rude arts of the natives who fumigate the skins with burning sulphur, their principal care seeming to be to get enough of it deposited to make sure of the skins' not being attacked by insects.

To be seen to best advantage one needs to watch them as they make their short migrations in flocks from one island to another with the change of the seasons from the dry to the wet monsoon. They prefer traveling against the wind rather than with it because their plumage is so elaborate and delicate in its structure that an attempt to fly with the wind frequently brings disaster to the glorious males and causes them to tumble ignominiously to the ground, after which they are a long time in arranging affairs for another attempt at navigation of the air.

The King Bird of Paradise is a small bird, measuring but little over six inches in length. It is extremely vivacious, flying about and running with but little show of the dignity of its family. Very fond of fruits, it is not satisfied with attacking those which other birds of its size would choose, but enjoys showing its gormandizing powers by devouring as much as possible of the largest specimens within its reach.

The fan-shaped tuft of feathers which adorns each side of the bird are subject to his will, being raised and spread out or lowered as the weather or the feelings of the bird seem to demand. At the ends of the long feather shafts springing from its tail are markings which strongly resemble the eye-like ornaments of the Peacock. The shafts seem not content with stretching themselves out to a greater length than that of the bird itself, but at the extremities they curve inward coiling compactly into spiral discs flashing with emerald green.

THE PECCARY.

Looks very much like a little Pig, does't he, children? Well, so he is, a species of wild pig found in the canebrakes of Texas, and native of South America.

You would hardly think so small an animal could be so ferocious, but the inhabitants of South America dread and fear him as much as they do the Wild Boar. He is a fearless little creature, too, attacking any object which comes in his way no matter how big it is. Even an Elephant wouldn't scare him, though, as Elephants are not found in South America or Texas, I presume a Peccary never saw one.

His jaws, as you see, are armed with tusks, like those of the Boar, but they are straight instead of curved, are sharp at the edges, and although no longer than your finger can inflict a terrible wound on account of the great strength of the animal's neck.

When a body of them charge an enemy they will fight till every one of them is slain. You will not wonder then that Men, Horses, and Dogs fly at the approach of a herd of Peccaries, the poor Horses being so easily brought down by having their legs cut to pieces by the sharp tusks.

In the canebrakes of Texas, where the trees are of enormous size, the Peccaries make their home. A fallen tree overgrown with thickets of the cane, matted together with strong and thorny vines, is their favorite lodging. Into one of these hollow logs a drove of twenty or thirty will enter at night, each one backing in, the last one to enter standing with his nose to the entrance and acting as sentinel.

On dark, drizzly days they never leave their lodgings, and it is on these days that the farmers who have suffered by their ravages on grain-crop and stock, succeed in putting an end to many of their enemies. As soon as daylight appears and the protruding snout and watchful eyes of the sentinel on duty can be seen, a sharp report of a rifle is heard; with a spring the sentinel leaps out and soon rolls lifeless upon the ground. Instantly a low grunt is heard, and another snout and sharp pair of eyes appear in the opening. A flash, a report, and out he leaps to his death, also; thus they go on till every "lodger" is disposed of.

Of all animals the Peccary alone, it is said, resists the terror of the gun, its flash and report serving only to enrage him.



THE PECCARY.

THIS interesting animal, which is of common occurrence throughout the forests of South America, roams through the woods in large herds and is constantly migrating, being often driven by scarcity of food to make long journeys. Rendgger, the well known naturalist, states that one may follow the Peccaries for days without seeing them. In their wanderings they keep to the open country, which ordinarily they rarely frequent, and even streams cannot stop them. If they reach a field they cross it at a run, and if they arrive at the banks of a river they do not hesitate but swim at once across it.

They have been seen crossing the Paraguay river at a place where it requires about a half hour to do so. The herd keeps together in a close throng, the males in advance, each mother having her young behind her. The noise made by the animals can be heard a long distance, not only on account of the dull, hoarse sounds which they make, but still more by reason of the cracking of the dead branches which they break in their impetuous progress.

Both day and night the Peccaries search for food. They eat all kinds of arboreal fruit and roots, and their teeth are so strong that they can easily open the hardest of palm seeds. They often do great mischief to the crops. Besides vegetable food they are said also to eat Snakes, Lizards, Worms, and Grubs, in this respect being useful animals. They are much more cleanly in their habits than the Wild Boars, and Beehm asserts that they never eat more than they require, and seek water only during periods of the most intense heat, and then they wallow only

in pools. During the day they hide in tree trunks, in which they sleep also at night.

The female gives birth to a single young one, in rare instances to two. The cry of the young is like that of Goats. They are easily tamed and domesticated if treated well. The flesh is eaten by the poorer classes, the skin being chiefly used for bags and thongs. On account of a gland which the animal bears in its haunches and which has an evil effect on the meat, causing it to become unfit for use in a very short time, the flesh is not considered to be particularly excellent.

It has been said that the Peccary is totally devoid of fear. It is small, rarely exceeding eighteen inches in height, and yet it is not less dreaded than the most savage Wild Boar would be. Many an unlucky sportsman, to escape a herd of these wild creatures has been glad to climb a tree in time to save his life. Men, Horses, and Dogs fly in haste, for the Peccaries fight like a well drilled army, and by swarming about an enemy they are sure to conquer with their strong, sharp tusks. They avoid conflict with man, and shyly run into the thick woods on his approach, but when fired upon or brought to bay they seem possessed only with rage and desire for vengeance.

The Peccary is peculiar in his anatomy, having several sacs in place of a single stomach, thus resembling the cud chewing animals. This resemblance is traced still further in the feet, where the metacarpal and metatarsal bones of the two greater toes are united into a sort of cannon bone.

This specimen came from the cañabres of Texas.

AUTUMN.

“Lightly He blows, and at His breath they fall,
The perishing kindreds of the leaves; they drift,
Spent flames of scarlet, gold aerial,
Across the hollow year, noiseless and swift.
Lightly He blows, and countless as the falling
Of snow by night upon a solemn sea,
The ages circle down beyond recalling,
To strew the hollows of Eternity.
He sees them drifting through the spaces dim,
And leaves and ages are as one to Him.”

THE summer wanes; the days grow shorter and the evenings longer, heralding the advent of Autumn, and the woods and fields are mellowing under the genial glow of the sun. All Nature is taking on a warmer tinge, gladdening the eye with its fullness of beauty—rich in the promise of autumnal harvest.

It is a sad fact, but none the less true that a great many of us go through life with unseeing eyes. Why must we be *taught* to see the beauties around us? What a tale might be told by the little flower that we pass carelessly by, or tread upon in our haste; if we would but listen!

* * * * *

Overhead in the maple a little life was struggling for being. It was only a pebble thrown by a thoughtless boy “to see if he could hit it,” but the cruel act was done, and the little songster, the happy bird whose early morning matins together with the carolings of his mate, had greeted us all through the summer lay in the little nest grievously wounded. The hurried, distressed movements of his little mate told of her anxiety to do what she could for the sufferer. She seemed to know it would not be long, now,—that he would never sing with her again.

After awhile everything was still in the maple bough. It was growing dark as we softly approached the nest, and we thought the remaining bird

There is beauty everywhere—in the early dawning when the iris-tinted morning-glories are radiant with glittering dew drops; when the sun is high overhead; when the soft twilight has enveloped the land in its mantle of calm; whether the rain is falling or whether the skies are blue and sunny beauty is everywhere.

“How strikingly the course of Nature tells by its light heed of human suffering that it was fashioned for a happier world!” Listen to the songs of happy birds. How care-free! How joyously they outpour from overflowing little throats their God-given melodies of love and gladness! Is not the world brighter and better for their being?

* * * * *

had flown away. It had not, however, for as the inquisitive face of our little girl peeped into the leafy retreat we heard a rustle of wings, and the bird flew out from its place of repose. Perhaps she was watching the little dead form of her mate, sure that her vigil would be rewarded and that he would greet her in the morning with love as he had done for so long. Who knows?

Next day we buried the little martyr and the other bird went away. She has not returned since, but the nest still remains in the old place. The boy who had done the mischief went on his way unconscious of the thing he had done, but

“He can never, never repay
The little life that he took away.”
—E. S.



THE BOTTLE-NOSE DOLPHIN.

DOLPHINS, according to the best authorities, inhabit all oceans, and undertake great migrations, but are the only Whales which frequent the rivers or even spend their whole lives in them, or in the lakes connected with them. They are all gregarious, some of them collecting in very large shoals, and roaming about the sea together for weeks and weeks. Their liveliness, playfulness, and lack of shyness have earned them the friendship of sailors and poets from the remotest ages.

The Bottle-nose Dolphin is one of the best known members of the family. The snout is very long, like a beak, and protrudes from twelve to twenty-four inches. The range of this Dolphin seems to be restricted to the Arctic Ocean and the north of the Atlantic, but it is known to make regular migrations a considerable distance south of it. Occasionally it appears on the coast of Great Britain. Cuttlefish, Mollusks, and small fry compose its food.

Kuekenthal declares that its diving

powers are remarkable; 300 fathoms of line were taken off by a harpooned Bottle-nose which remained forty-five minutes under water. They swim with such extraordinary speed that they not only follow the course of the swiftest steamer with ease, but gambol near it on their way, circling around it at will, and without being left behind. Occasionally one of them jerks himself up into the air, and, turning a somersault, falls noiselessly back into the water and hurriedly resumes his former position.

Several years ago we saw a school of Dolphins swimming and frolicking in the East River on the way from New York Bay to Long Island Sound. They seemed to us like gigantic Swine, their motions being similar to those that precipitated themselves, according to the New Testament, into the sea. They are very interesting to watch, and travelers find great pleasure in their company in crossing the ocean. Sometimes a small school of Dolphins will play about the ship for days at a time, affording constant amusement to the spectators.

NEW CHAMPION FOR THE SPARROW.

THE Sparrow has found an unexpected champion in the Prime Minister of France. The farmers have recently been agitating in favor of the extermination of the little bird, and succeeded so far that a decree was submitted to Premier Meline for signature, giving orders for the destruction of the bird throughout the country by all available means. Before giving his sanction to the measure the Prime Minister determined to make an investigation, in the course of which he has received so much information in favor of the birds, especially from the Forestry Department, that he has not only

refused to sign the decree, but has announced that he is about to take steps to promote the increase of the species in consequence of its usefulness. It seems that the harm they do to the crops is more than counterbalanced by the benefits which they confer in destroying the Caterpillars, Worms, and other insects that are so detrimental to trees.

It seems incredible that the matter of the usefulness or noxiousness of this little bird cannot be settled finally by those vested with authority to act. It is either beneficial or a pest. We think it is both, according to circumstances.

THE VOICE OF NATURE.

Who could not sleep in this embowered room
Perched high above the suffocating ground ;
Where clinging vines, and tree-tops in their
bloom
Cast grateful shade and fragrance all around ;
When, added to the magic spell of flowers,
The night bird's song fills up the witching
hours!

Who could not rise refreshed at early dawn
In this same sweet, enchanted nook ;
When, to the half-unconscious ear is borne,
From Lark and Robin, Sparrow, Thrush and
Rook,
The gentle warning of the opening day—
God's earliest sermon to humanity!

What soul could feel the burdening weight of sin
When, from these tiny, upraised throats,
The songs of Nature's praise begin
And Heavenward pour, in liquid dulcet notes!
We gladly join our grateful voice to theirs
And turn our thoughts to God in earnest prayers.
E. D. BARRON.

IN THE ANIMAL WORLD.

THE organs of smell in a Vulture and a Carrion Crow are so keen that they can scent their food for a distance of forty miles, so they say.

THE wings of birds are not only to aid locomotion in the air, but also on the ground and water. One bird even has claws in the "elbows" of its wings to aid in climbing.

THE Elephant does not smell with his trunk. His olfactory nerves are contained in a single nostril, which is in the roof of the mouth, near the front.

HUMMING BIRDS are domesticated by placing in their cages a number of paper flowers of tubular form, containing a small quantity of sugar and water, which must be frequently renewed. Of this liquid the birds partake and quickly become apparently contented with their captivity.

RIGHTLY considered, a Spider's web is a most curious as well as a most beautiful thing. When we were children, the majority of us supposed that the Spider's web was pulled out of its mouth, and that the little insect had a

large reel of the stuff in his stomach, and that he could almost instantly add feet, yards, or rods to the roll. The facts are that Spiders have a regular spinning machine—a set of tiny tubes at the far end of the body—and that the threads are nothing more nor less than a white, sticky fluid, which hardens as soon as it comes in contact with the air. The Spider does not really and truly "spin," but begins a thread by pressing his "spinneret" against some object, to which the liquid sticks. He then moves away and by constantly ejecting the fluid and allowing it to harden, forms his ropes or wonderful geometrical nets.

BIRDS have separate notes of warning to indicate whether danger is in the shape of a Hawk or a Cat or a man. If a Cat, a Hawk, or an Owl is on the move, the Birds, especially Blackbirds, always utter a clattering note, constantly repeated, and Chickens have a special sound to indicate the presence of a Hawk. But when disturbed by man the Blackbirds have quite a different sound of alarm and the Chickens also.



From col. Chi. Acad. Sciences.

TUFTED PUFFIN.
2 1/2 LIFE-SIZE.

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THE TUFTED PUFFIN.

THESE birds nest in colonies, the family consisting of about thirty species, nearly all found in the northern parts of the northern hemisphere. Audubon is said to have procured the specimen figured by him at the mouth of the Kennebec river, Maine, the only record of its occurrence on the Atlantic coast.

The Tufted Puffin breeds upon the rocks and in the Rabbit warrens near the sea, finding the ready-made burrows of the Rabbit very convenient for the reception of its egg, and fighting with the owner for the possession of its burrow. Where Rabbits do not exist, the Puffin digs its own burrows, and works hard at its labor. The egg is generally placed several feet within the holes, and the parent defends it vigorously.

Like most of the sea birds, both sexes assist in incubation, says a recent writer, referring to the birds found at the famous rookery in the open sea two hundred miles west of Fort Wrangell, an island often visited by the Indians for birds and eggs, and are close sitters, a great amount of probing with a long stick being necessary to dislodge them. A grassy hill side is a favorite retreat and here it is dangerous to travel about on account of the Puffins constantly coming blindly out of their dark holes with a force sufficient to upset one if fairly struck by the flying birds. When specimens are wanted they are easily captured with snares set over their holes during the night. The vari-colored pear-shaped eggs are well known and make good eating.

The Farrallones are the home of vast numbers of Puffins, as well as

other sea-birds, though less numerous than formerly. The nests have been robbed for the eggs to an extent that threatened their extermination until a recent law was enacted for their protection. A portion of the island is a veritable rookery, the grotesque birds standing guard all about the rocks. They are very awkward on land, moving with a comical waddling stride, but on the wing are graceful, rapid flyers. They dive and swim with ease, pursuing the fish in the water, which, with crustaceans and insects, constitutes their food.

The Farrallones have become largely known from the wholesale collection of the eggs of sea birds for market purposes. As they nest chiefly in colonies, the eggs therefore being numerous, it has been, hitherto, a considerable industry. The eggers starting together soon separate to cover their various routes over the cliffs, the birds appearing in rows all over the hill side. "As an egger climbs his familiar trail toward the birds, a commotion becomes apparent among them. They jostle their neighbors about the uneven rocks and now and then with open bills utter a vain protest and crowd as far as possible from the intruder without deserting their eggs. But they do not stay his progress and soon a pair, then a group, and finally, as the fright spreads, the whole vast rookery take wing toward the ocean. Instantly the Western Gulls congregate with their hollow *kock-kock-ka* and shrill cries adding to the din, to secure their share of the booty, and the egger must then work rapidly to secure the eggs."

“THE TALK OF ANIMALS.”

[This is the title of an article from the *London Telegraph*, which is so well written, and is so interesting that we cannot deny ourselves the privilege of making liberal extracts from it..]—*Ed.*

NATURALISTS have recently been discussing the interesting question whether or not Bees can talk with each other. Those best informed on the subject are, we gather, inclined to regard it as perfectly possible. Such a view would, perhaps, astonish many minds not familiar with these and others of the lower creatures by daily observation. Yet the more people live in close notice of animals and insects the less inclined they will feel to draw that very difficult line which divides instinct from reason, or to set any hard and fast limit to the wonders of Nature. In fact, the very word “lower” becomes sometimes an insult, a positive affront to the wonderful life about us, which even proud Man himself has scarcely a right to offer. There could, for instance, be nothing well conceived humbler than the Earthworm. Until the illustrious Darwin took up the subject of that despised being no one comprehended the vastness of man’s debt to this poor, ugly, trampled creature. The numberless millions of that obscure tribe, none the less, have created all the loam and all the arable land of the whole globe, passing through their bodies the fallen leaves and decaying vegetable matter; and by their single sphere of labor in this respect rendering cultivation and harvests possible. When we tread on that Worm we destroy an agricultural laborer of the most respectable class. To those eternal and widespread toils of the creeping friend of men we owe the woods, the meadows, and the flowers. This is, of course, only an example of the importance, not of the faculties of the lower creatures.

Nevertheless even Worms communicate sufficiently to have and to observe

their seasons of love; and Bees are so much higher in the scale of life, and so richly gifted in all details of their work, and so sociable in their habits, that it would not be at all a safe thing to say they possess no means of intercourse. Certainly no skillful and watchful bee-master would ever venture upon such an assertion. He knows very well how the sounds in the hive and those produced by individual Bees vary from time to time, and in a manner which appears to convey, occasionally at all events, mutual information. A Wasp or a strange Bee entering a hive without permission seems mighty quickly to hear something not very much to its advantage, and when two or three Bees have found a good source of honey, how on earth do all the others know which path to take through the trackless air, except by some friendly buzz or wing-hint? Now, the bee-masters tell us that there is surely one particular moment in the history of the hive when something very much like actual language appears to be obviously employed. It is when the young queen is nearly ready to move away. She begins to utter a series of faint, staccato, piping noises, quite different from her ordinary note, and just before she flies off this sound becomes altered to a low, delicate kind of whistle, as if emanating from some tiny fairy flute. How this small cry, or call, or signal, is produced nobody understands. The major portion of sounds in a hive is, of course, caused by the vibration more or less rapidly of the wings of the Bees. But whoever has examined the delicate machinery with which the Grass-hopper makes his chirp would not be surprised to find that the queen Bee had also some peculiar contrivance by which to

deliver what may be called the royal speech on the one or two great and signal occasions of her exemplary life.

We should, however, confine the subject in the boundary of far too close a fancy if it were imagined that sound was the only way in which speech and intercourse may pass among these humble creatures. Human beings naturally gather up that idea by living themselves in an atmosphere of which they agitate the waves for objects of mutual communication. No scientific Bee or highly educated Ant, if such creatures were possible, seeing and hearing men and women talk to each other, would dream that they could equally well exchange thoughts by making marks upon paper, or send their messages of love and business by seas and lands through a quivering wire. Nay, if report is to be believed, we are soon to be able to transmit, at a flash over long distances, a face, a map, a plan, a picture, a whole page of a newspaper, or an actual scene. As, therefore, those lower creatures, if they indeed could hear us speak, would have no notion of how we make the air waves into words, and still less grasp knowledge of any subtler form among human intercourse, so it is not quite safe for man to think and call all these strange families of the silent world alike dumb, or to despise them for being free of grammars and dictionaries. As a matter of fact, it is obvious that some power of mutual communication assuredly comes to all creatures that live in societies. Nobody can watch the flight of a flock of birds, the behavior of a herd of cattle, or, lower down, the marvelous accommodations for common existence of the small creeping and flying things, without perceiving that they know each other's minds in some way or other in a very satisfactory manner. Evidently there is, to begin with, a common language—a *lingua franca*—of the fields and of the forests. All sportsmen know how the particular

cry of a frightened bird will put all the wild animals on the alert who would otherwise quite disregard the bird's ordinary note. And the evil success with which poachers can imitate the cries of love and defiance from denizens of the woodlands, proves that its inhabitants possess a vocabulary which can be stolen.

But, who, in truth, loving Dogs and Cats and such-like humble friends ever can doubt their high intelligence and the strong and clear significance attaching to certain among their habitual utterances? Even London cab and cart Horses, though they cannot—fortunately for some among us—speak, grow to understand the few invariable words of direction which their drivers address to them. In the inferior orders of life there are doubtless many other methods of intercourse, and almost certainly there exists a plain and very useful language of touch. Nobody can read the delightful researches of Sir John Lubbock into the habits and customs of Ants without feeling persuaded that those little beings transact their business perfectly well by touching each other's antennæ. When Ants meet, a rapid passage of these wonderful organs takes place, gliding like rapiers above and below, and this quickly informs them whether they be friends or enemies, which is the nearest respective road home, whether any food is to be procured nigh at hand, and what is the general news in the fornicatory world. Truly it would be more desirable to learn what Bees talk about rather than to discuss the problem whether they talk at all. The views of Bees upon the purposes and colors of flowers, upon the moral duties of frugality and loyalty, and as to the real meaning and loveliness of a Rose, would be worth hearing. Of this much we may be all assured, that the little things of the world evade our knowledge as much and are quite as marvelous as the very largest and highest.

THE BUTTERFLY.

BY EMILY C. THOMPSON.

IN THE western part of England if the first Butterfly you see in the spring is white and if you succeed in killing this Butterfly, good luck will surely come to you. Some gentlemen on their way to church one day saw a friend dashing down the road wildly brandishing a cane. He could not stop to explain. He was as a rule a sedate, calm man, so this excitement alarmed them. As nothing could be done, they went on their way and soon met the father of their friend, an old man who usually hobbled painfully along on two canes. He too was excited and was doing his best to make his way down the road with only one cane. His first words were, "I'm afraid he has missed it." "Missed what?" thought the gentlemen, and finally after many efforts to quiet him enough for conversation learned from the old man that his son had seen his first butterfly, that it was white and that without more ado he had snatched his old father's cane and set off in pursuit. Still the old man was perfectly willing to hobble along as best he could, if only good luck and prosperity could be procured by the slaughter of the pretty little insect. The color of its wings is due to what seems to us a fine dust scattered over them, but in reality this dust is made up of little discs fastened by stalks to the wings, arranged usually in rows somewhat like the shingles on a house.

Notice its two great round eyes and remember that each of these is composed of thousands of perfect little eyes. Its trunk you will find coiled up under its head and sometimes this Butterfly of ours completes its toilet by opening its trunk and cleaning it. By the antennæ of the Butterfly you can tell it from the Moth, for those of

the former are immovable and furnished with knobs, while those of the other have not the knobs and can be stowed away under the wings. If you wish to distinguish the Butterfly from the Moth, remember this fact, and also that Butterflies fly only in the daytime and always rest with the wings erect. These facts are trustworthy, for no Moth has ever been found to possess all three of these characteristics, though some do possess one or two.

Though curious in itself, its life history is still more curious. Man, in passing through his seven ages never loses the distinguishing characteristics which make him a man, but our Butterfly as it passes through its three ages changes so much that we seem, while studying it to be studying three distinct creatures—the Caterpillar, the Chrysalis, and the Butterfly.

In the Caterpillar our dainty little fairy presents itself as it appears in its first stage, having just spent a few days, or a month, or perhaps the whole winter in the egg. It changes its old skin many times during its Caterpillar life of twenty or thirty days, at each change gaining in weight and brilliancy, until with the last it appears as a Chrysalis "a legless, mummy-like creature," which maintains its suspended position by means of the hooks on its tail or by a silken girth around its body. A few days before the Butterfly comes forth, it can be seen through the thin cases. Finally the skin on the back bursts open and the little insect is free. For a few minutes it stands with drooping wings. Gradually the wings distend and in a short while reach four times their original size. Then our Butterfly hastens away to carry its joyful greeting to man and flower. So the cycle of Butterfly life can thus be



Terias nicippa,
Colias philodice
Megastoma eurycle (Male).

BUTTERFLIES. LARVAE.

Papilio Phoebus,
Limenitis mesoda,
Papilio phalaena

Terias
Megalopteron

indicated: Egg, Caterpillar, Chrysalis, Butterfly, Egg.

Why they migrate is not known but evidence enough has been brought in by eye witnesses to prove that this does occur. One flight seen in Switzerland lasted for two hours, the continuous stream of insects being ten or fifteen feet wide and made up of the species called the Painted Lady. Similar companies have been seen at sea, as Mr. Darwin bears witness, also before and after tornadoes in certain places. In Ceylon a gentlemen drove through a cloud of white Butterflies for nine miles. But very interesting to us, is a great migration recorded to have been seen in our own country, in Massachusetts, about Oct. 1, 1876. These are strange stories, but really hardly more strange than other facts about these little animals, graceful and beautiful in form and motion, whose very presence adds greatly to the charm of mother Nature.

Such quantities of eggs are laid by the Butterflies that if certain animals did not contend against them, man would not be able to withstand the ravages of the Caterpillar. Man has one powerful ally in the birds which devour enormous quantities of these eggs, but a still more powerful ally is the Ichneumon Fly. This little insect is a parasite through its grub state and chooses as its host either the egg of the Butterfly or the Caterpillar. The full grown Fly lays its egg by means of an ovipositor, a sharp, hollow instrument with which it can pierce the skin or shell of its victim. The eggs of the fly hatch and the grubs feed upon the Caterpillar, but usually do not touch upon its vital parts until it is full grown, then they devour them and within the skin of their former host form their own cocoons. Sometimes they wait until the Caterpillar assumes its Chrysalis state before they finish their dread work, then much to the surprise of

interested beholders, a little cluster of flies appears at the breaking of the cocoon, and no beautiful Butterfly.

Some of these brightly colored little messengers of gladness live through the winter. Usually they pass this trying period wrapped warmly in the cocoon or nestled under some leaf, still a Chrysalis; but a few species weather the cold and the snow and, shut up in some hollow tree or some empty shed, sleep away the happy days of Jack Frost and Santa Claus and are ready to awake with the spring, when they are not abashed in their bedraggled garments to appear among their brothers, who come forth brightly clad, fresh from the soft, warm resting place of the cocoon.

Perhaps the marvelous migration of Butterflies which occurred on Oct. 3, 1898, will be more interesting to us than those already mentioned because it happened so recently and in our own country, and perhaps, most of all, because the reason for flight is hazarded. The inhabitants of Wichita, Kansas, at 3:15 o'clock in the afternoon of that day were greeted with the sight of many Butterflies flying south. Gradually the number increased until business practically ceased, the inhabitants all turning out to view the brilliant spectacle. The stream of yellow and brown insects, with the accompanying purr and brilliant effects of fluttering wings flowed on until within a half an hour of sunset, and even after this, millions of stragglers hastened southward. But you are interested in the reason given? They say that our little friends were driven away from their customary haunts by the forest fires in Colorado. This is only one more supposition to add to the list already awaiting some enterprising student, who shall at last solve the mystery of these wonderful flights and fully acquaint us with all the other interesting facts which our little Butterflies are still keeping secret.

THE ARMADILLO.

ALL Armadillos bear the name Fatu in the South American Guarau Indian language. Although the name is of Spanish origin the Indian term Fatu has also been adopted in European languages, except in the single case of the six-banded species. They are all of more or less similar appearance and habits. They are natives of the southern American belt, extending as far north as Mexico, and the specimen presented here was taken in Texas, where it is occasionally found. The Armadillos are at home in sparsely grown and sandy plains, and in fields on the edges of woods, which, however, they never enter. During the breeding season they consort together, but at all other times lead solitary lives and show no regard for any living thing except as it may serve for food.

Singular as it may appear, Armadillos do not have a regular abiding place, and they frequently change their homes. They can dig a hole in the ground five or six feet deep with such expedition that they are able to have several places of retreat. The hole is circular, at the entrance from eight to twenty-four inches wide, and at the bottom is a snug chamber large enough for them to turn around in. They are great night rovers and seldom move about by daylight, the glaring sunlight dazing them. When seen during the day it is always in rainy weather when the sky is overcast. It has been shown that Armadillos excavate their burrows under the hills of Ants or Termites, where they are able to gather their principal food with the greatest convenience by day as well as by night. Besides the foregoing they eat Caterpillars, Lizards, and Earthworms and are thus advantageous to the husbandman. Plants also consti-

tute a part of their diet.

Armadillos are not agile but are remarkably muscular. It is said, to avoid their enemies they can cut their way into the earth in places which a hoe wielded by a strong man can pierce with difficulty. The Fatu needs only three minutes to drive a tunnel exceeding the length of its own body. The strongest man is incapable of pulling it out by the tail. Once in its hole, it is always secure from Dogs. When it is seized by Dogs, it never defends itself in any way. This is probably not from cowardice, but because it believes itself secure from danger.

Best of all, the Armadillo is a useful animal. The Indians are fond of nearly all the species. While it has an unpleasant odor of musk, it can be prepared for the table; and some think it one of the most palatable of dishes. One of the species can roll itself into a ball, which, however, it does only in extremity.

In captivity Armadillos are usually put in cages with Monkeys, who, if they do not precisely reduce them to servitude, at least use them as playthings. The Monkeys ride their backs sportively, turn them over, without the danger they might experience from Turtles, who are less harmless, and cause them no end of worry. The Armadillo, with all his coat of mail, has a fur lining on his belly, and the experienced Dog quickly turns it over and makes short work of the apparently invulnerable quadruped. The Dog quickly crunches the thin armour and leaves the poor beast lifeless. Only the powerful digging claws which might, one would think, be used in his own defense, remain to tell the tale of the only means which nature has seemed to provide him with against his enemies.



NATURE'S GROTESQUE.

(THE YELLOW-BREASTED CHAT.)

THIS bird comedian is an actor, a mimic, and a ventriloquist; he has been called "a rollicking polygot," "an eccentric acrobat," "a happy-go-lucky clown, turning aerial somersaults," "a Punchinello among birds," and from my own experience I can add that he is a practical joker and "an artful dodger." His voice is absolutely unique in its range. Besides his power as a ventriloquist, to throw it in any direction, and so entice away from his nest any intruder upon his domain, he possesses the most unequalled capacity for making queer noises. On a certain summer day I was driving to Monticello, the Virginia home of President Jefferson, along a beautiful road, bordered by tall trees and a thick, leafy undergrowth where a thousand nests might be safely hidden. All along a road the Chats called *chit, chit*, or barked, whined, clucked, whistled, sang, chuckled and called overhead, or out of the bushes beside us, always invisible, or just giving a flutter to the leaves to show their presence. One of the party declared one called *Kitty, Kitty!* distinctly, and he also mimicked a puppy most successfully. Later on, in July, I was stopping near a favorite haunt of the Chats; a country place on the edge of the woods, where thickly growing shrubs and bushes filled the deep hollows between the hills and near the streams. Here they had their broods, and not only all day, but late in the evening by moonlight they could be heard, making the whole place ring with their medley of sounds, while not a feather of them could be seen.

Yet I finally succeeded in catching various glimpses of them, and in equally characteristic, though different

moods. First, I saw them darting rapidly to and fro on foraging journeys, their bills filled with food, for they are most admirable husbands and fathers, and faithful to the nests that they hide with such care. They are beautiful birds, rich olive-green above and a bright yellow below, with two or three pure white lines or stripes about the eye and throat and a "beauty spot" of black near the beak. I watched one balancing on a slender twig near the water in the bright sunshine and his colors, green and gold, fairly glittered. His nest is usually near the ground in the crotch of a low branch and is a rather large one, woven of bark in strips, coarse grass and leaves, and lined with finer grass for the three or four white eggs, adorned with small reddish-brown spots. One pair had their home near a blackberry thicket, and they might be seen gobbling berries and peeping at you with bright black eyes all the while.

The Chat excels in extraordinary and absurd pose; wings fluttering, tail down, legs dangling like a Stork, he executes all kinds of tumbles in the air. It is said that a Chat courtship is a sight never to be forgotten by the lucky spectator. Such somersaults, such songs, such queer jerks and starts. Our bird is one of the Wood Warbler family, a quiet and little known group of birds. His elusiveness and skill in hiding, and his swift movements, are his only traits in common with them.

ELLA F. MOSBY.

In those vernal seasons of the year, when the air is calm and pleasant, it were an injury and sullenness against Nature not to go out and see her riches and partake in her rejoicing with heaven and earth.—MILTON.

THE RED-HEAD DUCK.

IN MANY points of structure and habits Sea Ducks, of which this is a specimen, may be distinguished from Fresh Water Ducks by the presence of a lobe or little flap of skin on the lower side of the hind toe. The legs of the former are also placed farther behind, and they are thus better fitted for swimming, though not so well adapted for walking or running on land. The feathers of Sea Ducks are more dense also, and they are all provided with a quantity of thick down next to the skin, which is of no small commercial value.

The difference in the habits of the two species is no less striking. The latter dive for their food, which the former never do; they are chiefly maritime in their distribution, although all, or nearly all, retire to fresh water lakes to raise their young.

The Red-head is said not to be common along the coast of New England, but in the winter months is found in considerable numbers along the south shore of Long Island. It is extremely abundant south of that point, and particularly so in Chesapeake Bay, where immense numbers are killed each season. Where it is enabled to feed on the well known wild celery its flesh is said to be fully equal in flavor to that of the Canvas Back. Both in spring and fall it is an extremely abundant migrant in the Western States. It generally reaches northern Illinois, says Hallock, in its spring passage about the last of March, remaining until the latter part of April. On its return journey late in October,

it remains on the rivers, lakes, and sloughs until the cold weather, by freezing up its feeding grounds, forces it to go farther south. It is altogether probable that a few of these birds breed in the Rocky Mountain regions within the limits of the United States, but they usually continue northward to their regular breeding grounds, which extend from Wisconsin, Michigan, and others of the northern tier of states, to the fur countries.

The Red-head was found nesting on the St. Clair Flats, Michigan, by Mr. W. H. Collins, who, in describing some of its breeding habits, says: "I had the good fortune to find two nests of this bird containing respectively seven and eight eggs. The first was placed on some drifted rushes on a sunken log, and was composed of flags and rushes evidently taken from the pile of drift upon the log, as they were short pieces, so short, in fact, that the nest when lifted with the hands fell in pieces. The nest was four inches deep and lined with down from the female. This nest contained seven fresh eggs of a creamy color, varied in measurements and of a uniform oval shape, very little smaller at one end. The other nest was built similar to a Coot's nest; that is, of flags and grass interwoven at the base of a bunch of flags growing in water three or four feet deep. It was built in such a way that the nest would rise and fall with the water."

The food of the Red-head consists of mollusks, shell-fish, and the seeds and roots of aquatic plants.



BIRDS IN GARDEN AND ORCHARD.

DURING the last year I have received quite a number of letters from all over the United States, inquiring why so few birds are found about the homes, among the ornamental shrubs and trees, and in the orchard. My correspondents also wish to know how our beautiful native songsters can be induced to take up their residence in the neighborhood of man. As the many inquiries came from the East, the West, the North, and the South, I shall treat the subject in the following manner :

The northern, eastern, and central states show but little difference as to their bird-life, and there is also little diversity in regard to the ornamental trees and shrubs of the gardens. The region included is bounded on the north by the British possessions, on the east by the Atlantic ocean, on the west by the Rocky mountains, and on the south by the Indian Territory, Arkansas, Tennessee, and North Carolina. While living in the country I have always had birds at my home and in the neighborhood, and I shall, therefore, give my own experience.

Birds settle only where they find the surroundings perfectly congenial, and where they are protected and consequently feel safe ; where dense shrubbery, evergreens, and deciduous trees abound, and where water and suitable nesting material are near at hand. In one garden they are exceedingly numerous, while in another one close by, only a few pairs, perhaps, are to be found. When protected, they soon learn to regard man as their friend. Their enemies, especially Cats, Squirrels, and Owls, must not be allowed to rove about in the garden and orchard, and such thieves and robbers as the Blue

Jay, the Loggerhead Shrike or Butcher Bird, and that abominable tramp and anarchist among birds, the English Sparrow, should never be tolerated in a garden or park where other birds are expected to make their homes.

In the days of my boyhood the groves reechoed with the songs of many birds ; the woods, however, have been cleared away, and in the poor remnants of the once magnificent forests there are few birds to be found today. The sweet notes of the Veery, the thundering sounds of the Ruffed Grouse, the loud hammering of the Pileated Woodpecker, are no longer heard. I have devoted much time to erecting bird houses and planting ornamental trees and shrubs for the accommodation of the birds. Here they soon took up their residences. On the top of the barn and granary Martin boxes were placed, and in the gables of the barn holes were cut to admit the pretty Barn Swallow and the Phoebe. Among the first birds to settle were the Robins and Bluebirds, both heralds of spring, appearing in the last days of March or early in April from their winter homes in our Southern States. The Baltimore Oriole suspended its beautiful hanging nest from a high horizontal branch of a Walnut tree. The Cedar Bird, quiet and retired in its habits, and a most beautiful denizen of the garden, placed its nest constructed of sheep's wool on a low horizontal branch of an Oak. The sprightly Canary-like song of the American Goldfinch, often called the Wild Canary, was heard throughout the summer, and its cozy little nest, lined warmly with thistle-down, was placed in the upright exterior branches of a Sugar Maple. In the same tree, but lower down on a horizontal branch the exquisite pendulous nest of the


Red-eyed Vireo was now and then found. This Vireo is an incessant songster as it gleans among the upper branches of the trees.

The Rose-breasted Grosbeak invariably nested in a clump of dense wild Crab-apple trees, partly overgrown with grape vines. Another inhabitant of the grove not easily overlooked, is the bold Kingbird, the guardian of the barnyard, its nest saddled on a rather strong moss-covered limb of another Oak. I could mention a number of other birds that build their nests near

the dwellings of man, but space will not permit me to do so. I will add, however, that if my readers would have about them these beautiful and useful birds, which are almost the best friends of mankind, don't allow English Sparrows to come near your home, and you will soon find yourself in the midst of the songsters. The incredible numbers of English Sparrows now found almost everywhere have driven our native birds away.

—JOS. F. HONECKER,
Oak Forest, Ind.

GOLDENROD.

PRING is the morning of the year,
And Summer is the noontide bright;
The Autumn is the evening clear
That comes before the Winter's night.

And in the evening, everywhere
Along the roadside, up and down,
I see the golden torches flare
Like lighted street-lamps in the town.

I think the Butterfly and Bee,
From distant meadows coming back,
Are quite contented when they see
These lamps along the homeward track.

But those who stay too late get lost;
For when the darkness falls about,
Down every lighted street the frost
Will go and put the torches out!

—*Frank Dempster Sherman.*



GOLDEN ROD.
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From Nature by Chicago Colortype Co.

OCTOBER.

AY, thou art welcome, heaven's delicious breath,
When woods begin to wear the crimson leaf,
And suns grow meek, and the meek suns grow brief,
And the year smiles as it draws near its death.
Wind of the sunny south! oh still delay,
In the gay woods and in the golden air,
Like to a good old age released from care,
Journeying, in long serenity, away.
In such a bright, late quiet, would that I
Might wear out life like thee, mid bowers and brooks,
And, dearest yet, the sunshine of kind looks,
And music of kind voices ever night;
And when my last sand twinkled in the glass,
Pass silently from men, as thou dost pass.

—BEZANT.

October days are stealing
All swiftly on their way;
The squirrels now are working,
The leaves are out at play;
The busy, busy children
Are gathering nuts so brown,
And birds are gaily planning
A winter out of town.

—CLARA L. STRONG.

FROM "CONSTANTINOPLE."

EDMONDO DE AMICIS.

CONSTANTINOPLE has one grace and gayety peculiar to itself, that comes from an infinite number of birds of every kind, for which the Turks nourish a warm sentiment and regard. Mosques, groves, old walls, gardens, palaces all resound with song, the whistling and twittering of birds; everywhere wings are fluttering and life and harmony abound. The sparrows enter the houses boldly, and eat out of women's and children's hands, Swallows nest over the café doors, and under the arches of the bazaars; Pigeons in innumerable swarms, maintained by legacies from sultans and private individuals, form garlands of black and white along the cornices of the cupolas and around the terraces of the minarets; Sea-gulls dart and play over the water; thousands of Turtle-doves coo amorously among the

cypresses in the cemeteries; Crows croak about the Castle of the Seven Towers; Halcyons come and go in long files between the Black Sea and the Sea of Marmora; and Storks sit upon the cupolas of the mausoleums. For the Turk, each one of these birds has a gentle meaning, or a benignant virtue: Turtle-doves are favorable to lovers, Swallows keep away fire from the roofs where they build their nests, Storks make yearly pilgrimage to Mecca, Halcyons carry the souls of the faithful to Paradise. Thus he protects and feeds them, through a sentiment of gratitude and piety; and they enliven the house, the sea, and the sepulchre. Every quarter of Stamboul is full of the noise of them, bringing to the city a sense of the pleasures of country life, and continually relishing the soul with a reminder of nature.

There are several kinds of animals, points out Cosmos, that have never swallowed water. Among these are the Lamas of Patagonia and certain Gazelles of the far east, and a considerable number of reptiles—Serpents, Lizards, and certain Batrachians—that live and flourish where there is no moisture. A kind of Mouse of the arid plains of western America also exists where moisture is said to be unknown.

In the London Zoological Gardens a Paroquet lived fifty-two years without drinking a drop, and some naturalists believe that Hares take no liquid except the dew that sometimes forms on the grass they eat. Even Cows and Goats in France, in the neighborhood of the Lozere, almost never drink, yet they produce the milk from which is made the famous Roquefort cheese.

ANIMALS AND MUSIC.

ONE of our poets is authority for the statement that "music hath power to sooth the savage breast," but experiments have recently been made in Lincoln Park, Chicago, *The American Naturalist* tells us, to determine with scientific accuracy the effects of violin playing on certain animals.

"Music which was slow and sweet, like 'Home, Sweet Home' or 'Annie Laurie,' pleased the Panthers, a Jaguar, and a Lioness with her cubs. The Panthers became nervous and twitched their tails when a lively jig, 'The Irish Washerwoman,' was played to them, and relapsed into their former quiet when the music again became soothing.

"The Jaguar was so nervous during the jig music that he jumped from a shelf to the floor of his cage and back again. When the player ceased playing and walked away, the Jaguar reached out his paw to him as far as he could. His claws were drawn back.

"The Lioness and her cubs were interested from the first, though when the violinist approached the cage the mother gave a hiss, and the cubs hid behind her. At the playing of a lively jig, the cubs stood up on their hind legs and peeped over at the player. When the musician retreated from the cage, the animals came to the front of it and did not move back when he gradually drew so near as almost to touch the great paws which were thrust through the bars. When playing 'Home, Sweet Home,' the entire family seemed very attentive, and were motionless except that the cubs turned their heads from side to side. Then another jig was played and the cubs pranced about."

"The Coyotes in a den, squatted in a semicircle, and sat silently while the music continued. When it ceased, they ran up and pawed at the player through the bars. He began afresh, and they again formed in a silent semicircle. This experiment was tried several times with the same results."

Of late years the Sea Gulls have found it so much to their interest to come up to the Thames in our midst that their graceful evolutions around the crowded bridges in ever growing flocks has almost ceased to excite notice. But this year, as never before, they have descended upon the water of St. James Park in such great numbers that their presence must considerably exercise the minds of those responsible for the welfare of the other wild fowl there. They may be seen sometimes resting upon the surface of the eastern half of the lake in sufficient number almost to hide the water.

And at the luncheon hour, when released workers throng bank and bridge, bestowing upon the water the scanty fragments of their frugal meals, the gulls, on ready wing, with an agility born of long practice over stormy seas, give the clumsier Ducks and Geese hard work to obtain even a small share of what is going. Not so long ago a piece of plain bread might often float uneaten until it sank waterlogged for the benefit of the fish. It is so no longer. No crumb now goes a-begging or is scouted by any of the old habitues as beneath their notice.—
London Paper.

SUMMARY.

Page 126.

KINGBIRD OF PARADISE.—*Cincinnurus regius*.

RANGE—New Guinea and the neighboring islands.

Page 130.

PECCARY.—*Dicotyles torquatus*.

RANGE—From Arkansas to Brazil. This specimen was taken in Texas.

Page 134.

BOTTLE-NOSED DOLPHIN.—*Tursiops tursio*.

RANGE—Arctic ocean and the north of the Atlantic.

Page 138.

TUFTED PUFFIN.—*Lunda cirrhata*. Other name: Sea Parrot.

RANGE—Coasts and islands of the north Pacific, from California to Alaska, and from Japan to Bering Strait. Accidental on the coast of Maine.

NEST—In crevices of rocks, often without lining.

EGG—One.

Page 147.

ARMADILLO.—*Tatusia novemcincta*. Other name Peba.

RANGE—From Texas to Paraguay.

Page 151.

RED-HEADED DUCK.—*Aythya americana*.

RANGE—North America in general, breeding from California, Wisconsin, and Maine, northward.

NEST—On low grassy grounds near the water.

EGGS—Seven to ten, grayish white to pale greenish buff; oval in form.

Page 155.

GOLDENROD.—*Solidago Virga-aurea*. The name is common to all the species of the genus *Solidago*.

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Cat Bird.	Chimney Swift.	Creep, Brown.
Chickadee, Black-capped.	Chat, Yellow-breasted.	Dickcissel.
Cock of the Rock.	Cuckoo, Yellow-billed.	Duck, Baldpate.
Crossbill, American.	Dove, Mourning.	Duck, Black.
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Gull, Ring-billed.	Grackle, Bronzed.	Heron, Great-blue.
Hawk, Marsh.	Grosbeak, Evening.	Ibis, White-faced Glossy.
Hawk, Night.	Grouse, Black.	Kingbird, Arkansas.
Heron, Black-crowned.	Heron, Snowy.	Murre, Brünnich's.
Jay, American Blue.	Humming Bird, Allen's.	Nightingale.
Jay, Arizona Green.	Humming-Bird, Ruby-throated.	Ovenbird.
Jay, Canada.	Junco, Slate colored.	Owl, Sawwhet.
Kingfisher, American.	King Bird.	Owl, Short-eared.
Lark, Meadow.	Kingfisher, European.	Partridge, Mountain.
Longspur, Smith's.	Kinglet, Ruby-crowned.	Parrot, Double Yellow-headed.
Lory, Blue-mountain.	Lark, Horned.	Partridge, Scaled.
Mocking Bird, American.	Merganser, Red-breasted.	Petrel, Stormy.
Mot Mot, Mexican.	Nuthatch, White-breasted.	Pheasant, Silver.
Noupareil.	Osprey, American.	Pigeon, Crowned.
Oriole, Baltimore.	Partridge, Gambel's.	Pigeon, Passenger.
Oriole, Golden.	Phalarope, Wilson's.	Plover, Snowy.
Oriole, Orchard.	Pheasant, Ring-necked.	Prairie Hen, Lesser.
Owl, Long-eared.	Phoebe.	Rhea, South American.
Owl, Screech.	Plover, Belted-piping.	Sandpiper, Bartramian.
Owl, Snowy.	Plover, Simipalmated Ring.	Sparrow, English.
Paradise, Red Bird of.	Rail, Sora.	Sparrow, Fox.
Parrakeet, Australian.	Sapsucker, Yellow-bellied.	Spoonbill, Roseate.
Parrot, King.	Scoter, American.	Stilt, Black-necked.
Pheasant, Golden.	Skylark.	Swan, Black.
Pheasant, Japan	Snake Bird.	Vireo, Red-eyed.
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Warbler, Prothonotary.	Warbler, Kentucky.	
Wax Wing, Bohemian.	Warbler, Yellow.	
Woodpecker, California.	Woodcock, American.	
Woodpecker, Red headed.	Wren, House.	
Wren, Long-billed Marsh.	Wood Pewee.	
	Yellow Legs.	

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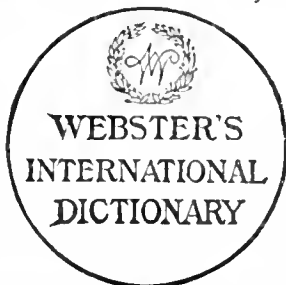
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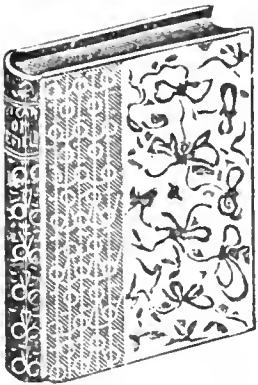
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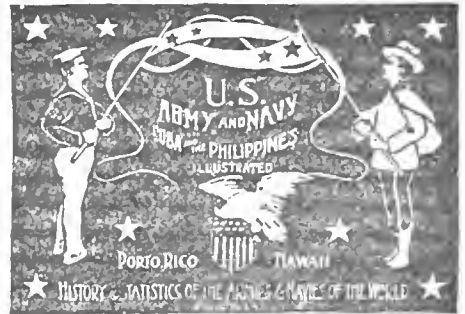
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EDITED BY C. C. MARBLE.



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AND ALL NATURE.

A MONTHLY MAGAZINE

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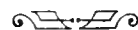
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VOL. IV.

NOVEMBER, 1898.

No. 5

NATURE'S ORCHESTRA.

ALL nature is attuned to music. Man may seek the fields, the forests, the mountains, and the meadows, to escape from distracting noises of the city, but nowhere, not even in the depths of mountain forests, will he find absolute silence. And well for him that it is so, for should no noise, no vibration of the air greet his accustomed ear, so appalling would be the dead silence that he would flee from it as from the grave.

Even the Bugs make music. They may not be much as vocalists but they take part in nature's symphony with the brook, the Bird, and the deep diapason of the forest monarch swaying and humming to the gusts of the wayward wind. It is true that the great majority of our species of insects are silent, and those which do make sounds, have not true voices, breathing as they do through holes arranged along each side of their body, and not through their mouths, they naturally possess no such arrangement for making noises connected with breathing as we find in the human larynx.

The "buzzing Fly" and "droning Bee" are classed among nature's musicians, as well as the Cicadas, Grasshoppers, Crickets, Locusts, Katydid, and Beetles. Only the males are the musicians in the insect families—with the exception of the Mosquito, the lady being the musical member of that family—and the different kinds of Grasshoppers are provided with an elaborate musical apparatus by means of which they call their mates.

Chief among the insect performers is the Cicada, often confused with the Lo-

cust, though he does not belong to that family at all, who possesses a pair of complicated kettle-drums, which he plays with his muscles instead of sticks.

Directly behind the base of each hind leg is a circular plate of about one-quarter of an inch in diameter. Beneath each of these is a cavity across which is stretched a partition of three membranes. At the top is a stiff, folded membrane, which acts as a drum-head. Upon this he plays with his muscles, the vibrations being so rapid that to the ears of some listeners the noise, or music he engenders, sounds more like that of a mandolin than a drum. He is a black fellow with dull green scroll work over his thick body, lives in trees, and is generally invisible when he plays the drum.

The Grasshopper is the fiddler of the great orchestra, and the hotter the day the more energetically does he fiddle. The fellow with the short horns has a rough hind leg which he uses as a bow; this he draws across the wing cover, giving off the notes which he so dearly loves. Near the base of each fore wing is a peculiar arrangement of veins and cells. This arrangement differs in the different species, but in each it is such that by rubbing the fore wings together they are made to vibrate, and thus, some naturalists aver, they make the sounds which we hear.

The most easily observed of all insect musicians are the common Crickets. By placing a sod of growing grass in a cage with several male crickets, you can watch them play upon their fiddles. Upon the lower side of their wings you will see ridges like

those of a tiny file, and on the inner margin toward the base from the end of the principal vein, a hardened portion, which may be called the scraper.

By using the files and scrapers of their fore wings the little musicians add their notes to the universal music of the world. ELLANORA KINSLEY MARBLE.

A LITTLE BIRD.

A little Bird in a tree
Made one—a man and maiden three.
'Twas not by chance that they had met!
“None see,” they said; one can forget
A little Bird.

A long hot road, a strip of grass,
'Twould tempt the Fates to let it pass!
Two people linger in the walk;
There's only one to hear them talk,
A little Bird.

Long shadows stretched across the sky,
Two people parted with a sigh,
But there was no one there to see!
How do I know? and who told me?
A little Bird.

—E. R. C.

THE TURKEY'S FAREWELL.

I go, but I return.
The fiery furnace has no horrors for me.
Mine is a race of martyrs. I can trace
Ancestors by the score who laid their heads
Upon the axman's block. It is a little way
We have. Why should I care to flaunt
My feathered beauty on a bare November bough?
I shall appear again in a far richer dressing.
In years to come it will be said of me,
As of my ancestors, that nothing in my life
Shed so much glory as the leaving of it.
Full many a little child that now
Is prattling at its grandma's knee shall say
In future years that of all days it holds
In the most sacred memory the one
When it officiated at
The funeral of this Turk. And now
Lest some one shall say I knew not how to die,
Let the ax fall.

BIRDS.

THE BIRD is little more than a drift of the air brought into form by plumes; the air is in all its quills, it breathes through its whole frame and flesh, and glows with air in its flying, like a blown flame; it rests upon the air, subdues it, surpasses it, outraces it—*is* the air, conscious of itself, conquering itself, ruling itself.

Also, into the throat of the Bird is given the voice of the air. All that in the wind itself is weak, wild, useless in sweetness, is knit together in its song. As we may imagine the wild form of the cloud closed into the perfect form of the Bird's wings, so the wild voice of the cloud into its ordered and commanded voice; unwearied, rippling through the clear heaven in its gladness, interpreting all intense passion through the soft spring nights, bursting into acclaim and rapture of choir at daybreak, or lispings and twittering

among the boughs and hedges through heat of day, like little winds that only make the Cowslip bells shake, and ruffle the petals of the Wild Rose.

Also, upon the plumes of the Bird are put the colors of the air; on these the gold of the cloud, that cannot be gathered by any covetousness; the rubies of the clouds, the vermilion of the cloud-bar, and the flame of the cloud-crest, and the snow of the cloud, and its shadow, and the melted blue of the deep wells of the sky—all these, seized by the creating spirit, and woven into films and threads of plume; with wave on wave following and fading along breast and throat and opened wings, infinite as the dividing of the foam and the sifting of the sea-sand; even the white down of the cloud seeming to flutter up between the stronger plumes, seen, but too soft for touch.—RUSKIN.

BIRDS IN STORMS.

DURING windstorms birds may sometimes be seen flying overhead at a great height. When this is observable, it is said it may be taken for granted that the upper atmosphere is comparatively quiet, and the disturbance is confined chiefly to the lower regions. Many seabirds seek the upper air of comparative quietness during tropical hurricanes. A writer in the *Boston Transcript* says that when a heavy wind or gale springs up, the Gulls, Terns and Petrels will fly back and forth over the water's surface, rising and falling, and uttering their peculiar cries of warning. If the storm extends too high up they will drift gradually with the wind, or fly away on the edge of the hurricane. Very often they get caught unexpectedly in the gales of wind, and they find themselves in a dangerous position. Then they struggle with might and

main against the powers of the air currents. Knowing that danger and death face them if they once come under the dominion of the wind, they use all the strength and tactics they are capable of to combat the elements. A young Herring Gull, a Petrel, or a Tern thus surprised will beat up against the wind with powerful flight. It will rise high in the air, facing the gale, and making a little progress forward as well as upward. Then it will suddenly descend with rapid flight toward one side of the storm-swept path, but falling off at the same time in the direction of the blowing wind. Once more it will sweep around and face the storm, ascending heavenwards and striking desperately out toward the direction of the storm. By pursuing these tactics, the bird will gradually work itself to one side of the storm centre.

THE SLEEPING-PLACES OF BIRDS.

IT IS difficult to imagine a spot with fewer domestic features to adorn the home than a piece of the bare ceiling of a tropical veranda; but the attachment of animals to their chosen sleeping-places must rest on some preference quite clear to their own consciousness, though not evident to us. In some instances the ground of choice is intelligible. Many of the small blue British Butterflies have grayish spotted backs to their wings. At night they fly regularly to sheltered corners on the chalk downs where they live, alight head downwards on the tops of the grasses which there flourish, and closing and lowering their wings as far as possible, look exactly like seed-heads on the grasses. If the night is cold they creep down the stem and sleep in shelter among the thick lower growth of grass. The habits of birds in regard to sleep are very unlike, some being extremely solicitous to be in bed in good time, while others are awake and about all night. But among the former the sleeping-place is the true home, the *domus et penetralia*. It has nothing necessarily in common with the nest, and birds, like some other animals and many human beings, often prefer complete isolation at this time. They want

a bedroom to themselves. Sparrows, which appear to go to roost in companies, and sometimes do so, after a vast amount of talk and fuss, do not rest cuddled up against one another, like Starlings or Chickens, but have private holes and corners to sleep in. They are fond of sleeping in the sides of straw-ricks, but each Sparrow has its own little hollow among the straws, just as each of a flock of sleeping Larks makes its own "cubicle" on the ground. A London Sparrow for two years occupied a sleeping-home almost as bare of furniture as the ceiling which the East Indian Butterfly frequented. It came every night in winter to sleep on a narrow ledge under the portico of a house in Onslow Square. Above was the bare white-washed top of the portico, there were no cosy corners, and at eighteen inches from the Sparrow was the gas-lit portico lamp. There every evening it slept, and guests leaving the house seldom failed to look up and see the little bird fast asleep in its enormous white bedroom. Its regular return during two winters is evidence that it regarded this as its home; but why did it choose this particular portico in place of a hundred others in the same square?—*Spectator*.

BIRD COURTSHIPS.—When he (the Flicker) wishes to charm his sweetheart he mounts a very small twig near her, so that his foreparts shall not be hidden as he sits upright in regular Woodpecker attitude, and he lifts his wings, spreads his tail, and begins to nod right and left as he exhibits his mustache to his charmer, and sets his jet locket first on one side of the twig and then the other. He may even go so far as to turn his head half around to show her the pretty spot on his "back hair." In doing all this he per-

forms the most ludicrous antics, and has the silliest of expressions of face and voice, as if in losing his heart, as some one phrases it, he has lost his head also. For days after she has evidently said yes, he keeps it up to assure her of his devotion, and, while sitting crosswise on a limb, a sudden movement of hers, or even a noise made by one passing, will set him to nodding from side to side. To all this she usually responds in kind.—*Baskett*.



THE SHARP-TAILED GROUSE.

In open woodlands far remote
The Sharp-tails utter their cackling note,
And on the wild prairie ground
Their simple nest and eggs are found.

Long years ago, in countless pairs
They courted, danced, and "put on airs,"
But hunters, greedy, cruel—strange!
Have driven them beyond their range.

C. C. M.

A WELL-KNOWN observer, who has spent many years in the West, says that the Sharp-tailed Grouse, being a bird of the wild prairies and open woodlands, has gradually retreated westward as the settlements have advanced, and will soon be a rare bird, to be looked for only in the sand-hills and unsettled portions of the country.

During the summer months this bird inhabits the open prairies, retiring in winter to the ravines and wooded lands, and when the snow is deep and the weather severe often hides and roosts beneath the snow. This sometimes proves the destruction of the birds, the entrance to the roosting-place being filled by falling snow and frozen over.

The Sharp-tails feed chiefly on Grass-hoppers, seeds, buds, blossoms, and berries.

"When walking about on the ground they stand high on their legs, with their sharp-pointed tails slightly elevated, and when flushed, rise with a whirring sound of the wings, uttering as they go a guttural *kuk-kuk-kuk*, and swiftly wing themselves away in a direct course. The birds have several cackling notes, and the males a peculiar crowing or low call, that in tone sounds somewhat

like the call of the Turkey. In the early spring, as the love season approaches, they select a mound or slight elevation on the open prairies for a courtship ground, where they assemble at early dawn, the males dancing and running about in a circle before the females in a most ludicrous manner, facing each other with lowering head, raised feathers and defiant looks, crossing and recrossing each other's paths in a strutting, pompous way, seldom fighting, each acting as if confident of making the greatest display, and thus winning the admiration of and capturing the hen of his choice. These meetings and dances are kept up until the hens cease laying and begin to sit."

These Grouse place the nest in a tuft of grass or under a low, stunted bush. A hollow in the ground is worked out to fit the body and lined with a few blades of grass arranged in a circular form. The hens attend wholly to the hatching and rearing of the young and are attentive and watchful mothers.

The flesh of the Sharp-tail is lighter in color and more highly esteemed than that of the Prairie Hen, and the bird is therefore hunted more industriously.

TAME BATS.

THE Bat is a harmless little animal, but I doubt if many of us would care to have a number of them flying around. The hotter the climate the more Bats you will find. As evening draws nigh, even in Italy, Greece, and Spain, out of their nooks and corners thousands of them fly, fluttering over the fields, through the gardens and streets of the town, through houses and rooms.

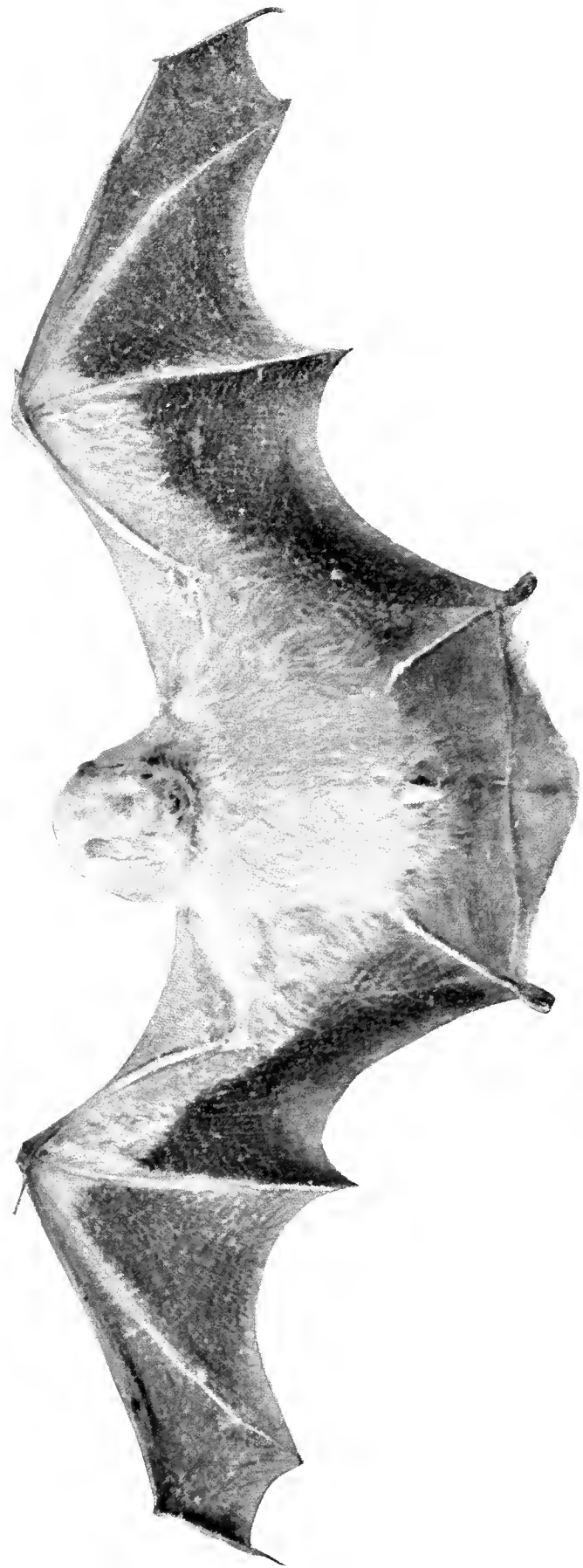
People get used to them there, and when awakened by the noise of their wings will get up, chase them from the room with a stick, and though aware they will return again when all is quiet, lie down again and go to sleep.

You would scarcely think to look at these lively little animals that they could be tamed and become strongly attached to their masters, would you? But indeed they are very intelligent and many naturalists have made pets of them, training them to take food from their hands or search for it in a glass. They will follow the one they love all over the house, and show themselves very amiable and sensible, too.

One cold spring morning a lady with a sympathetic heart—a true Christian lady I should judge, since she loved all things “both great and small”—saw a boy tossing in the air a little animal which she took to be a Mouse. Even so insignificant a creature should not be needlessly tortured, so she went at once to its rescue. Instead of a Mouse

she found it to be a Bat, half-dead from cold and fright. With tender hands she placed it upon some cotton in the bottom of a basket and set it near the fire. Many times she peeped into the basket and was at length delighted to see the little creature hanging bat-fashion on the side of the basket, its keen, bright eyes watching every movement. One of its feet she found was crushed. With trembling hands she severed the bit of skin by which it hung, and applied some healing salve to the wound. The poor little creature suffered too much to taste food, but after a few days accepted a Fly from her hands, then a bit of meat, after which it folded its wings to signify it had enough.

The Bat at length became as tame as a Mouse and would hang itself to any convenient portion of its mistress' dress; would eat whatever of animal food she gave it, and lick milk off her fingers. At night it would settle upon her hair, but never went near other members of the family; would fly about the room, and go out of the window in search of insects, returning in a couple of hours, and if the window was closed hang to the window-sill, or to the sash, until admitted. Thus it lived for two years, a happy, contented Bat, till one night it flew out and never returned—a prey probably to some White Owls who for years had made their home in an old belfry near by.



RED AND BLACK BATS.

Over the houses, in the windows, fluttering everywhere,
Like Butterflies gigantic, the Bats dive through the air;
Up and down, hither, thither, round your head and away,
Look where they wander, coming ever with vanishing day.

C. C. M.

BATS are so much alike, especially those common to this country, of which there are numerous species known to naturalists, that the description of one will serve for all, with the exception of the Vampire.

The sub-order of smooth-nosed Bats is represented in this country by several species peculiar to America. The most common in all the Atlantic coast states is the Red Bat, or New York Bat, which is a busy hunter of flying insects, which it follows so persistently that it frequently flies into rooms in pursuit of its favorite prey. It flies rather slowly, but it changes the direction of its flight very rapidly, and its movements in the air are very graceful. Besides this species is the Black Bat, and several others have been observed and described, but so far the descriptions, according to Brehm, have been principally technical, and little or nothing is known of their habits, except that no North American species seems to be harmful, but the contrary, as they are all insect-eaters.

The principal food of these Bats consists of Butterflies, Beetles, Mosquitoes, and the like.

All Bats sleep by day and fly about by night. Most of them make their appearance at dusk, and retire to their hiding-places long before dawn. Some species appear between three and five o'clock in the afternoon and flicker merrily about in the bright sunshine. Each species has its own hunting-grounds in forests, orchards, avenues, and streets, and over stagnant or slowly flowing water-surfaces. It is said to

be rare that they fly over open fields, for the reason that there is no game for them. In the South they haunt the rice fields, where insects are numerous. Their hunting-ground is limited, although some large species will cover a mile in their flight, and the Bats of the tropics fly over much greater distances.

Bats are in general very much averse to the ground, and never voluntarily place themselves on a level surface. Their method of walking is very curious. First the forelegs or wings are thrust forward, hooking the claw at its extremity over any convenient projection, or burying it in the ground. By means of this hold the animals draw themselves forward, then raising their bodies partly off the earth advance the hind-leg, making at the same time a tumble forward. The process is then repeated on the opposite side, and thus they proceed in a strange and unearthly fashion, tumbling and staggering along as if their brains were reeling.

It has long been known that Bats are able to thread their way among boughs of trees and other impediments with an ease that seems almost beyond the power of sight. Even utter darkness does not apparently impede their progress, for when shut up in a darkened room, in which strings had been stretched in various directions, they still pursued their course through the air, avoiding every obstacle with precision. This faculty has been found not to result from any unusual keenness of sight, but from the exquisite nervous system of their wings.

THE OTTER.

NATURE, children, as you observe, gave my family a handsome coat. Now no bird can have fine feathers, nor beast a fine fur but men and women desire them for adornment, or possibly to keep themselves warm. So the hunters, finding it a paying business, shoot and trap us till places which once knew the Otter know us no more.

Such gentle animals as we are, too. No little girl or boy would care to have a more frolicsome playmate than a young cub Otter. He will romp with you, and play with Dog or Cat and sit up on his hindquarters, and whistle and do even many quaint tricks to make you laugh.

To make him happy you must have a little pond in the yard or a large tank, though he will run about the yard or house most of the time with the Dog. Feed him at first on bread and milk, then on fish, though you can train him to do without the latter and eat the "leavings" from the table.

Such fun as we Otters that live in the Northern part of the United States and Canada do have in winter. No school-boy enjoys coasting down hill more than we do. Though we live in the water, you may say, and are known as the fastest-swimming quadrupeds, yet, in spite of our short legs, we can run over land tolerably well, too. So we trudge along till we come to a high

hill, well covered with snow; up we scramble to the top, lie down flat on our smooth jackets, bend our fore feet backward and, giving ourselves a shove with our hind legs, down we slide head-foremost. Such fun as it is! Not till we get hungry or too tired to jog up the hill any more do we give it up for that day.

In summer we enjoy the same sport, too. How? Oh, all we want is a clay-bank with a good muddy surface, and down we go to turn a somersault into the water of the creek below. "Shooting the chutes" you little people would call it, I suppose, though we call it our "slide."

Our homes are always on the banks of a stream. We begin to burrow three or four feet below the surface of the water, forming a tunnel which leads to a chamber in the bank high and dry. That is called our den and we line it with grass and live very comfortably.

Being a hunted animal our senses are very acute. When on land we are always on the alert and, at the approach of danger, down we go into the water and hide in our dens. After sunset we go out to fish. We beat the surface of the water with our tails and frighten the scaly fellows so that they seek refuge under stones or in holes in the bank. Then we catch our Fish. For a change we eat Crabs, Frogs, and sometimes small birds.





THE AMERICAN OTTER.

In holes on river banks the Otter makes his home;
From solitude—wild nature haunts—he never cares to roam;
But swimming in the waters and sliding down the hills,
He plays the games of boys and girls, and fishes in the rills.
Alas! the hunter sets his traps, to take him unawares,
With springs of wire and teeth of steel unhappily he fares;
His fur is fine, and soft, and warm, and ladies vain adore it,
With ne'er a thought of pity for the little beast that bore it!

C. C. M.

IN ALL parts of temperate North America this, the most interesting of the Otter family, makes its home on the banks of nearly all streams except those from which it has been driven by man. It is much larger than the European Otter, has a longer tail, and has a nasal pad between the nostrils which is larger than that of any other species. Though closely allied to the common species, it has distinctive differences which entitle it to be classed as a separate species. Its habits resemble those of its cousins, but it has one peculiarity that is noticed by naturalists who have studied this animal, which is the habit of sliding or coasting down hill, in which it displays a remarkable skill. In Canada, and other sections where the snow is plentiful, Otters indulge freely in this sport, and, says Godman, they select in winter the highest ridge of snow they can find, scramble to the top of it," lie on their bellies with the forefeet bent backwards and then, giving themselves an impulse with their hindlegs, glide head-foremost down the declivity, sometimes for the distance of twenty yards. This sport they continue, apparently with the keenest enjoyment, until fatigue or hunger induces them to desist."

The young are born in April in the northern, and earlier in the southern part of the Otter's range, and a litter is composed of from one to three young ones.

Authorities agree that the number of the Otters is rapidly decreasing in America, because of the systematic way in which they are pursued by trappers for the value of their fur. The skin of the American Otter is in high reputation and general use with furriers, but those from Canada are said

to be more valuable than those from the more southern sections.

The Otter, when taken young, is easily tamed. Audubon had several young Otters which he says "became as gentle as Puppies in two or three days. They preferred milk and boiled corn meal, refusing fish or meat till they were several months old." They became so tame that they would romp with their owner, and were very good-natured animals.

Rivers whose banks are thickly grown with forests are the favorite home of the Otter. There, says Brehm, it lives in subterranean burrows, constructed in accordance with its tastes and mode of life. "The place of exit is always located below the surface of the water, usually at a depth of about eighteen inches; a tunnel about two yards long leads thence, slanting upwards into a spacious chamber, which is lined with grass and always kept dry. Another narrow tunnel runs from the central chamber to the surface and aids in ventilation. Under all circumstances the Otter has several retreats or homes." When the water rises, it has recourse to trees or hollow trunks.

The Otter is the fastest swimming quadruped known. In the water it exhibits an astonishing agility, swimming in a nearly horizontal position with the greatest ease, diving and darting along beneath the surface with a speed equal, if not superior, to that of many fishes.

The Otter, said an eminent naturalist, is remarkable in every way; in its aquatic life, as well as in its movements; in its hunt for food and in its mental endowments. It belongs without question to the most attractive class of animals.

THE SKYLARK.

JOHN BURROUGHS relates that a number of years ago a friend in England sent him a score of Skylarks in a cage. He gave them their liberty in a field near where he lived. They drifted away, and he never heard or saw them again. But one Sunday a Scotchman from a neighboring city called on him and declared, with visible excitement, that on his way along the road he had heard a Skylark. He was not dreaming; he knew it was a Skylark, though he had not heard one since he had left the banks of the Doon, a quarter of a century or more before. The song had given him infinitely more pleasure than it would have given to the naturalist himself. Many years ago some Skylarks were liberated on Long Island, and they became established there, and may now occasionally be

heard in certain localities. One summer day a lover of birds journeyed out from the city in order to observe them. A Lark was soaring and singing in the sky above him. An old Irishman came along and suddenly stopped as if transfixed to the spot. A look of mingled delight and incredulity came into his face. Was he indeed hearing the bird of his youth? He took off his hat, turning his face skyward, and with moving lips and streaming eyes stood a long time regarding the bird. "Ah," thought the student of nature, "if I could only hear the bird as he hears that song—with his ears!" To the man of science it was only a bird song to be critically compared to a score of others; but to the other it brought back his youth and all those long-gone days on his native hills!

NATURE STUDY AND NATURE'S RIGHT.

There is another study which should go hand in hand with nature-work—nature's rights, people's rights. Too many little feet are learning to trespass; too many little hands are learning to steal, for that is what it really is. Children are young and thoughtless and love flowers. But does loving and wishing for things which are not ours make it right to take them? If the teacher can develop the love of nature, can she not develop the sense of honor also? Cannot the moral growth and the mental growth of the child develop together?

To love nature is not to ruthlessly rob her of her treasures. Therefore in

collecting for the school-room teach the children to use thought and care in breaking the tender branches. They should remember that each flower on the fruit-tree will in time become fruit. Mother Nature has taken time and loving care to bring forth the leaves and flowers. The different parts of the flowers may be studied without sacrificing many blossoms.

And the birds, why rob them of nests or eggs? Many ways can be found for studying nests, eggs, and birds, without causing suffering. Nature and science study, taught by the thoughtless teacher, can do much harm.—*A. G. Bullock in School Journal.*



AMERICAN GOLDEN PLOVER.

GOLDEN YELLOW RUMP is one of the names often applied to this most beautiful member of the Plover family, which is thus made conspicuous and easily recognizable. It is found everywhere in the United States, from the Atlantic to the Rocky Mountains, but is rare on the Pacific coast south of Alaska. They are seldom found far inland, their natural home being on the seacoast, occasionally frequenting marshy or wet grounds, though as a rule they prefer the sandy beach and adjacent flats and uplands. During migration their flight, especially in the spring, is hurried, direct and in the night, only stopping to rest and feed during the day, returning, it is said, in a more leisurely manner and largely along the seashore. When on the ground these birds run about on unbended legs, the bodies in a horizontal position and heads drawn down. While sleeping or resting they usually sit or stand on one leg. Captain Houdlette of the Oceanic Steamship Company caught a Plover that came aboard his ship while on its way from Alaska to Hawaii. These birds are not web-footed, and the captain seems to have solved the problem as to whether they ever rest on the water during their long flights. He says they do. "It was during the run from San Francisco to Honolulu that I saw several Plovers in the water resting. When the steamer came too near they would rise with a few flaps of their wings, but, being very tired, they would soon settle back into the water again. In its efforts to get away one of them came on board and

it lived for some time. I always thought the birds made a continuous flight of over 2,000 miles, but I am now satisfied that they rest on the waves when tired."

The flight of a flock of Golden Plovers is described by Goss as swift and strong, sweeping over the prairies in a compact, wavy form, at times skimming close to the ground, then high in the air; an everchanging, circling course, whistling as they go; and on alighting raising their wings until the tips nearly touch, then slowly folding them back, a habit which is quite common with them as they move about the ground.

Plovers eat Grasshoppers, Beetles, and many forms of insect life; small berries are also a part of their diet.

Mr. Nelson, in his "Report Upon Natural History Collections in Alaska," gives a full and interesting account of their nesting-habits. He says the courtship of this handsome bird is carried on very quietly, and there is no demonstration of anger or quarreling among the rivals. When two are satisfactorily mated they quietly go about their nesting, after which each pair limits its range to the immediate vicinity of its treasures. The eggs are deposited the latter part of May in a small depression among the moss and dried grass of a small knoll, and at times a slight structure is made of dried grass. Four eggs are laid, of a pale yellowish ground color, with very dark, well-defined umber brown spots scattered profusely over the shell.

Golden Plovers on the ground,
See them rise, and fly, and sing;
Where before was not a sound
Now the very echoes ring.

CAN ANIMALS COUNT ?

MY LITTLE readers have heard their elders when speaking of the Horse, Dog, Cat, and other dumb creatures call them the "lower" animals. Well, so they are, but when you have grown to be men and women you may possibly prefer the faithful affection and good comradeship of one of these lower animals to the disagreeable society of a cold, mean, and selfish "higher" one. Indeed, to learn how near akin are man and beast, mentally, not physically, men and women of large and tender natures have given up the greater part of their lives. Many stories have been written concerning the faithful love of animals for their masters, big and little, of their marvelous instinct and almost human cunning, but when I tell you that animals can be taught to count—and birds are animals, too, you know—why, then, if you are bright children you will wonder, as your elders do, where instinct ends and reason begins. However, these animals, of which I am going to write, may have been more than usually intelligent and capable of learning where others would not.

A few years ago a confectioner bought a Parrot, and, though the bird talked very plainly and volubly, the man was not satisfied. He desired his bird to display more cleverness than the ordinary Parrot, so he conceived the idea of teaching her to count. Polly didn't take to figures at all; but, though she listened with a great deal of patience to what her teacher had to say she uttered never a word. When at length he turned away discouraged, Polly croaked, "Shut up," and turned a double somersault on her perch, evi-

dently very glad indeed that school was over.

Day after day Polly had her lesson, but count aloud she would not. Still the confectioner didn't give up the idea, and one day, to the bird's amazement her teacher, at lesson time, stood before the cage with a pan of water and a whisk broom in his hand. Dipping the broom in the water and flitting the drops over her head the teacher said, "One." Giving her time to think the matter over, a few more drops were sprinkled upon her head, the teacher exclaiming, "Two," and so on in this way till he had reached ten. This method of instruction went on for some time; but, though Polly came near being drowned in several of the lessons, she stubbornly refused to repeat the figures after her teacher. Arithmetic was not her forte, and the confectioner at length gave up in despair, very much I fancy to Miss Polly's relief.

A month or more went by, when one day, as the bird in her cage was hanging out of doors, it suddenly began to rain. "One," the delighted confectioner heard Polly say, as the big drops fell upon her head, then "two, three, four, five, six, seven, eight, nine, ten," in rapid succession. But to the Parrot's vexation the rain did not cease as it was wont to do when taking her lesson, and every additional drop increased her anger. Finally she could stand it no longer, and in her shrillest tones shouted: "Stop it, stop it! That's all I know, hang it, that's all I know!"

The confectioner says no amount of money can buy that bird.

The Crow, an eminent doctor in

Russia says, can be taught, if you have the patience, to count up to ten, while a certain tribe of men in Polynesia, "higher" animals, you know, cannot be taught to count beyond five or six.

This same doctor had an intelligent Dog which was accustomed, like other Dogs, to bury his surplus bones in the garden. In order to test the mental powers of this animal the doctor one day gave him no less than twenty-six bones, every one of which he saw the Dog duly bury in separate places. The next day no food was given him at meal time, but he was commanded by his master to dig up the bones. This the intelligent fellow proceeded to do, but after uncovering ten came to a full stop. After whining and running about in great perplexity he finally succeeded in unearthing nine more. Still he seemed conscious that he had not found the full number and kept up the search till he had fetched to his master the other seven.

I think that was too much to ask of any Dog, don't you? Many a little boy or girl who goes to school couldn't count that number of bones, though you can, of course.

Well, the doctor then turned his attention to the Cat. When pussy was good and hungry a tempting morsel of meat was held under her nose, then withdrawn five times in succession; the sixth time she was permitted to secure it. This was repeated every day, till she got accustomed to waiting for the presentation of the meat five times; but upon the sixth Pussy never failed to spring forward and seize the meat. The doctor attempted the experiment with a higher number, but the Cat stuck to her first lesson and after counting one, two, three, four, five, six, would invariably make the spring. Had he begun with ten Pussy might

have shown herself capable of counting that number as well as the Crow and the Parrot.

A farmer tells of a Horse which in plowing had acquired the habit of counting the furrows, stopping for a rest regularly at the twentieth row. The farmer at the end of the day used to estimate the amount of work done, not by counting the furrows but by remembering how many times the Horse had stopped to rest. The poor animal had never been taught his figures, and his mind did not say "one, two, three," and so on, but all the same he had his way of counting, and never failed to know when he had reached twenty.

Still another Horse was able to count the mile-posts and had been trained by its master to stop for feed when they had covered eighteen miles of a certain road. He always stopped after passing the eighteenth post. To test him they put up three false mile-posts between the real ones, and, sure enough, deceived by the trick, he stopped at the eighteenth post for his oats, unaware that he had not covered eighteen miles.

The doctor also observed another Horse which was accustomed to receiving his oats precisely at noon. Whenever the clock struck an hour the Horse pricked up his ears as if counting the strokes. If he heard twelve, off he would trot to be fed, but if a less number he would plod on resignedly at his work. The experiment was made of striking twelve strokes at the wrong time, whereupon the Horse started for his oats though he had been fed only an hour before.

All of which goes to prove that the capacity of an animal's mind is limited, and, so you may say, is that of the average man.

MRS. E. K. MARBLE.

BUTTERFLIES LOVE TO DRINK.

BUTTERFLIES have never had a character for wisdom or foresight. Indeed, they have been made a type of frivolity and now something worse is laid to their charge. In a paper published by the South London Entomological society Mr. J. W. Tutt declares that some species are painfully addicted to drinking. This beverage, it may be pleaded, is only water, but it is possible to be over-absorptive of non-alcoholics. Excess in tea is not unknown—perhaps the great Dr. Johnson occasionally offended in that respect—and even the pump may be too often visited. But the accuser states that some Butterflies drink more than can be required by their tissues under any possible conditions. It would not have been surprising if, like some other insects, Butterflies had been almost total abstainers, at any rate, from water, and had contented themselves with an occasional sip of nectar from a flower.

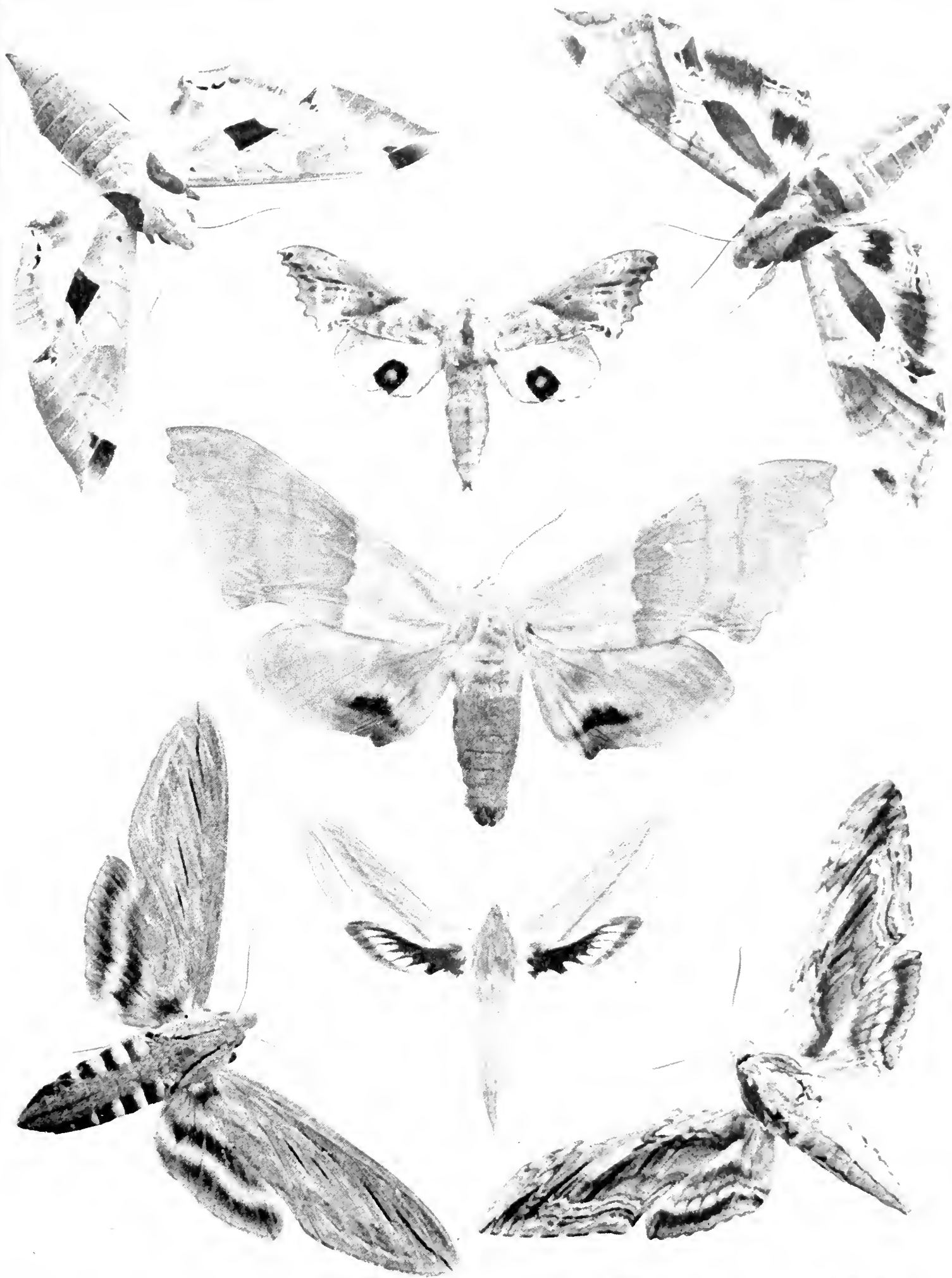
MALES ARE THE SINNERS.

The excess in drinking seems to be almost a masculine characteristic, for the toppers, he states, are the males. They imbibe while the females are busy laying eggs. This unequal division of pleasure and labor is not wholly unknown even among the highest of the vertebrates; we have heard of cases where the male was toping at the "public" while the female was nursing the children and doing the drudgery of the household. Mr. Tutt has called attention to a painful exhibition of depravity which can often be observed in an English country lane, where shallow puddles are common, but never so well as on one of the rough paths that wind over the upper pastures in the Alps. Butterflies are more abundant there than in England, and they may be seen in dozens absorbing the moisture from damp patches. Most species are not above taking a sip now and again, but the majority may be classed as "mod-

erate drinkers." The greater sinners are the smaller ones, especially the blues, and the little Butterfly which, from its appearance, is called the "small copper." There they sit, glued as it were to the mud—so besotted, such victims to intemperance, that they will not rise till the last moment to get out of the way of horse or man. Some thirty years ago Prof. Bonney in his "Alpine Regions," described this peculiarity, saying that "they were apparently so stupefied that they could scarcely be induced to take wing—in fact, they were drunk."

OTHER LIQUIDS ARE LIKED.

If we remember rightly, the female occasionally is overcome by the temptation to which her mate so readily falls a victim. But we are by no means sure that Butterflies are drinkers of water only. Certainly they are not particular about its purity; they will swallow it in a condition which would make a sanitarian shudder; nay, we fear that a not inconsiderable admixture of ammoniacal salts increases the attraction of the beverage. It is admitted that both Moths and Butterflies visit sugar, overripe fruit, and the like, but it is pleaded that they do this for food. Perhaps; but we fear this is not the whole truth. The apologist has forgotten that practice of entomologists called "sugaring," which is daubing trunks of trees and other suitable places with a mixture of which, no doubt, sugar is the main ingredient, but of which the attraction is enhanced by a little rum. Every collector knows what a deadly lure this is, and what treasures the dark-lantern reveals as he goes his rounds. True, this snare is fatal only to the Moth, because at night the Butterfly is asleep. If he once adopted nocturnal habits we know where he would be found, for he is not insensible by day to the charms of this mixture.



From col. Chi. Acad. Sciences.
Phylampelus Achemon.

Sphinx chersis.

MOTHS. —¹⁵/₁₆ Life-size.

Stenandria exaequalis,
 from modes.

Phylampelus pandorus.

Coratomia anynton.

THE ENVIOUS WREN.

On the ground lived a Hen,
In a tree lived a Wren,
Who picked up her food here and there;
While Biddy had wheat
And all nice things to eat
Said the Wren, "I declare, 't isn't fair!

"It is really too bad!"
She exclaimed—she was mad—
"To go out when it's raining this way!
And to earn what you eat,
Doesn't make your food sweet,
In spite of what some folks may say.

"Now, there is that Hen,"
Said this cross little Wren,
"She's fed till she's fat as a drum;
While I strive and sweat
For each bug that I get,
And nobody gives me a crumb.

"I can't see for my life
Why the old farmer's wife
Treats her so much better than me.
Suppose on the ground
I hop carelessly round
For awhile, and just see what I'll see."

Said this cute little Wren,
"I'll make friends with the Hen,
And perhaps she will ask me to stay;
And then upon bread
Every day I'll be fed,
And life will be nothing but play."

So down flew the Wren,
"Stop to tea," said the Hen;
And soon Biddy's supper was sent;
But scarce stopping to taste,
The poor bird left in haste,
And this was the reason she went:

When the farmer's kind dame
To the poultry yard came,
She said—and the Wren shook with fright—
"Biddy's so fat she'll do
For a pie or a stew,
And I guess I shall kill her to-night."

—*Phoebe Cary.*

THE CANADIAN PORCUPINE.

It climbs the trees and strips them clean
Of leaf, and fruit, and bark;
Then, creeping where no life is seen,
O'er branches grim and stark,
Begins anew, the bark beneath,
The endless grind of claws and teeth,
Till trees, denuded, naked rise
Like spectres painted on the skies.
Fretful it may be, as its quills are sharp,
But with its teeth it stills the sylvan harp.

C. C. M.

FORMERLY plentiful in the northern United States, but now quite rare in this country, although not so scarce in Canada, is the Urson, otherwise called the Canadian Porcupine. It is the tree or climbing species and is distinguished from other members of the family by its slender body and tail of greater or less length. The Urson attains a length of thirty-two inches, seven and one-half of which are included in the tail. A thick set fur, which attains a length of four and one-half inches on the nape of the neck and changes into sharp spines on the under parts of the body and the tip of the tail, clothes the animal.

The Canadian Porcupine is a native of the forests of North America, ranging as far south as Virginia and Kentucky and as far west as the Rocky Mountains. "The Urson," says Cartwright, "is an accomplished climber and probably never descends a tree in winter, before it has entirely denuded the upper branches of bark. It is most partial to the tenderest roots or seedling trees. A single Urson may ruin hundreds of them during one winter." Audubon states that he passed through woods, in which all the trees had been stripped by this animal, producing an appearance similar to that induced when a forest has been devastated by fire. Elms, Poplars, and Firs furnish its favorite food, and therefore usually suffer more than other trees from its destructiveness.

The nest of this Porcupine is generally found in holes in trees or rocky hollows, and in it the young, usually two, more rarely three or four in number, are born in April or May. The

young are easily tamed. Audubon says that one which he possessed never exhibited anger, except when some one tried to remove it from a tree which it was in the habit of mounting. It had gradually become very tame and seldom made any use of its nails, so that he would open its cage and afford it a free walk in the garden. When he called it, tempting it with a sweet potato or an apple, it turned its head toward him, gave him a gentle, friendly look and then slowly hobbled up to him, took the fruit out of his hand, sat down on its hind legs and raised the food to its mouth with its fore-paws. Frequently when it would find the door of the family room open it would enter, approach and rub itself against a member of the family looking up pleadingly as if asking for some dainty. Audubon tried in vain to arouse it to an exhibition of anger. When a Dog came in view matters were different. Then it instantly assumed the defensive. With its nose lowered, all its quills erect, and its tail moving back and forth, it was ready for the fray. The Dog sprang upon the Porcupine with open mouth. That animal seemed to swell up in an instant to nearly double its size, sharply watched the Dog and at the right moment dealt it such a well-aimed blow with its tail that the Mastiff lost courage and set up a loud howl of pain. His mouth, tongue, and nose were full of Porcupine quills. He could not close his jaws, but hurried open-mouthed off the premises. Although the spines were immediately extracted, the Dog's head was terribly swollen for several weeks afterward, and it was months before he entirely recovered.



THE DEATH OF THE FLOWERS.

The melancholy days are come, the saddest of the year,
Of wailing winds, and naked woods, and meadows brown and sear.
Heaped in the hollows of the grove, the autumn leaves lie dead;
They rustle to the eddy gust, and to the Rabbit's tread.
The Robin and the Wren are flown, and from the shrubs the Jay,
And from the wood-top calls the Crow through all the gloomy day.

Where are the flowers, the fair young flowers, that lately sprang and stood
In brighter light, and softer airs, a beauteous sisterhood?
Alas! they all are in their graves, the gentle race of flowers
Are lying in their lowly beds, with the fair and good of ours.
The rain is falling where they lie, but the cold November rain
Calls not from out the gloomy earth the lovely ones again.

The Wind-flower and the Violet, they perished long ago,
And the Brier-rose and the Orchis died among the summer glow;
But on the hill the Golden-rod, and the Aster in the wood,
And the yellow Sun-flower by the brook in autumn beauty stood,
Till fell the frost from the clear, cold heaven, as falls the plague on men,
And the brightness of their smile was gone, from upland, glade, and glen.

And now, when comes the calm, mild day, as still such days will come,
To call the Squirrel and the Bee from out their wintry home;
When the sound of dropping nuts is heard, though all the trees are still,
And twinkle in the smoky light the waters of the rill,
The south wind searches for the flowers whose fragrance late he bore
And sighs to find them in the wood and by the stream no more.

—*Bryant.*

THE CASPIAN TERN.

The Terns are on the wing,
See them play!
They dart into the sky,
They poise, and scream, and fly
O'er the bay;
Round the ship that sails the sea,
Round the lighthouse o'er the lea—
The Terns are on the wing!

C. C. M.

THE great Caspian Tern is the largest of the family, its wings, when extended, measuring from fifty to fifty-five inches in length. It is a bird of very irregular distribution, breeding in Labrador, along the Arctic coast, on islands in Lake Michigan, on the coasts of Virginia, Texas, and California, and is numerous in Australia. Forbes found it to be more or less common about Washoe Lake and the Humboldt Marshes, Nevada, and the Great Salt Lake, Utah, where it was no doubt breeding. He says that unlike most other Terns, particularly unlike the almost equally large Royal Tern, the Caspian appears to breed in isolated pairs instead of large colonies, its nest being found far removed from that of any other bird, and consisting merely of a shallow depression scooped in the sand, in which its two eggs are laid, with little if any lining, though a few grass or sedge blades or other vegetable substance are sometimes added. It is very bold in defense of its eggs or young, darting impetuously at the intruder, uttering meanwhile hoarse barking or snarling cries.

This elegant and graceful bird is also known as the Imperial Tern. At a distance it is often mistaken for the Royal Tern, but may be distinguished from the latter by its more robust form and less deeply forked tail. Eggs and young have been taken on Cobb's Island, Virginia, in July. Dr. Merrill observed it breeding on Padre Island, near Fort Brown, Texas, in May. Large numbers of this species are said to breed on Pelican Island in the Gulf of Mexico. The eggs vary from white to greenish-buff, spotted and blotched with brown and lilac of different shades.

The Terns furnish abundant interest while flying. They seem always to be on the wing, and always hungry. Like the Gulls, they seize their food by darting upon it, tossing it into the air and catching it again, without alighting. They pick up from the surface of the water floating objects. They swim on the surface, rarely diving deep. They dart also upon fish from above, and "one plows the water in flight with a knifelike beak in hopes of running through a shoal of fishes."



THE FLOWERING ALMOND.

BY EMILY C. THOMPSON.

THE Sweet, the Bitter, and the Flowering Almond are all of a kin and in this kinship many include also the Peach and the Nectarine. The Flowering Almond or the dwarf Almond is a shrub which early in the spring, in March or April, sends forth its fair rosy blossoms before its leaves are sprouted. The shrub seldom exceeds three feet in height. The leaves are like those of the willow, only darker and of a more shining green. It is really a native of Calmuck Tartary but now is used extensively in gardens because it blooms so early and can easily be cultivated in any dry soil.

The Almond tree figures in history, mythology and poetry. In the Bible we find four references to it: Exodus 25:33,34; 37:19,20; Num. 17:8; Ecc. 12:5. In this connection it is interesting to note that Aaron's famous rod was the shoot of an Almond tree. Theophrastus mentions the Almond as flourishing in Greece. Cato also tells us that it was grown, but as a luxury, in Italy. The rest of its history is obscure and all we know about its cultivation in England is that it was introduced during the reign of Henry VIII. Virgil in the Georgics welcomes the Almond when covered with blossoms as the sign of a fruitful season.

In ancient times everything that was considered of any importance to the Greeks had some connection with the siege of Troy. The Almond tree here fared especially well, for two stories have come down to us in mythology relating its connection with that wonderful event. Demophon returning from Troy suffered the fate of many

another Greek worthy. He was shipwrecked on the shores of Thrace. He was befriended by the king and received as a guest. While at the court he met the beautiful daughter of his host. Immediately he fell in love with the charming princess, gained her love in return, and made arrangements for the marriage. But Demophon was obliged to return home to settle up his affairs before he could take upon himself these new ties. So the youth sailed away, but never to return. The princess, faithful Phyllis, watched and waited, hoping in vain for the return of her promised lord. Her constancy was noted even by the gods who, when she was gradually pining away, turned her into an Almond tree. Since then this tree has been a sign of constancy and hope.

“The hope in dreams of a happier hour,
That alights on Misery's brow,
Springs out of the silvery Almond flower,
That blooms on a leafless bough.”

Another version of the same story relieves Demophon of such gross inconstancy. It is reported by some that the marriage took place and not until after the couple were happily wedded was the hero called to Athens by the death of his father. Day by day the young wife watched for his return on the shore, but he was detained until the winter passed away and with it his faithful bride. In the spring he returned to find only an Almond tree awaiting his coming. He realized what had happened and in his despair clasped the tree in his arms when it burst forth into blossoms although it was bare of leaves.

COLOR PHOTOGRAPHS AND CONVERSATION LESSONS.

SINCE Nature Study Publishing Company, in January, 1897, put before the teaching world the first accurately beautiful representations, not only of the forms of nature but of the tints and colors also, the brightest minds have been active in noting the effectiveness of the color photograph in school. Thousands of teachers have vied with each other in applying them in nature study with most gratifying results.

An important discovery has been made almost at the same time by many of them. The lively interest aroused by the bird presented, the agreeable sensations the child experiences in relating incidents and hearing from his mates and teacher about its habits, and the reminiscences of delightful outdoor experiences, all tend to warm the child to enthusiasm.

This point of warmth is the supreme opportunity of the teacher. Instruction given under such a glow is intensely educative. A few minutes of such work is worth hours of effort where the child is but indifferently aroused.

Many of the best first primary teachers do not begin to teach reading during the first few weeks of the child in school. They aim, first, to establish a bond of sympathy between themselves and their pupils, to extend their range of ideas, and to expand their powers of expression. Expression is induced and encouraged along all lines, by words, music, drawing, color work, and physical motions.

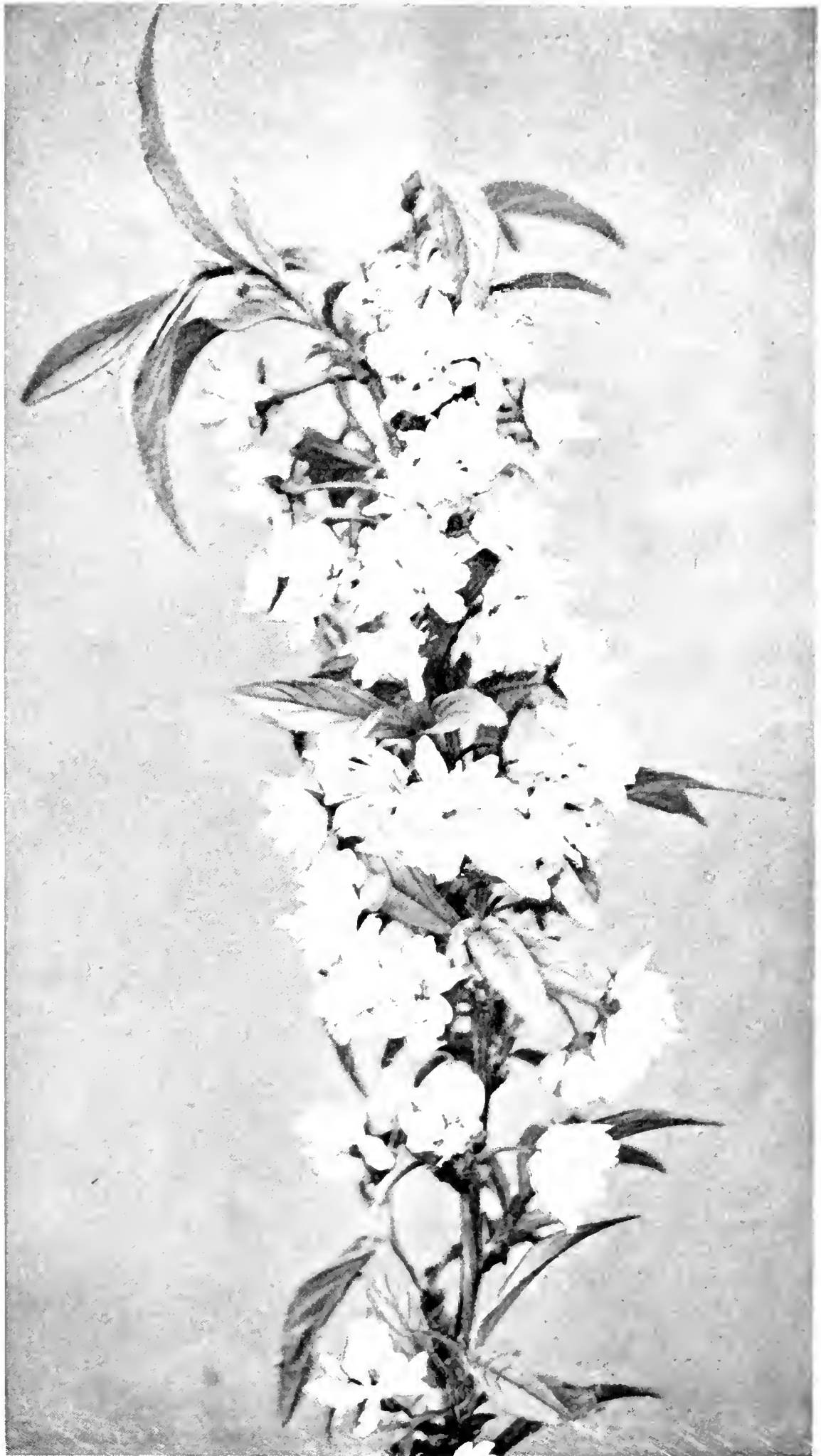
The common things of life are discussed, experiences related, and the imagination brought strongly into play. Songs and recitations are given

with the actions of birds, animals, persons, or machines, imitated joyously by groups of children. Games calculated to train the senses and the memory are indulged in. The whole nature of the child is called into play, and perfect freedom of expression is sought.

Experience shows that intelligent training along these lines is profitable. The time of learning reading and spelling is somewhat deferred, and number work is delayed, but the children who are skilfully trained in this way outstrip the others rapidly when they bring their trained powers to bear upon the things that are popularly supposed to be the business of a school. Superintendent Speer has shown that pupils whose technical instruction has been deferred for several months in this way are found at the end of the second year far superior to others of equal promise, who have been put at reading, spelling, and number work directly.

To conduct a conversation lesson requires some tact. Not tact in asking questions, nor in "talking down" to the level of the children. Direct questions are of doubtful value in the first grade. In fact, the value of the lesson may sometimes be judged by the absence of such questions put by the teacher. The question mark and the pump handle resemble each other, and often force up perfunctory contributions, and sometimes they merely produce a dry sound. Children do not care to be pumped.

Here are a few questions that give the children little pleasure and less opportunity for expression: Isn't this a very pretty bird? Do you see what a bright eye it has? How many



From Nature, by Chicago Colortype Co.

FLOWERING ALMOND.
Life-size.

of you have seen a bird like this? How would you like to own him, and have him at your house? Don't you think, dear children, God is very good to us to let us have such beautiful birds in the world?

Any one of these questions by itself is not harmful, but an exercise made up of such material merely gives the class a chance to say, "Yes, ma'am," and raise their hands. All talk by the teacher and no activity by the class. With a bright smile and a winning voice, the teacher may conduct what appears to be a pleasant exercise with such material, but there is little real value in it under the best circumstances and it should be avoided systematically. It is unskilful, and a waste of time and opportunity.

Attempts to lower one's conversation to the level of little children are often equally unsatisfactory. Too much use of "Mamma bird," "baby birdies," "clothes," "sweet," "lovely," "tootsy-wootsy," and "Oh, my!" is disappointing.

Ordinary conversation opened with a class in much the same style and language as used by one adult in talking with another is found to be the most profitable. Introductory remarks are generally bad, though some otherwise excellent teachers do run on interminably with them. To begin directly with a common-sense statement of real interest is best.

Here are a few profitable opening statements for different exercises: One day I found a dead mouse hanging upon a thorn in a field. Mr. Smith told me he heard a Flicker say, "Wake up! Wake up! Wake up!" Willie says his bird is fond of fruit, and I notice that most birds that eat fruit have beautiful, bright feathers. This bird likes the cows, and I once saw him light on a cow's horn.

Such statements open the minds of

young people where many times direct questions close them. Questions and regular contributions to the conversation flow readily from members of the class when the right opening has been made. Do not let the class feel that your purpose is to get language from them. Mere talk does not educate. Animated expression alone is valuable.

Have plenty of material to use if the class seem slow to respond, and have patience when they have more to offer than the time will admit. Bear in mind that a conversation lesson on some nature subject is not a nature lesson, but is given to induce correct thinking, which shall come out in good language. It may incidentally be such a nature lesson as to satisfy the requirements of your course of study in that line, but if you give it as a conversation lesson, let conversation be the exercise.

Where a few in the class tend to monopolize the time you may frequently bring a diffident one into the exercise by casually looking at him as if you felt his right to be heard. It is better not to ask him to talk, but to make it easy for him to come into the conversation by referring to something he has previously done or said, or by going near him while others talk. A hand on his shoulder while you are conversing with others, will sometimes open him to expression. Sometimes you need to refer to what Willie's father said, or what you saw at his house, or to something that Willie owns and is pleased with. Many expedients should be tried and some time consumed in endeavoring to get such a pupil into the conversation instead of saying point blank, "Now, Willie, what do you think?"

The matter of spoken language is words largely. The thinking of children is always done in words, as far as school matters go. The thoughts of

the average child are correct enough from his standpoint, and when the teacher represses him on his first attempt to carry his part in the exercise, he is hurt to such an extent that he may never recover from it, and he may always believe himself peculiarly unfortunate in that he is incapable of speaking as others do.

The truth is that all children are eloquent. They talk easily, very easily, in comparison with adults who have been frightened out of their natural tongues, and are forever trying to say what they think in terms that they do not think it in.

All children are sensitive concerning their speech. Some of the keenest hurts children experience are inflicted by those who notice patronizingly or critically the language they use. Mothers are in a hurry to have them learn English at once, and so correct them instantly when such mistakes as "runned," "mouses," and "me wants" occur. The child allowed to think in his own terms overcomes his verbal difficulties in a short time if associated at home with those who speak correctly, and he is perfectly excusable for using what we call incorrect forms until he has acquired the so-called correct ones.

There are times when the child's mind is open to acquisition of formal expertness in language. He will find these times for himself and exercise himself in forms without being driven to it at the very times when his mind is most active with other things which he tries to express to us in his moments of overflowing enthusiasm. In these moments he should not be bothered and confused by formal quibbling. In his most active states intellectually he ought not to be repressed. This applies to the child who hears good English at home. It also applies, with slight modifications, to the child who hears

imperfect language at home. The child who will eventually prove capable of correct speech will learn to speak the best language he hears without direct instruction if encouraged in it and given the respect a growing child is entitled to receive.

Children learn to speak while at play. They are active and much interested when they are acquiring a natural vocabulary. Much of the vocabulary is wrong from the standpoint of the grammar and dictionary, and they have to unlearn it. They have to unlearn it at school and from the lips of pains-taking parents. One reason it is so hard for them to learn the correct forms is this unintelligent way of teaching. Another is that the incorrect conversation is heard under circumstances favorable to retention and reproduction; that is, when the child is much interested and happy; while the correct forms are given him when he is but half aroused, or when he is somewhat intense over another matter, and many times the intended instruction goes in at one ear and out at the other. When the skill of the teacher and the things of the school room become so powerfully attractive to the pupil that once hearing a new word will fix it, once seeing a word will make him master of it in all its forms, then the language lesson will not need to be given; for language, which is as natural to man as breathing, will flow in correct forms trippingly from the tongue, being so fixed in the pupil's mind from the first that he will have nothing to unlearn.

Conversation lessons are intended to take care of some of the crudest errors in speech before the child has committed the indiscretion of putting them in writing. It can be done with so much less severity in conversation than in a written lesson. Notice

silently the peculiarly bad expressions and forms of statements of the whole class, then plan your talking lesson in which those who are not guilty of those errors are allowed to lead. Then let the child whom you consider most likely to profit by hearing correct expression from his mates give you the necessary statement. If he use correct forms, let another try.

For instance, suppose you have a number of pupils who are inclined to say "The robin isn't so purty as the bluejay." The reason for this is that the parents of nearly all these pupils will make the same error. If early in their experience with you you are shocked by their speech and let them know it, you either lose their respect or make them feel that they and their parents are inferior beings with no right to speak.

It will take a few minutes to speak of something else that is pretty, and let several of your pupils who speak the word correctly give some statements concerning pretty things. Then call upon one of the offenders, without his suspecting himself to be such, and the probability is that he will say "pretty," as you wish. But suppose he fail, you must not think he does so because of dullness, for he may say "purty" for the sole reason that his mates are listening and he fears they may think he is trying to "put on style." If you pass the matter in silence that day you will find him bolder or more acute the next day, and he will speak the word correctly. In this way he will seem to himself to be teaching himself. Self-culture will begin in him and the credit will be yours. Another teacher would suppress that sort of language and compel the boy to say the word right instanter. But her pupils speak one language in school and a different one in places where they are more comfortable.

Aim to set the child to correcting his own speech by his own apparent choice. A single error is easily repressed, but the habit of looking after one's own speech is not easily acquired. It is easy to make a child feel his inferiority to you, but it is a great thing to inspire him to do the good and wise and elegant things which you are capable of doing in his presence.

The process of unlearning words has always been a failure with the majority of pupils, and most of the English speaking race are ashamed of their inability to speak. Men most eloquent and successful in business conversation, who were by nature fitted to thrill the world with tongue and pen, have been confused and repressed by this process till they believe themselves vastly inferior to others because they cannot translate their thoughts out of the terms of the street or counting room into the language of the grammar school, and so they never try to fill the large places that would have been open to them if they could but have learned to think in terms which may be spoken right out without fear of opprobrium.

Now since so much of our teaching psychology and common sense have shown to be radically wrong, let us build up our language work on the high plane of interest in real things, expressing thought directly without translation into fitter terms. Let the thinking be done in terms suitable for life. And use the color photograph to insure that enthusiasm necessary to good thinking; be guarded as to how you deal with thoughts that come hot from growing minds, repress never, advise kindly, and know that by following the natural method in language you are not ruining the speech powers of your best pupils, as has been done heretofore.

SUMMARY.

Page 166.

SHARP-TAILED GROUSE—*Pediocætes phasianellus campestris*. Other names: Sprig-Tail, Pin-Tail, White Belly.

RANGE—Plains and prairies east of the Rocky Mountains; east to Wisconsin, north to Manitoba, south to New Mexico.

NEST—In a tuft of grass or under a low bush.

EGGS—Six to thirteen.

Page 170.

RED BAT—*Atalapha noveboracensis*. Other name: "New York Bat."

RANGE—Throughout all the Atlantic coast states.

Page 170.

BLACK BAT—*Scotophilus carolinensis*. Other name: "Carolina Bat."

RANGE—Common throughout North America.

Page 174.

AMERICAN OTTER—*Lutra canadensis*.

RANGE—All parts of temperate North America, encroaching closely on the Arctic region.

Page 178.

GOLDEN PLOVER—*Charadrius dominicus*. Other names: Frost Bird, Bull Head.

RANGE—Nearly the whole of North America, breeding in the Arctic regions; south in winter to Patagonia.

NEST—In a small depression among the moss and dried grass of a small knoll.

EGGS—Four, of a pale yellowish ground color, with dark umber-brown spots scattered over the shell.

Page 187.

CANADIAN PORCUPINE—*Erethizon dorsatus*.

RANGE—A native of the forests of North America, from the sixty-seventh parallel of north latitude south to Virginia and Kentucky, the eastern and western boundaries being Labrador and the Rocky Mountains.

Page 191.

CASPIAN TERN—*Sterna tschograva*.

RANGE—Nearly cosmopolitan; in North America, breeding southward to Virginia, Lake Michigan, Texas, Nevada, and California.

NEST—A mere hollow scooped in the dry sand.

EGGS—Two or three, varying from white to greenish-buff, spotted with brown and lilac of different shades.

Page 195.

FLOWERING ALMOND—*Amygdalus communis*. Native of Calmuck, Tartary.



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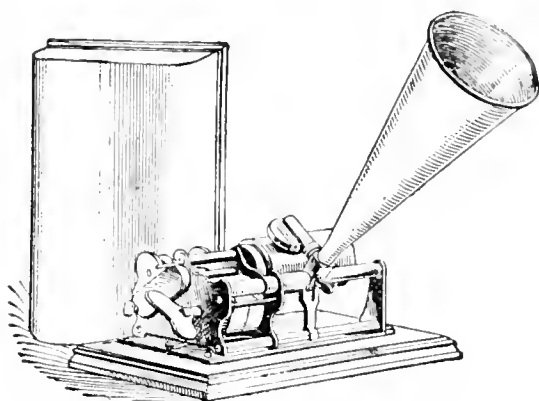
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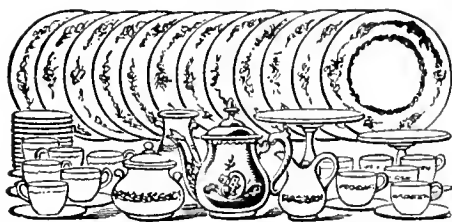
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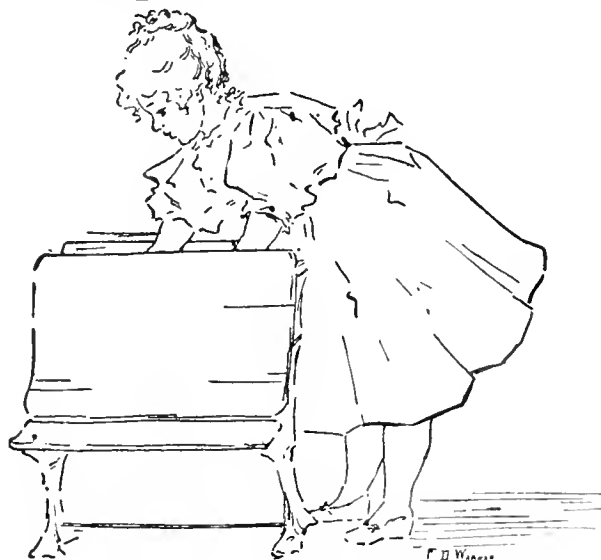
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VOL. IV.

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No. 6

VOICES.

W. E. WATT.

ALL animals with lungs have some sort of contrivance in the wind-pipe that is able to set the air in vibration as it is expelled or inhaled. Some have not only this means of making vocal sound, but have also power to vary the quality and intensity of it. Out of this second ability come speech and song.

Ants converse with their antennæ, having no lungs nor windpipe. Bees do the same. Those of her attendants who first perceive the absence of the queen from the hive apply their antennæ to the feelers of their companions. The ensuing excitement settles the question as to their ability to talk. This shows that while voice is the usual organ of language there is yet a good deal of conversation going on about us that is not expressed in words, just as there is much music performed by insect orchestras with no vocal contributions.

Hares and Rabbits never use their voices except when suffering intensely. When caught by an enemy or wounded in the chase they utter the only cry that ever escapes from their throats. Spasmodic agitation of the chest muscles and the larynx gives forth the sound. Such unintentional utterances are frequent in other animals that use their voices freely when nothing has injured them, as the death shrieks of cattle and the screams of horses attacked by wolves.

It is of little use to ask why animals are equipped with voices, for the fact is an animal could hardly be constructed with lungs and apparatus for controlling

ingress and egress of air without the controlling organ's being more or less noisy or even musical. Snorts, snores, whistles, purrs, groans, and trumpeting follow naturally where the bellows and pipe are active.

Although Darwin considers that the habit of uttering musical sounds was first acquired for courtship, and that in man it was early associated only with his strongest emotions, such as love, rivalry, and triumph, the writer holds the opinion that both significant and musical utterance originated not in any desire to move others, but was cultivated solely for the pleasure it gave the one who made it.

If primitive man did not receive language ready-made at creation, but developed it as the philologists claim, it was a gradual acquisition. While our early ancestor dug in the ground he emitted certain sounds, as he pursued he uttered others, and as he devoured he indulged in a different grunt or exclamation. When he wished to call the attention of others to one of these acts he merely reproduced the sound that went naturally with it. And so *clamor concomitans* became *clamor significans*. But the sound as it came forth at first had no meaning and no design. The man made the sound rather instinctively than mentally and he enjoyed making sounds as much as a baby now enjoys crowing or a youngster delights in yelling when he has no ideas he cares to convey. Much of the singing of birds is done merely because the birds wish to please themselves with the sounds peculiar to

themselves. They are, as a rule, in no-wise trying to charm their mates, and they are not at all desirous of pleasing anyone but themselves. It would be as reasonable to claim that the carpenter on the roof is whistling to please his sweetheart or that the lumberman alone with his cattle in the forest trolls forth his jolly song for any amorous reason. There are times when these purposes are the cause of singing, but the fact is that the great majority of the singing and whistling done by men, birds, and beasts sounds far better to the ones that produce it than to any other. In fact, society itself would be in a far better state if the men and women who sing would only acknowledge that they are doing so mainly to please themselves, and they might then be persuaded in part to leave off trying to surprise their hearers at times by singing louder or higher or faster than nature intended they should do. Most people enjoy listening to song, but no one can appreciate the beauties of it so well as the artistic singer who has acquired his talents by assiduous and intelligent discipline. His enjoyment of his own efforts is as much higher than that of his auditors as is the pleasure of the man who sings out of tune above the felicity of his hearers.

Elephants speak in three ways. Pleasure is evinced by blowing the proboscis in a sharp manner—like the sound of a trumpeter learning. Wants are murmured over in the mouth. Rage roars tremendously low in the throat. While these sounds are not made for the purpose of informing others of states of feeling, yet they do convey to man and beast an idea of what is going on. So the lower animals accidentally, if you please, have a sort of language. It is instinctive and conveys no intelligence not immediately connected with the present state of the speaker or his community.

Marcgrave says he has frequently seen the meetings held by the Ouarine Monkeys and enjoyed their deliberations. "Every day they assemble in the woods to receive instructions. One takes the highest place on the tree and makes a signal with his hand for

the rest to sit round. As soon as he sees them placed he begins his discourse in a loud and precipitate voice; the rest preserve a profound silence. When he has done he makes a sign with his hand for the rest to reply. At that instant they raise their voices together, until by another signal silence is enjoined."

Professor Garner has studied simian speech so carefully that he is able to converse with Monkeys to a limited extent. He says they have words for "food" and "drink," have a spoken salutation, and can distinguish numbers up to about three, and have some notion of music. "In brief, they appear to have at least the raw material out of which are made the most exalted attributes of man."

Aristotle noticed that voices vary with conditions when he gravely announced that the Calf affords the only instance in nature where the voice of the young is deeper and graver than that of its parent. Wild animals frequently change their voices on domestication. Domestic Dogs and eventame Jackals have learned to bark, which is a noise not proper to any species of the genus, with the possible exception of the *Canis latrans* of North America. Columbus discovered that Dogs left by him on an island where there was no game nor any other occasion for barking lost their voices completely before he visited them on a subsequent voyage. Some breeds of domestic Pigeons coo in a new and quite peculiar manner not manifested in their wild state.

The same species of birds living in different localities sometimes have different vocal habits. An excellent observer says an Irish covey of Partridges spring without uttering a call, while, on the opposite coast, the Scotch covey accompany their springing with intense shrieks. Bechstein says that from many years of experience he is certain that in the Nightingale a tendency to sing in the middle of the night or in the day runs in families and is strictly inherited.

As the Parrot acquires human language by association with unfeathered bipeds, so do many voices modify themselves as circumstances alter, and

the particular sound which one day may accompany and express fright or anger may be laid aside for another more suitable to new conditions, much as a man uses different sounds in asking for butter at a French restaurant and in a German inn. And while it is probably not true that speech was given for the purposes of communicating with others, it has occurred in nature that speech has become the principal means of transmitting ideas.

An old Goose had her nest in the kitchen of a farmer. She had been endeavoring for a fortnight to hatch some eggs, but was taken ill rather suddenly and found she could not finish the task. With evident agony she repaired to an outhouse where was a Goose of but one year's growth. In some way she told the young sister that her valuable mission was about to be interrupted ere its fulfillment and implored her to become her successor. So complete was the communication between them that the young one entered the kitchen and took her place with evident maternal pride, remaining there till the eggs were hatched and afterwards caring assiduously for the welfare of the Goslings. The old Goose expired contentedly before incubation was complete.

A gentleman who visited London occasionally was usually accompanied by a small Dog. Nearing the city, he put up at an inn and left the Terrier there to await his return. Once, as he came back from London, the Dog was not there. He had had a fight with a large Housedog and been so badly wounded that it was thought he would not recover. But after lying quietly for a couple of days he disappeared. About a week later he returned with a larger animal, sought his adversary, and by union of efforts gave him a terrible punishment. It was found that his coadjutor was a neighbor, and that the wounded animal must have traveled long to visit his friend, had been able to tell him of his sorrows, awaken his sympathies, and keep him enlisted in his cause all the while they were on their way to seek their enemy, and was no doubt able to congratulate his partner many times during the homeward

journey on the success of their valorous enterprise.

Professor Morgan says: "I find that the sounds emitted by young Chicks are decidedly instinctive—that is to say, they are inherited modes of giving expression to certain emotional states. And some of them are fairly differentiated. At least six may be distinguished: First, the gentle, piping sound expressive of contentment—for example, when one takes the little bird in one's hand. A further low note, a sort of double sound, seems to be associated with extreme pleasure, as when one strokes the Chick's back. Very characteristic and distinct is the danger note. This is heard on the second or third day. If a large Humble-bee, or a black Beetle, or a big lump of sugar, or in fact anything largish and strange, be thrown to them this danger note is at once heard. Then there is the piping sound, expressive apparently of wanting something. It generally ceases when one goes near them and throws some grain, or even only stands near them. My Chicks were accustomed to my presence in the room, and generally were restless, and continuously made this sound when I left them. Then there is the sharp squeak when one seizes a Chick against its inclination. Lastly there is the shrill cry of distress, when, for example, one of them is separated from the rest. I have very little doubt that all of these sounds have a suggestive value of emotional import for the other Chicks. Certainly the danger-note at once places others on the alert, and the pleasure-note will cause others to come to the spot where the little bird is when the note is sounded."

A good story is told by H. B. Medlicott to show what ideas wild pigs can express in sounds. "In the early dawn of a gray morning I was geologizing along the base of the Muhair hills in South Behar, when all of a sudden there was a stampede of many Pigs from the fringe of a jungle, with porcine shrieks of *sauve-qui-peut* significance. After a short run in the open they took to the jungle again, and in a few minutes there was another uproar, but different in sound and in action;

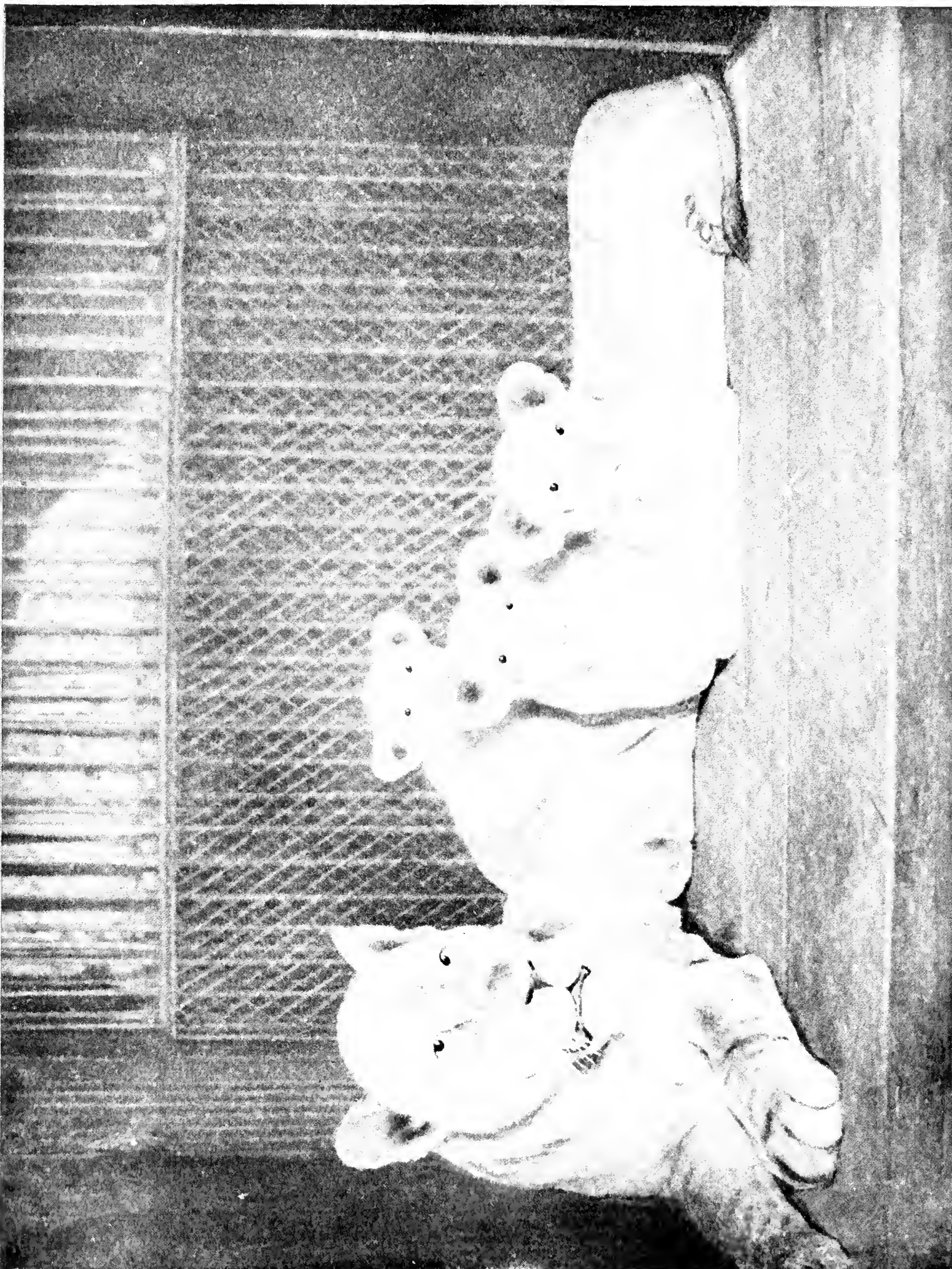
there was a rush, presumably of the fighting members, to the spot where the row began, and after some seconds a large Leopard sprang from the midst of the scuffle. In a few bounds he was in the open, and stood looking back, licking his chaps. The Pigs did not break cover, but continued on their way. They were returning to their lair after a night's feeding in the plain, several families having combined for mutual protection; while the beasts of prey were evidently waiting for the occasion. I was alone, and though armed, I did not care to beat up the ground to see if in either case a kill had been effected. The numerous herd covered a considerable space, and the scrub was thick. The prompt concerted action must in each case have been started by a special cry. I imagine that the first assailant was a Tiger, and the case was at once known to be hopeless, the cry prompting instant flight, while in the second case the cry was for defense. It can scarcely be doubted that in the first case each adult Pig had a vision of a Tiger, and the second of a Leopard or some minor foe."

The structure of throats that talk and sing varies greatly, and scientists have yet much to learn about the adaptations of forms to purposes. Agassiz gives the following clear description of the throats of birds: "The proper larynx is very simple, destitute of vocal chords, and incapable of producing sounds; but at the lower end of the windpipe there is a second or inferior larynx, which is very complicated in structure. It is a kind of bony drum, having within it two glottides, formed at the top of the two branches of the windpipe, each provided with two vocal chords. The different pieces of this apparatus are moved by peculiar muscles, the number of which varies in different families. In birds which have a very monotonous cry, such as the Gulls, the Herons, the Cuckoos, and the Mergansers, there is but one or two pairs; Parrots have three; and birds of song have five." But there are still further items regarding special uses that make the question hard to solve.

Some throats that have apparently the same structure as far as the scalpel

and microscope can distinguish have marvelously different powers of delivery. MacGillivray has pointed out that the Rook and the Hooded Crow seem to have just as complex an apparatus for their sepulchral utterances as the Nightingale and the Blackbird. But where loudness of sound is required without regard to range and quality there are some notable conformations, as in the Whooping Crane and the Howling Monkey. This Monkey has large cavities communicating with the glottis, and the air reverberates as it passes the larynx so the most deafening noises are produced.

Birds sing and other animals yell, roar, and snort, not for love-making purposes, but rather because of the joy of life that is in these creatures, and it manifests itself in this way as well as in the gambols of the Lambkin or the antics of the Monkey. The voice of the Mule is the sweetest sound in the world—to some other Mule. But it is sweeter still to the Mule that makes the joyful sound. Placzeck notes that a bird frequently sings lustily when he knows himself to be entirely alone. "In the spring-time of love, when all life is invigorated, and the effort to win a mate by ardent wooing is crowned with the joy of triumph, the song reaches its highest perfection. But the male bird also sings to entertain his mate during the arduous nest-building and hatching, to cheer the young and, if he be a domesticated bird, to give pleasure to his lord and the Providence that takes care of him, and in doing so to please himself. Lastly, the bird sings—by habit, as we call it—because the tendency is innate in the organs of song to exercise themselves." In other words, animals have the apparatus for making noises provided them in their organs of breathing, and because they have them they use them and are delighted with them, each in his own kind. Finding them a source of joy unto themselves it is not to be wondered at that they employ their voices in their love-making because they feel that what pleases themselves so much must not be without effect upon their loved ones.



THE AFRICAN LION.

Amid the far-off hills,
With eye of fire, and shaggy mane upreared,
The sleeping Lion in his den sprang up;
Listened awhile—then laid his monstrous mouth
Close to the floor, and breathed hot roarings out
In fierce reply.
— EDWIN ATHERSTONE. (1821)

THE common opinion of the Lion from the remotest times is that he is King of Beasts, and a single glance at his face of majesty is sufficient to make us accept it. His roar is terrific, and the fact is well known that all animals tremble at the mere sound of his voice. The effect of it on his subjects is said to be indescribable. "The howling Hyena is stricken dumb, though not for long; the Leopard ceases to grunt; the Monkeys utter a loud, gurgling sound and mount to the highest tree-tops; the Antelopes rush through the bushes in a mad flight; a bleating flock becomes silent; the laden Camel trembles and listens no longer to his driver's appeal, but throws load and rider off and seeks salvation in flight; the Horse rears, snorts, and rushes back; the Dog, unused to the chase, creeps up to his master with a wail." But it is said we must not think that the Lion lets his roar re-echo through the wilderness at all times. His usual sounds are a deep growl and a long-drawn tone, like the mewling of a giant Cat. His real roar is uttered comparatively seldom, and many people who have visited countries inhabited by Lions have never heard it. It is the only one of its kind, and is surpassed in fullness of tone by the voice of no living creature except the male Hippopotamus, according to Pechnel-Loesche. "The Arabs have a pertinent expression for it: '*raad*,' meaning thunder. It seems to come from the very depth of the chest and to strain it to the utmost."

This Lion is distributed all over Central and Southern Africa. They are regularly met with on the banks of the Blue and White Nile, and in the deserts of central and Southern Africa they are of common occurrence.

The Lion leads a solitary life, living with his mate only during the breeding

season. Selous says that in South Africa one more frequently meets four or five Lions together than single specimens, and troops of ten or twelve are not extraordinary. His experience taught him that the South African Lion prefers feasting off the game some hunter has killed to exerting himself to capture his own prey. This is why he regularly follows nomadic tribes wherever they go; he regards them as his tributary subjects and the taxes he levies on them are indeed of the heaviest kind.

The Cubs are usually two or three and the Lioness treats them with great tenderness. They play together like Kittens. In well-managed zoological gardens Lions are now bred as carefully as Dogs; and even in circuses, where the animals have but little room and often insufficient nourishment, they are born and sometimes grow up. The cubs are at first rather clumsy. They are born with their eyes open and are about half the size of a Cat. Towards the close of the first year they are about the size of a strong Dog. In the third year the mane begins to appear on the male, but full growth and distinction of sex, according to Brehm, are only completed in the sixth or seventh year. Lions in captivity have lived to be seventy years old.

Brehm, who loved the Lion and was probably better acquainted with his habits than any other traveler, says: "The most prominent naturalists give the Lion credit for qualities which in my opinion include nobility enough. And whoever has become more closely acquainted with that animal; whoever has, like myself, intimately known a captive Lion for years, must think as I do; he must love and esteem it as much as a human being can love and esteem any animal."

A SYMBOL.

BY IRWIN RUSSELL.*

Over the meadow there stretched a lane,
Parting the meadow in segments twain;
And through the meadow and over the sod
Where countless feet had before him trod—
With a wall forever on either hand
Barring the lane from the meadow-land,
There walked a man with a weary face,
Treading the lane at a steadfast pace.

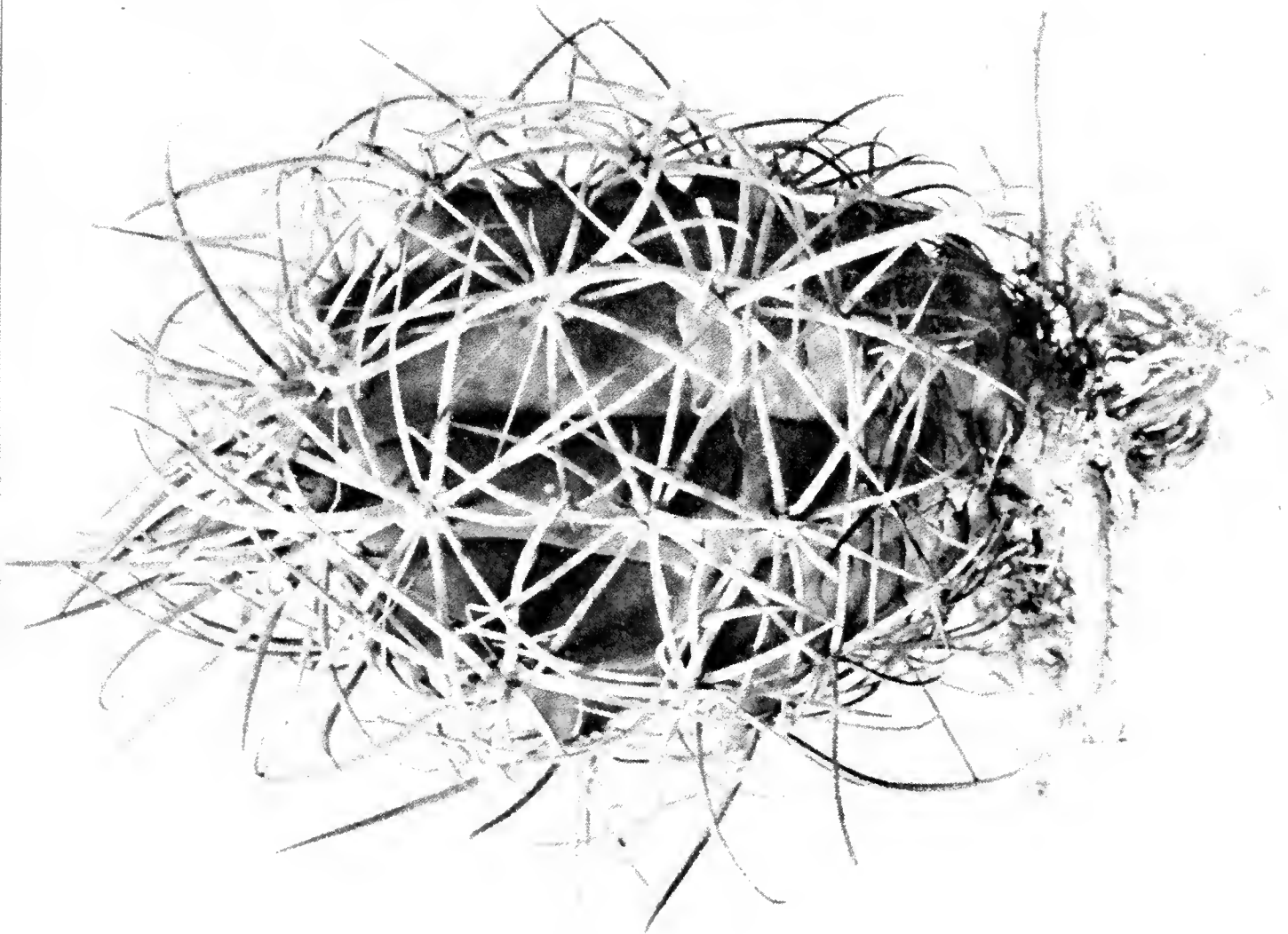
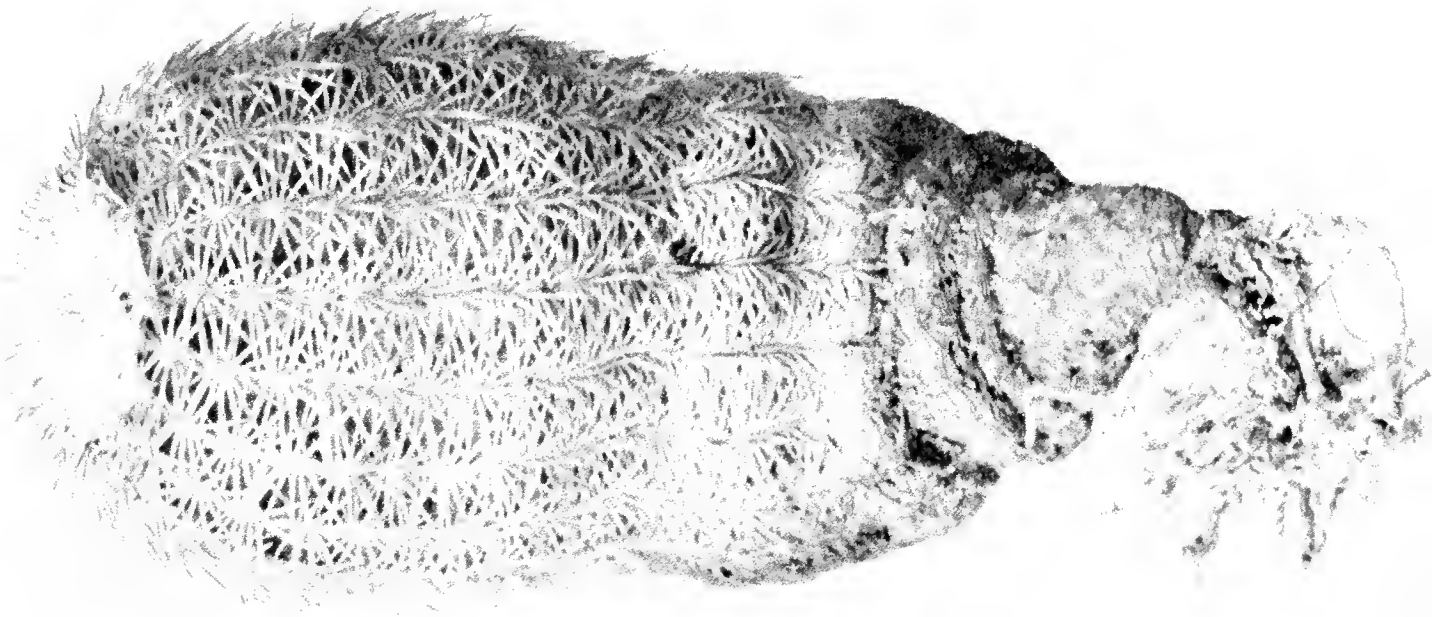
On before him, until the eye
To gauge the distance could no more try,
To where the meadow embraced the sky,
The lane still stretched, and the walls still barred
The dusty lane from the meadow sward.
He paid no heed to the joyous calls
That came from men who had leaped the walls—
Who paused a moment in song or jest,
To hail him "Brother, come here and rest!"
For the Sun was marching toward the West,
And the man had many a mile to go,
And time is swift and toil is slow.

The grassy meadows were green and fair
Bestudded with many a blossom rare,
And the lane was dusty, and dry, and bare;
But even there, in a tiny shade
A jutting stone in the wall had made,
A tuft of clover had lately sprung—
It had not bloomed for it yet was young—
The spot of green caught the traveler's eye,
And he plucked a sprig, as he passed by;
And then, as he held it, there came a thought
In his musing mind, with a meaning fraught
With other meanings.

"Ah, look!" said he,
"The spray is one—and its leaves are three,
A symbol of man, it seems to me,
As he was, as he is, and as he will be!
One of the leaves points back, the way
That I have wearily walked to-day;
One points forward as if to show
The long, hard journey I've yet to go;
And the third one points to the ground below.
Time is one, and Time is three:
And the sign of Time, in its Trinity—
Past, Present, Future, together bound
In the simplest grass of the field is found!
The lane of life is a dreary lane
Whose course is over a flowery plain.
Who leaps the walls to enjoy the flowers
Forever loses the wasted hours.
The lane is long, and the lane is bare,
'Tis tiresome ever to journey there;
But on forever the soul must wend—
And who can tell where the lane will end?"

The thought was given. Its mission done,
The grass was cast to the dust and sun;
And the sun shone on it, and saw it die
With *all three leaves* turned toward the *sky*.

* Died in 1878. The Century Co. published a small volume of his poems a few years ago. This poem has never before been printed.—ED.



THE CACTUS.

PROF. W. K. HIGLEY.

BECAUSE the Greeks in olden times applied the word Cactus to a prickly plant, Linnæus, often called the Father of Botany, gave the same name to our wonderful American growth and since his time these strange and varied plants have borne this nomenclature.

We can hardly imagine any group of plants more interesting. There are over eight hundred varieties of curious and unexpected forms, bearing tubular or rotate flowers most varied in size and color—white, pink, purple, yellow, crimson, deep red—all beautiful and fascinating, and in our Northern country, protected in the conservatories. The Night-blooming Cereus is most renowned, most admired of all.

The Cacti are commonly found in the United States, in Mexico, and in South America, and some species are cultivated on the borders of the Mediterranean Sea, where the fruit is eaten.

They vary in size from an inch or two in height to enormous growths of fifty or sixty feet (*Cereus giganteus*) which stand like telegraph poles, sometimes nearly bare, sometimes with many vertical branches, reminding one of a huge candelabrum. Then again some forms are nearly spherical, while others are long, jointed, and square, one species (*Echinocactus visnaga*) grows about nine feet in height with a diameter of three feet or more and a single plant of this species will sometimes weigh a ton. One of our most common forms is flat and broad; This, the Prickly Pear or Indian Fig (*Opuntia Vulgario*), is the only species found as far north as Wisconsin and New York.

As many of the Cacti require but little care, they are quite extensively cultivated, not only for the rare beauty of their flowers, but for economic purposes. However, nearly all are worthy of culture because of their peculiar forms.

In structure they are fitted for growth in the most arid regions; they abound in the deserts of New Mexico and southward, in many cases obtaining their food from a soil in which no other

plant will grow, their thick coats enabling them to retain moisture and vitality for many weeks. Specimens of the Prickly Pear have been known to grow after lying on a dry floor, in a closed room, for six months and they have blossomed when left in this condition for some time.

These plants, which are more or less succulent, are usually protected from the ravages of animal life by a formidable array of spines and prickles. Those who have carelessly handled our common Prickly Pear can attest to the intensely irritating character of its defensive armor. Thus does nature provide for the care of its otherwise defenseless forms.

A form of the Prickly Pear (*Opuntia coccinellifera*) is cultivated in Mexico for the purpose of raising the Cochineal insect (*Coccus cacti*) which feeds upon it. Some of these plantations contain as many as 50,000 plants. The females are placed on the Cactus in August and in about four or five months the first gathering of the Cochineal takes place, being then ready for the market.

There are many other interesting uses to which these plants are put. When suffering from thirst animals will tear off the hard outer fibers and eagerly devour the moist, juicy interior of the stems. The Moki Indian basket makers use the fiber in their work. This they dye different colors and wind around the foundations, giving strength and beauty. The spines of one species (*Echinocactus visnaga*) are used by the Mexicans as toothpicks. It has been estimated that a single plant may bear upwards of 50,000 spines.

A unique and beautiful sight was a group of Cacti blooming in a Colorado garden, where the owner had spent much time and expense in gathering together many varieties, and one was made to realize how remarkable a thing Nature had lavished upon us: for, as Mr. Grant Allen has said: "The Cactuses are all true American citizens by birth and training, and none of them are found truly indigenous in any part of the Old World."

MYTHS AND THE MISTLETOE.

On Christmas Eve the bells were rung;
On Christmas Eve the chant was sung;
That only night in all the year
Saw the stoled priest the chalice near;
The damsel donned her kirtle sheen;
The hall was dressed with Holly green:
Forth to the woods did merry men go
To gather in the Mistletoe.

THE Mistletoe, particularly that which grows on the Oak, was held in great veneration by the Britons. At the beginning of their year the Druids went in solemn procession into the forests, and raised a grass altar at the foot of the finest Oak, on which they inscribed the names of those gods which were considered the most powerful. After this the chief Druid, clad in a white garment, ascended the tree and cropped the Mistletoe with a consecrated golden pruning-hook, the other Druids receiving it in a pure, white cloth, which they held beneath the tree. The Mistletoe was then dipped in the water by the principal Druid and distributed among the people as a preservative against witchcraft and disease. If any part touched the ground it was considered an omen of some dreadful misfortune.

In the Eddas of mythological Norse lore, Loke, the evil spirit, is said to have made the arrow with which he wounded Balder (Apollo), the son of Friga (Venus), of a branch of Mistletoe. Balder was charmed against everything which sprang from fire, earth, air, and water, but the Mistletoe, springing from neither of these, was fatal, and Balder was not restored to the world till by a general effort of the other gods. In some parts of Germany and

Switzerland it is believed that by holding in the hand a branch of Mistletoe one will be enabled not only to see, but to converse with departed spirits.

The Druids, partly because the Mistletoe was supposed to grow only on the Apple tree and the Oak, and also on account of the usefulness of the fruit, paid great attention to its cultivation. Many old rites and ceremonies, in connection with the Apple, are practiced to this day in some parts of England. On Christmas Eve the farmers and their men take a huge bowl of cider, with a smoking piece of toasted bread in it and, carrying it to the orchard, salute the Apple trees with great ceremony, in order to make them bear well next season.

The wassail bowl drank on Christmas Eve, and on other church festivals, was compounded of old ale, sugar, nutmegs, and roasted apples, of which each person partook, taking out an apple with a spoon and then a deep draught out of the bowl.

Under the Mistletoe of Christmas, the custom of kissing has been handed down to us by our Saxon ancestors, who, on the restoration of Apollo, dedicated the plant to Venus, the Goddess of Love and Beauty. It was placed entirely under her control, thus preventing its ever again being used against her in future ages.—*E. K. M.*



From *Co. Acad. Science*

FLYING SQUIRREL.
Life-size.

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Nature Study Pub. Co., Chicago.

THE FLYING-SQUIRREL.

WITH the exception of Australia, Squirrels are found in all parts of the globe; they extend tolerably far north and are found in the hottest parts of the South. As a family they are lively, quick, and nimble in their movements, both in trees and upon the ground, Flying Squirrels alone being ill at ease when upon the surface of the earth. In compensation for this, however, they are possessed of a faculty which enables them to make exceedingly long leaps, which they take in an obliquely descending direction.

The nocturnal Flying Squirrels, says Brehm, differ from the diurnal Tree Squirrels mainly in having their fore and hind legs connected by a wide flying-membrane. This membrane acts as a parachute, and enables them to execute considerable leaps with ease, in an inclined plane from above downwards. This membrane consists of a stout skin, extending along both sides of the body, thickly grown with hair on the upper side, while the lower one shows but a scanty covering. A bony spur at the first joint of the fore-legs gives especial strength to the membrane. The tail serves as an effective rudder and is always vigorous, though it is not of the same conformation in the different species, one group having it simply bushy, while the other has the hair on it arranged in two lateral rows. There are also slight differences in the structure of the teeth.

The Flying Squirrel of North America, Assapan, is next to the smallest variety of the whole species, the Jaguan, or East Indian, being the largest, nearly equaling a cat in size.

The fur of the North American Flying Squirrels is exceedingly soft and delicate. In captivity they suffer themselves, by day, to be gently handled, making no effort to bite with their little sharp teeth as other Squirrels do. Overcome with sleep they lie curled up in their cage, as much hidden from

view as possible, rarely bestirring themselves before nine o'clock at night. Then, "on the upper edge of the sleeping-box, which one must give them as a substitute for their nest, a round little head becomes visible; the body follows and soon one of the little creatures sits on the narrow edge of the box in a graceful Squirrel-like attitude, the flying membrane half folded against its body, half hanging down in a soft curve. The small, expanded ears move back and forth as does the bewhiskered muzzle, and the large, dark eyes inquisitively scan the cage and surroundings. If nothing suspicious is visible, the Assapan glides down like a shadow, always head first, whether the plane be inclined or vertical, without any noise, without a perceptible movement of the limbs, the greater part of which is covered with the membrane. It proceeds on the woven ceiling of the cage, back downward, as if it walked on level ground; it rope-dances over thin twigs with unsurpassed precision and agility at a uniform speed; spreading its membrane to the full, it darts through the whole space of the cage like an arrow, and the next instant seems glued to the perch, without having made an effort to regain its balance.

During all this moving about it picks up a crumb, a nut, a grain of meat from its dish; drinks, sipping more than it laps, washes its head with saliva, combs its hair with the nails of its fore-feet, smooths it with the soles of its small paws, turning, stretching, stooping all the while, as if its skin were a bag in which its body sits quite loosely.

After hunger and thirst are somewhat appeased, and the toilet over, a playful humor succeeds. Up and down, head upward or inverted, along the ceiling, or the floor, running, jumping, gliding, soaring, hanging, sitting, rushing ahead as if it could move a thousand joints at once, as if there were no such thing as gravity to be overcome."

HUMMING-BIRDS.

IF these exquisite little creatures are called Humming-birds, you little folk may ask, why wasn't the Bee called a Buzzard because it buzzes?

Well, really, that is a question which I will not attempt to answer, but the fact remains that no other name would have been so appropriate for these jewel-like birds but the one above, on account of the humming sound which they produce when hovering in their curious fashion over a tempting blossom, and feeding on its contents while suspended in air.

There are four hundred and sixty-seven species of these little birds, and no two of them, 'tis said, make precisely the same sound, one producing a noise exactly like the whizzing of a wheel driven by machinery, while that of another is very like the droning hum of a large Bee. But no two voices in even one human family, you know, are alike, so it is not amazing that the rule holds good among the birds.

You can capture and tame these lovely little creatures, too, though I wouldn't advise you to keep them in a cage very long. They will pine away and look very doleful if you do.

Rather, after you have accustomed them to your presence, and fed them regularly upon the honey and syrup and other sweets which they dearly love, open the cage door and give them their liberty. A gentleman once did this and was delighted to see them return to their old quarters in a very little while. By watching them the next morning after setting them free again, he found they had been pining for a nice fresh garden Spider which they had been accustomed to daintily pick from the center of his web. He had provided them with Spiders and Flies, but they wanted to flit about and search for themselves. For dessert they liked the sweets which he gave them, so back they went to their cage, instead of extracting it from the flowers with their long bills, as they were wont to do.

A Humming-bird one summer built its nest in a butternut tree very near a lady's window. She could look right down into its nest, and one day, as it began to rain, she saw the mother-bird take one or two large leaves from a tree near by and cover her little birdlings with it. She understood how to make an umbrella, didn't she?



HUMMING-BIRDS.

“ Minutest of the feathered kind,
Possessing every charm combined,
Nature in forming thee, designed
That thou shouldst be

“ A proof within how little space
She can comprise such perfect grace.
Rendering thy lovely fairy race
Beauty's epitome.”

IT has been said that what a beautiful sonnet is to the mind, one of these fairy-like creations is to the eyes.

This is true even in the case of mounted specimens, which must necessarily have lost some of their iridescence. Few can hope to see many of them alive. The gorgeous little birds are largely tropical, the northern limit of their abundance as species being the Tropic of Cancer. They are partial to mountainous regions, where there is diversity of surface and soil sufficient to meet their needs within a small area. The highlands of the Andes in South America are the regions most favored by a large number of species. They are most abundant in Ecuador, the mountain heights affording a home for more than one hundred species. Columbia has about one hundred species; Bolivia and Peru claim about ninety-six; then follow, in consecutive order, Central America, Brazil, Venezuela, Mexico, Guiana, the West Indies, and the United States.

The eastern part of the United States has but one representative of the Humming-bird family, and only seventeen species have been found within the limits of the country. As ten of these really belong to the Mexican group, we can claim ownership of only seven, most of which, however, migrate far south in winter. Only one of these, the Anna, spends the winter in the warm valleys of California.

Most of the Hummers are honey-lovers, and they extract the sweetest juices of the flowers.

The “soft susurrations” of their wings, as they poise above the flowers, inserting their long beaks into tubes of nectar, announce their presence. Some of the Warblers and Kinglets will sometimes poise in this way before a

leaf and peck an insect from its surface, but it is not a regular habit with them. The Hummer's ability to move backwards while on the wing is one of the most wonderful features of its flight, and this movement, Mr. Ridgway says, is greatly assisted by a forward flirt of the bird's expanded tail.

The nests of the Humming-birds are of cup-shape and turban-shape, are composed chiefly of plant-down, interwoven and bound together with Spider webs, and decorated with lichens and mosses. Usually the nest is saddled upon a horizontal or slanting branch or twig, but that of the Hermit Hummer is fastened to the sides of long, pointed leaves, where they are safe from Monkeys and other predaceous animals.

“Dwelling in the snowy regions of the Andes are the little gems called Hill-stars,” says Leander S. Keyser, “which build a structure as large as a man's head, at the top of which there is a small, cup-shaped depression. In these dainty structures the eggs are laid, lying like gems in the bottom of the cups, and here the little ones are hatched. Some of them look more like bugs than birds when they first come from the shell. The method of feeding the young is mostly by regurgitation; at least such is the habit of the Ruby-throat, and no doubt many others of the family follow the fashions of the Humming-bird land. The process is as follows: The parent bird thrusts her long bill far down into the throat of her bantling, and then, by a series of forward plunges that are really terrible to witness, the honey food is pumped from the old bird's craw into that of the youngster. So far as is known the babies enjoy this vigorous exercise and suffer no serious consequences from it.”

CHRISTMAS TREES.

FRED. A. WATT.

OUR Christmas tree is a relic of the old heathen times and came down to us as a part of the Yule festival. It seems to have originated in Germany and can be traced back as far as the year 1604 with certainty, and as it was an established custom at that time it is evidently much older.

How the early man conceived the idea is open to dispute, but in my opinion it is due to an old superstition which has some believers even to this day. It is said that any maid who is not kissed under the Mistletoe at Christmas will not be married during the year following. I have no doubt that the anxiety of the young ladies to be always found under the Mistletoe on that day has led to the profuse green decorations, from which it is only a step to the Christmas tree.

It was introduced into the Court of St. James in 1840 by Prince Consort Albert of Saxe-Cobourg, and the custom spread rapidly through the aristocratic families of London and was almost immediately adopted by all classes throughout England.

It was introduced into the court at Paris in 1830 by the Duchess of Orleans and is now a French custom.

It seems, however, that in our own country it has taken deepest root. Here, by reason of the democratic nature of the people, it may be said to be distinctively American, as the German who first introduced it undoubtedly became an American citizen long ago and his successors are probably numbered among our best citizens even to the present time. Our people of all nationalities have adopted it and we find it installed in our churches, our family gatherings, our schools, and private clubs. Our nineteenth century inventor has even tried to change it into an affair of cast iron, through whose hollow trunk and branches gas pipes are conducted and gas jets among the branches take the place of candles. One of the results of all this is that the demand for Christmas trees and Christmas

greens has grown to enormous proportions in our larger cities and furnishes employment during the latter part of September and through November and December to a number of people who make a business of gathering the gay green branches and transporting them to market.

While traveling through the southern part of Maine a few years ago, I was struck by the symmetry and beauty of a tract of Evergreen Trees and remarked that they would make good Christmas trees. I afterward found that such was likely to be their fate, as men who make a business of "clam-whopping" and fishing during the summer months turned their attention during the fall to the business of gathering these trees and shipping them to New York, Philadelphia, and Boston.

In looking the subject up to determine what became of all these Trees I found an industry which I had not dreamed of. I find that the Christmas greens for New York City were first shipped from Keyport, N. J. That as the demand for them assumed larger proportions the raw material was exhausted in that neighborhood, but the inhabitants having become interested in the business, and finding it a source of profit, have continued to advance into the surrounding country, little by little, until now they are gathering Spruce from Maine, New Hampshire, and Vermont, Princess Pine from Vermont, White Pine from Michigan and even Wisconsin, Laurel and Holly from the South, and in fact they can now gather only Balsam on the home grounds in paying quantities.

In addition to the above-named evergreens, quantities of Ground Pine, Cape Flowers, Fir, Hemlock, the plants of the Club Mosses, berried Black Alder, Quill Weed, and Mistletoe are sought out and gathered wherever found and shipped—the Christmas trees to New York where they lie piled up by thousands along West street facing the dock lines, for several weeks before the holidays, and the other greens to Keyport

and vicinity where they are made up into stars, anchors, crosses, wreaths, hearts, triangles, horseshoes, and miles of roping for decorative purposes.

For the entire length of Monmouth county the families within a mile of the bay shore are nearly all engaged in the business of making these decorations at this season. Four miles from Keyport is the town of Keansburg which now surpasses the former place in this industry. Neighbors are referred to as "making" or "not making" and numbers of new faces appear in the town, attracted by the industry from the north, south, and west. The wages paid are not high but anyone who can "make" can always find a position during the busy season.

The small villages along this strip of country now present a pretty appearance. The houses are almost hidden behind stacks of evergreens of all kinds. A peep into a detached summer kitchen will disclose a group of girls gathered around a long table piled high with evergreens, and at first glance they appear to be principally engaged in pleasant conversation, but you will not have to watch them long before you are aware that their busy fingers are turning out Christmas decorations at an astonishing rate. Or, if you should happen to look in at night, you might see the tables and evergreens pushed to one side and gay groups of girls and young boat-builders, oystermen, and fishermen engaged in a lively neighborhood dance.

Materials other than evergreens are used in this industry to a considerable extent; laths are used to make frames

for the stars and crosses. Willows are gathered in quantities from the marshes with which frames for wreaths are made, but the trade in rattan is probably the most benefited, as nothing else will give such satisfaction in making the frames for hearts, anchors, and other decorations of this kind.

The completed decorations are shipped to New York, Philadelphia, and Boston, but not to Chicago. In Chicago we find a different state of affairs. We are so near the evergreen forests of Wisconsin, where Christmas trees may be had for practically nothing, that the cost of transportation alone from New Jersey would be greater than the price realized would amount to.

Numbers of hulks of condemned vessels lie in and around Chicago which are practically worthless. These boats are taken in the fall by seamen who are out of employment up along the Wisconsin coast and there loaded with evergreens, are brought back to the Chicago river and docked, and lie there until the load is disposed of to the holiday trade. The decorations are mainly manufactured in the city in the store-rooms of the dealers.

That the business of bringing these trees down from the north is not without serious danger and hardship is evidenced by the wreck of the schooner *S. Thal*, which occurred off the coast near Glencoe, Ill., a short time ago, in which five lives were lost. Five lives yielded up that our children may enjoy an hour of pleasure!

Do they ever think of the cost?

A WINTER'S WALK.

Gleamed the red sun athwart the misty haze
Which veiled the cold earth from its loving
gaze,
Feeble and sad as hope in sorrow's hour—
But for thy soul it still hath warmth and
power;
Not to its cheerless beauty wert thou blind;
To the keen eye of thy poetic mind
Beauty still lives, though nature's flowrets
die,

And wintry sunsets fade along the sky!
And naught escaped thee as we strolled
along,
Nor changeful ray, nor bird's faint chirping
song.
Blessed with a fancy easily inspired,
All was beheld, and nothing unadmired;
From the dim city to the clouded plain,
Not one of all God's blessings given in vain.
—Hon. Mrs. Norton.

THE SILKWORM.

THE Caterpillar, or Silkworm, is at first of a dark color, but soon becomes light, and in its tints much resembles the perfect insect—a circumstance common in Caterpillars. Its proper food is the Mulberry, though it will likewise eat the Lettuce, and some few other plants, on which, however, it does not thrive equally well, and the silk yielded is of a poor quality.

The Silkworm is about eight weeks in arriving at maturity, during which period it changes its skin four or five times. When about to cast its skin it ceases to eat, raises the forepart of the body slightly, and remains in perfect repose. In this state it necessarily continues for a time, in order that the new skin, which is at this time forming, may become sufficiently mature to enable the Caterpillar to burst through the old one. This operation is performed thus: The forepart of the old skin is burst; the Silkworm then, by continually writhing its body, contrives to thrust the skin back to the tail and disengage itself; this is difficult, however, since it is no uncommon occurrence for them to die from not being able to free themselves.

When full grown the Silkworm commences spinning its web in some convenient spot, and as it does not change the position of the hinder portions of its body much, but continues drawing its thread from various points, and attaching it to others, it follows that after a time its body becomes, in a great measure, enclosed by the thread. The work is then continued from one thread to another, the Silkworm moving its head and spinning in a zig-zag way, bending the forepart of the body back to spin in all directions within reach, and shifting the body only to cover with silk the part which was beneath it. In this way it encloses itself in a cocoon much shorter than its own body. During the time of spinning the cocoon the Silkworm decreases in length considerably, and after the work is done it is not half its original length. At this time it becomes quite torpid, soon changes its skin, and appears in the form of a chrysalis.

In this state the animal remains about three weeks; it then bursts its case and comes forth in the imago state, the moth having previously dissolved a portion of the cocoon by means of a fluid which it ejects. The moth is short lived; the female in many instances dies almost immediately after she has laid her eggs; the male survives her but a short time.

China was the first country in which the labors of the Silkworm were availed of, and Aristotle was the first Greek author who mentions it. It was not until the fifteenth century that the manufacture of silk was established in England. The raising of Silkworms in the United States has been attempted with success in the Southern States, and especially in California. As the Silkworms in Europe are affected by disease, immense quantities of eggs are sent from this country.

Reeling from the cocoons is only performed in countries where the silk is produced. In plain silk-weaving the process is much the same as in weaving wool or linen, but the weaver is assisted by a machine for the even distribution of the warp, which frequently consists of eight thousand separate threads in a breadth of twenty inches. The Jacquard loom, invented by a weaver of Lyons, has been the means of facilitating and cheapening the production of fancy or figured silks to an extraordinary extent.

The Pan-American delegates during their tour through this country were presented with silk flags by the Woman's Silk-Culture Association of Philadelphia. The flags were made from material produced in the United States.

The eggs from which our photograph was taken are "live eggs," and if properly handled will hatch out in the spring. In order to bring about this result care must be taken that they do not become too warm; freezing will not hurt them, but heat or dampness will cause them to hatch or spoil.

Forty thousand eggs weigh about one ounce, and when hatched will produce about one hundred pounds of fresh cocoons.



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PLATE 1

No. 1—S. (10 mm) 1218. No. 2—L. (10 mm) 2010. No. 3—P. (10 mm) 2010. No. 4—P. (10 mm) 2010. No. 5—M. (10 mm) 2010. No. 6—M. (10 mm) 2010. No. 7—C. (10 mm) 511. No. 8—M. (10 mm) 2010. No. 9—M. (10 mm) 2010.

ANIMALS' RIGHTS.

That there is pain and evil, is no rule
That I should make it greater, like a fool.

Leigh Hunt.

Never to blend our pleasure or our pride
With sorrow of the meanest thing that feels.

Wordsworth.

“**A** GOOD man,” said Plutarch, “will take care of his Horses and Dogs, not only while they are young, but when old and past service.”

The organs of sense, and consequently feeling itself, are the same as they are in human creatures. I can't imagine how a man not hardened in blood and massacre is able to see a violent death, and the pangs of it, without concern.—*Bernard de Mandeville, 1723.*

However we may differ as to speculative points of religion, justice is a rule of universal extent and invariable obligation. See that no brute of any kind, whether intrusted to thy care or coming in thy way, suffer through thy neglect or abuse. Let no views of profit, no compliance with custom, and no fear of the ridicule of the world, even tempt thee to the least act of cruelty or injustice to any creature whatsoever. But let this be your invariable rule everywhere, and at all times, to do unto others as, in their condition, you would be done unto.—*Humphry Primmatt, D. D., 1776.*

But a full-grown Horse or Dog is, beyond comparison, a more rational, as well as more conversable animal than an infant of a day, a week, or even a month old. But suppose the case were otherwise, what would it avail? The question is not, Can they *reason*? nor, Can they *talk*? but, Can they *suffer*?—*Jeremy Bentham, 1780.*

Animals are endued with a capability of perceiving pleasure and pain; and from the abundant provision which we perceive in the world for the grati-

fication of their several senses, we must conclude that the Creator wills the happiness of these his creatures, and consequently that humanity towards them is agreeable to him, and cruelty the contrary. This, I take it, is the foundation of the rights of animals, as far as they can be traced independently of scripture, and is, even by itself, decisive on the subject, being the same sort of argument as that on which moralists found the Rights of Mankind, as deduced from the Lights of Nature.—*Thomas Young, 1798.*

The claims of the lower animals to humane treatment, or at least to exemption from abuse, are as good as any that man can urge upon man. Although less intelligent, and not immortal, they are susceptible of pain; but because they cannot remonstrate, nor associate with their fellows in defense of their rights, our best theologians and philosophers have not condescended to plead their cause, nor even to make mention of them; although, as just asserted, they have as much right to protection from ill-usage as the best of their masters have. *W. Youatt, 1839.*

There is a moral as well as a physical character to all animal life, however humble it may be—enveloped indeed in obscurity, and with a mysterious solemnity which must ever belong to the secrets of the Eternal. Let us then approach with caution the unknown character of the brute, as being an emanation from Himself; and treat with tenderness and respect the helpless creatures derived from such a source.—*Ralph Fletcher, 1848.*

THE CALIFORNIA VULTURE.

Among the crags, in caverns deep,
The Vulture rears his brood;
Far reaching is his vision's sweep
O'er valley, plain, and wood;
And wheresoe'er the quarry lies,
It cannot 'scape his peering eyes.
The traveler, from the plain below,
Sees first a speck upon the sky—
Then, poised on sweeping wings of woe,
A Vulture, Bat-like, passes by.

—C. C. M.

DOCTOR BREWER states that the single species composing this very distinct genus belongs to western North America, and, so far as known, has the most restricted distribution of all the large raptorial birds in the world. It is found on the coast ranges of southern California from Monterey Bay southward into Lower California. It has become very much reduced in numbers and extinct in localities where it was formerly abundant, which is doubtless due to the indiscriminate use of poison which is placed on carcasses for the purpose of killing Wolves, Bears, Lynxes, Cougars, and other animals which destroy Sheep, Calves, and other cattle of the stockmen. Davie says it is more common in the warm valleys of California, among the almost inaccessible cliffs of the rough mountain ranges running parallel with the Sierra Nevadas for a hundred miles south of Monterey. It associates with the Turkey Buzzard, and the habits of both species are alike, and they often feed together on the same carcass.

The Vulture's flight is easy, graceful, and majestic. A writer who watched one of these gigantic birds thus pictures it: "High in air an aeronaut had launched itself—the California Condor. Not a wing or feather moved, but resting on the wind, like a kite, the great bird, almost if not quite the equal of its Andean cousin, soared in great circles, ever lifted by the wind, and rising higher and higher into the empyrean. Not a motion of the wing could be seen with careful scrutiny through the glass, but every time the bird turned and faced the wind it seemed to bound upward as though lifted by some superhuman power, then bearing away before it, gathering the force or momentum which shot its air-laden frame higher and higher until it almost dis-

appeared from sight—a living balloon."

The ordinary California Buzzard and the singular Ravens of Santa Catalina Island often give marvelous exhibitions of soaring or rising into the air without moving their wings, and when it is remembered that their bodies are reduced to a minimum of weight, and that even the bones are filled with air, it is almost scientifically and literally true that they are living balloons. And yet the weight of the Vulture is sometimes twenty-five pounds, requiring immense wings—eight and a half to eleven feet from tip to tip—to support it.

Mr. H. R. Taylor, of the late *Nidologist*, says there have probably but three or four eggs of the California Vulture been taken, of which he has one. The egg was taken in May, 1889, in the Santa Lucia Mountains, San Luis Obispo County, California, at an altitude of 3,480 feet. It was deposited in a large cave in the side of a perpendicular bluff, which the collector entered by means of a long rope from above. The bird was on the nest, which was in a low place in the rock, and which was, the collector says, lined with feathers plucked from her own body. This assertion, however, Mr. Taylor says, may be an unwarranted conclusion. From the facts at hand, it appears that the California Condor lays but a single egg.

The Condor is not an easy bird to capture, for it has a fierce temper and a powerful beak. An unusually large one, however, was recently taken in Monterey County, California. To catch the mighty creature William J. Barry made use of a lasso, such as ranchmen have with which to round up obstreperous cattle. The strength of one man was barely sufficient to imprison it. It is said that the appetite of the bird was not affected by its loss of liberty.



From col. F. M. Woodruff.

CALIFORNIA VULTURE.
1/3 Life-size.

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A GAMELESS COUNTRY.

THE West Indian Archipelago, with its four islands and numberless islets, is called the gameless country, because in a region of more than 100,000 square miles there are no Monkeys, Bears, Raccoons, Wild Hogs, Jaguars, Pumas, Panthers, Lynxes, Wild Cats, Foxes, Wolves, or Jackals. There is not even a Woodchuck to be dug out of the many caves. Dogs and Cats, too, are unknown, and this lack of household pets seems to have driven the aborigines to expedients, for in a book called "Ogilvy's Voyages" there is a story told of a San Domingo native who kept a tame Manatee or Sea Cow that made its headquarters in an artificial pond, and was so well trained that when called by its name it would come out of the water, go to a neighbor's house and

after receiving food return to the pond, accompanied by boys who seemed to charm it by singing, and it often carried two children on its back. Its instinct was wonderful. It was once struck by a pike in the hand of a Spaniard and after that always refused to come out of the water when there was a clothed man near.

Manatees are often seen northwest of Cuba in shoals, sporting about the reefs like Sea Lions. They are cunning creatures and can dodge the harpoon with more success than any other aquatic animal. The largest land animal of this strange territory is a huge Rat, measuring eighteen inches in length without the tail. With this exception, it is claimed, Cuba, Jamaica, San Domingo, and Porto Rico have no land animals.

SNOWFLAKES.

Out of the bosom of the air,
Out of the cloud folds of its garments
shaken,
Over the woodlands brown and bare,
Over the harvest fields forsaken,
Silent, and soft, and slow,
Descends the snow.

Even as our cloudy fancies take
Suddenly shape in some divine expres-
sion,
Even as the troubled heart doth make
In the white countenance confession,
The troubled sky reveals
The grief it feels.

This is the poem of the air,
Slowly in silent syllables recorded;
This is the secret of despair,
Long in its cloudy bosom hoarded,
Now whispered and revealed
To wood and field.

—Longfellow.

THE AMERICAN GOLDEN-EYE.

We watch the hunters creeping near
Or crouching in the silvery grasses;
Their gleaming guns our greatest fear,
As high o'erhead our wild flock passes.

But we are of the air, and speed
Like meteors dropping from the sky;
He's "the man behind the gun" indeed
Who can fairly wing a Golden-eye.

—C. C. M.

FOR beauty this bird will compare favorably with any of the family except the Wood Duck, whose colors are more various and brilliant. Whistler is the name by which it is more commonly known, from the peculiar noise of wings made while flying. In spite of its short, heavy body and small wings, it covers immense distances, ninety miles an hour being the speed credited to it by Audubon, who, however, was not always accurate in his calculations. It is an abundant species throughout the fur countries, where it frequents the rivers and fresh-water lakes in great numbers. It breeds as far north as Alaska, where, on the Yukon, it nests about the middle of June. Like the Wood Duck, it makes its nest in hollow trees and decayed trunks. This consists of grass, leaves, and moss, lined with down from the bird's breast. The eggs are from six to ten in number, and ashy green in color.

The Golden-eye is a winter visitant to Illinois. On Long Island it is better known among the hunters as the "Whistler," and by others it is also called the "Great-head," from its beau-

tifully rich and thickly crested head. On that island it is said to be a not very abundant species, arriving there in company with other migratory Ducks. Mr. Girard met with it in the fall and spring on the Delaware and in Chesapeake bay. Its food consists of small Shell and other Fish, which it procures by diving. In the fall the flesh of the Golden-eye is very palatable. It is very shy and is decoyed with great difficulty. In stormy weather it often takes shelter in the coves with the Scoup Duck, and there it may be more readily killed. Naturally the Golden-eye is chiefly seen in company with the Buffle-head, the Merganser, and other species that are expert divers like itself. When wounded, unless badly hurt, its power of diving and remaining under water is said to be so remarkable that it cannot be taken.

The Golden-eyes always have a sentinel on the watch to announce the approach of an enemy. They have been very little studied in their haunts. The word *Clangula* indicates in some degree the tone of their voices. They swim under water like fish, out of which they can bound upward and make off with prodigious speed.

GOLDEN ROD.

A lady who has lately been making a visit in the West was telling the other day about the forlorn aspect of the country out that way to her. "Even the Golden-rod," she said; "you can't imagine how scraggly and poor it looks, compared with our magnificent flowers along the road here. I wonder what makes the Western Golden-rod so inferior." The very next day there arrived at her house a relative whom she had been visiting when she was in the West. He sat on the veranda, and looked in-

dulgently — even admiringly — at the landscape, and praised its elements of beauty. But as his eye ran along the roadside near by, he said: "But there is one thing that we are ahead of you in — you have no such splendid Golden-rod here as we have out West! The Golden-rod growing along that road, now, is tame and poor compared with ours." What a blessed thing it is that the gold of our own waysides is richer than the gold of all other waysides!



THE AMERICAN SKUNK.

THIS little animal is distinctively American, the one figured being found only in North America. It has a beautiful jet-black fur, varied with a larger or smaller amount of white forming a stripe on each side of its body and head, and more or less of its tail. In some cases the white is reduced to a small "star" at the top of the head, and without doubt some specimens are entirely black, while occasionally a white specimen may be seen.

The fur of the Black Skunk is considered the best, and brings the highest price which decreases as the amount of white increases, the white ones being almost valueless. A slight unpleasant odor clings about the manufactured fur, which detracts much from its commercial value, although some dealers claim that this is never noticed when it is sold as "Alaska sable."

Another common name for the Skunk is Polecat. Though found in the woods, they prefer to inhabit grassy or bushy plains. During the day they lie sleeping in hollow trees or stumps, in clefts of rocks, or in caverns, which they dig for themselves; at night they rouse themselves and eagerly seek for prey. Worms, insects, birds, and small animals, roots and berries constitute their food.

The range of the Skunk is quite extensive, the animal being most plentiful near Hudson Bay, whence it is distributed southward.

It is slow in its movements, can neither jump nor climb, but only walk or hop. Knowing how formidable is its weapon of protection, it is neither shy nor cowardly.

The Skunk is a much respected animal, both man and beast preferring to

go around him rather than over him, and many amusing anecdotes are related by hunters and naturalists, which lead us to believe that he does not always come out second best in an encounter. When in search of food he is so bold that he can be approached without difficulty, and he wears a look of innocence that effectually deceives the uninitiated, and brings about very unexpected results.

Hensel says that when it is pursued by dogs it lays its tail along its back like a sitting Squirrel, turns its hinder quarters towards the dogs and performs queer, angry, hopping antics, such as one sometimes sees in the cages of Bears. The attacked animal never wastes its secretion by unnecessary haste, but continues to threaten as long as the dogs are a few yards distant from it.

"Skunk Farming" cannot be said to be a growing industry, but there are a number of such "farms" in the northern and eastern states which are said to pay fairly well. A small plat of land is enclosed by a high board fence; stakes are driven into the ground close together under the fence so that the animals cannot burrow out. Small shelters are built in, some hay thrown in for nests, and the farm is ready for the skunks.

Skunks get very tame in captivity and tolerably well accustomed to their keeper, though great care is required not to irritate them. Hay is their favorite bed, on which they curl up like a ball. After eating, they wipe their snouts with their forepaws, being very cleanly, and they always keep their fur dainty and dressed. The fur is not very fine or soft, but it is valuable and in considerable demand.

BIRDS IN "THE ILIAD."

EMILY C. THOMPSON.

THE universe is so ordered that Birds are essential to the life of Man. To-day we believe this and value them accordingly. Years ago as well as now the birds held the same relation toward man but the latter did not then understand this relationship as we do in this age of scientific enlightenment. About twenty-eight hundred years ago, nine hundred years before the beginning of our era, a poet flourished in the East, or certain poets as some scholars maintain. He is supposed to have been a blind bard, who wandered around to the courts of the petty kings, sang his heroic lays and left them for our inheritance, and a noble inheritance it is to those who have the desire and will to go to the depth of the treasure. These poems tell of the people of that time and show us many sides of their life and the chief characteristics of their civilization.

One scarcely expects from a great poem, dealing with war and adventure, to gather information about birds. Yet it is there, but not so much scientific as ethical. Birds, they believed, were here on earth as the messengers of the gods. Rarely did a bird appear before them or raise a cry which did not do so by the direct command of some ruling divinity. Imagine with what anxiety these old Greek heroes watched for and listened to the heaven-sent messages. Great was the fear at certain omens, and great the rejoicing at others. As a rule only special men could interpret these signs and these men were of immense importance in a community. They were almost a priesthood in nature, as nearly so as any order which the people then possessed, for the priesthood was not developed at that time.

In the Iliad, at four of the critical points in the story a bird appears and shows the will of the gods to mortals. It is related that before the Greeks sailed to Troy, while the ships were yet assembled at Aulis, one of these omens occurred and was interpreted thus: Near the ships was an altar and by the

altar stood a plane-tree, upon the bough of which a little bird had built its nest, and already within the nest were nine fledglings. Suddenly a serpent darted forth from beneath the altar straight toward the tree; the nine little birds were soon devoured and at last the serpent ended his feast by catching the mother which had flown crying about it. At once the serpent was turned into stone. This wonderful prodigy was shown by one of the prophets to mean that for nine years the Greeks would toil fruitlessly before Troy as the serpent had devoured the nine little birds; but in the tenth year they would seize the city.

The flight of birds was watched and upon this rested often the movements of whole armies. As the seer had foretold for nine years the Greeks had been fighting before the walls of Troy; their ships were drawn up on the shore of the sea and before them they had built a wall and dug a ditch for protection. The nine years had passed, the tenth year was already going by and never had the people from the beleaguered city dared to approach their ships. But now, after so many years, all was changed. The great hero of the Greeks, the great swift-footed Achilles, was angry and refused to fight for them and sat apart at the stern of his ship on the shore of the barren sea wearing out his heart with anger. Now the Trojans, never before so successful, had reached the wall and were encamped there for the night. The Greeks felt that it was necessary to send out spies to observe the movements of their foes. Diomedes volunteered his services and chose Odysseus for his comrade. They crept away from their companions in the darkness but had gone only a few steps when the cry of a Heron was heard on their right. This meant good luck for them, for they knew that Athene, the protecting goddess of Odysseus, had sent this favoring sign, and it proved true, for their sally was prospered and they returned unharmed, having slain



thirteen of the enemy, and bringing as booty a noble pair of steeds, a prize in which all Greeks took delight.

Even in Homer we see the dawning of skepticism, a skepticism of which we approve and the sentiment of which we cannot but admire. The next day after the favorable sign of Athene to her favorite, after nine long years of terrible war the Trojans stand at the very edge of the ditch before the Greek ships. Hector their noble leader, a hero who may well inspire modern men to noble deeds of patriotism, stands at their head. One rush more, one impetuous dash through the ditch and against the wall, and the ten years' war may be ended with the weary Trojans victors. But at this critical moment a bird appears, it is the favorite bird in Homer and also the favorite bird with us, for it is our national bird, the Eagle. Homer calls it the bird that is surest to bring fulfillment with its omens and tells us that it belonged to mighty Zeus the thunderer, the ruler of gods and men. The bird appeared flying at the left. The people halted. A bird flying at the left meant disapproval. It held in its mouth a snake not yet dead, which, coiling its head, bit at the breast of the bird. The bite was effective, and with a sharp cry, the bird dropped the serpent at the feet of the awe-inspired Trojans and fled shrieking away. Well might the people halt. What was to be done, an onward move against such a portent, or a calm withdrawal when everything was in their favor? One of the common people declared that they must withdraw or death would come upon them. Then noble Hector with frowning brows answered him: "Polydamas, no longer do you speak words pleasing to me. You know how to speak another word better than this. If you speak this truly in earnest, the gods themselves have taken away your senses from you who bid me to forget the counsels of high-thundering Zeus, the promises he made me and the plans to which he nodded assent. You bid me put my trust in long-winged birds which I do not heed or regard at all, whether they fly to the right toward the sun and the dawn, or to the left toward the murky darkness. Let us trust the counselings of great Zeus who holds sway over

gods and men. One bird is the best to defend one's fatherland."

In the last book of the Iliad in the sad scenes surrounding the death and burial of this hero we have again an omen. Priam, the aged, feeble man, determined to go to the strange, wrathful Achilles and beg for the body of his dear son Hector, which the swift-footed hero had been mutilating in his wrath, dragging it behind his chariot about the city walls. Priam was determined to go. His wife tried to dissuade him from such a dangerous undertaking, he bade her not to be a bird of ill omen in his halls, but she insisted, and finally persuaded him to pray to Zeus to send him an omen that his journey would be successful. He prayed; thereupon an Eagle appeared flying at his right. Hecuba was now satisfied and the old lord of windy Troy started out on his errand of love. The omen was true this time for he did persuade the heart of Achilles and returned to his city with the remains of his son.

There are other instances of omens given by the presence and flight of birds, but these are sufficient to show us the great importance which the men of two thousand years ago attributed to them. Although birds are most prominent in Homer in this connection, still we find them mentioned many times just as parts of the physical world and without divine import. Among the birds thus mentioned we find names which our scholars have interpreted to designate Cranes, Meadow Larks, Jackdaws, Geese, Swans, Nighthawks, Vultures, and Eagles. Birds are especially noted for their quickness in flight, and the horses were most prized which flew like the birds. Birds were always mentioned in connection with the dead, and a favorite curse was to wish that one might be left a prey to the dogs and birds.

Gods often honored this part of the animal world by assuming their forms. We find Athene and Apollo in the likeness of Vultures settling down upon the Oak tree to watch the battle of the Greeks and Trojans. Sleep watches the wiles of Juno toward her lord while he sits as a Nighthawk upon a tree. But Homer is essentially a poet, and in

many places a nature-poet, and in these touches of nature he does not forget the birds, but very often compares the movements of his heroes to them.

"As a tawny Eagle darts upon the flocks of winged birds feeding by the river, flocks of Geese, of Cranes, of long-necked Swans, so Hector darted upon them."

"The Trojans went with hue and cry—like the birds when the cry of the Cranes is in the front of heaven, who, when they flee from the winter and portentous storms, with cries fly to the streams of Oceanus bearing death and fate to the Pygmies, and at dawn they bear forth with them their evil strife."

"As a bird bears a morsel for its un-

fledged young whenever it obtains any, but fares badly itself, so I have toiled for other men and gained naught myself."

"As many flocks of birds, of Geese, Cranes, long-necked Swans, in an Asian meadow by the banks of the Cayster fly hither and thither exulting in their wings as they settle down with cries and the meadow reëchoes, so flocks of men poured from the tents and ships into the plain of the Scamander."

"As a flock of Meadow Larks or Jackdaws comes with full, unbroken cry when they see before them a Hawk which bears destruction to small birds, so with full, unbroken cry went the youths of the Achæans before Æneas and Hector."

SUMMARY.

Page 206.

AFRICAN LION—*Felis leo capensis*.

RANGE—All over central and southern Africa from the western to the eastern coast, and as far north as the 20th degree of northern latitude.

Page 210.

CACTI — (1) *Echinocadus Le Contii*, Tempe, Arizona. (2) *Mamillaria Sheerii*, Nogales, Arizona.

Page 214.

AMERICAN FLYING SQUIRREL — *Pteromys volucella*.

RANGE—All over the United States and Central America.

Page 218.

HUMMINGBIRDS — (1) *Lampornis gramineus*, Venezuela. (2) *Petasophora Anais*, Columbia. (3) White-tailed Hummer.

Page 223.

SILK-WORM—*Bombyx mori*. Originally from China.

Page 227.

CALIFORNIA VULTURE—*Pseudogryphus californianus*. Other name: California Condor.

RANGE—Coast ranges of southern California from Monterey Bay southward into Lower California; formerly north to Frazer River.

NEST—On the bare floor of a cave in a lofty precipice.

EGG—One.

Page 231.

AMERICAN GOLDEN-EYE—*Glaucionetta clangula americana*. Other names: Whistler, Whistle Wing, Brass-eyed Whistler, Great Head, Garrot.

RANGE—North America, nesting from our northern boundaries to the far south, and wintering in the United States southward to Cuba.

NEST—In hollow trees, lined with grass, leaves, and moss.

EGGS—Six to ten, ashy green in color.

Page 235.

AMERICAN SKUNK—*Mephitis varians*.

RANGE—Extensive, being most plentiful near Hudson Bay, whence it is distributed southward.

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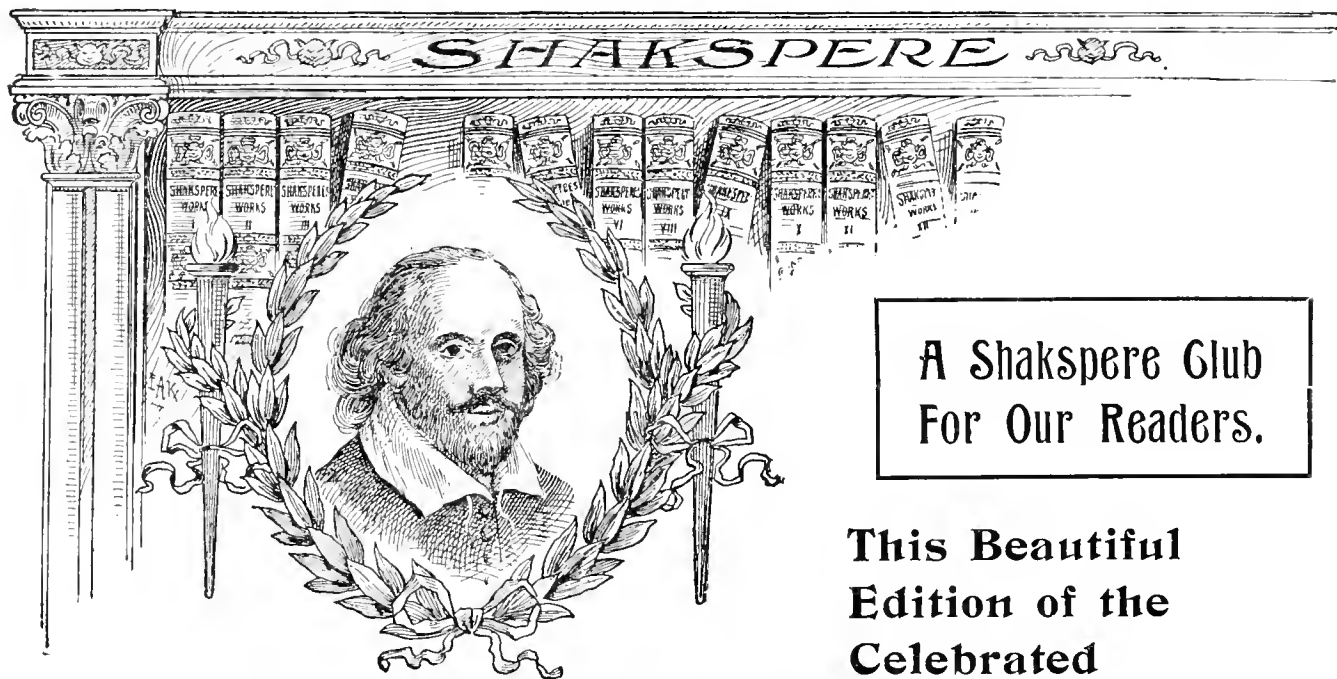
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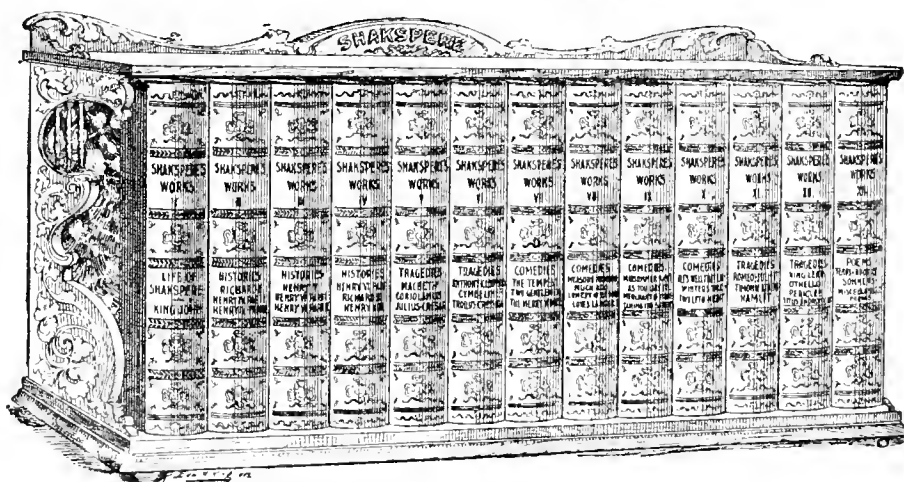
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