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BIRDS AND ALL NATURE.

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ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. IV. SEPTEMBER, 1898. NO. 3.

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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 Blackbird 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 bethought 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.

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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 whereever 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 venemous.

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? Dost? 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.*

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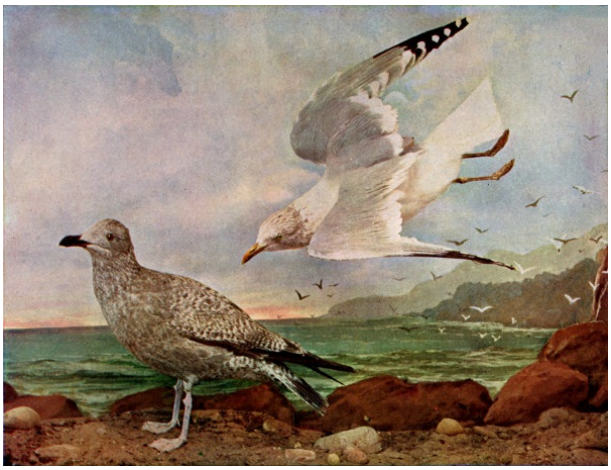

From col. Chi. Acad. Sciences.

AMERICAN HERRING GULL.
⅙ Life-size.
CHICAGO COLORTYPE CO., CHIC. & NEW YORK

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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 inland 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.

From col. Chi. Acad. Sciences.

RACCOON.
⅕ Life-size.

THE RACCOON.

ON 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.*

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From col. Chi. Acad. Sciences.

PYGMY ANTELOPE.
⅓ Life-size.

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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 Natures' 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.

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From col. Chi. Acad. Sciences.

RED-SHOULDERED HAWK. ⅓ Life-size.

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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 *kee-oe* 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 values 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 absolutely necessary on account of lack of food. In fact, the Doges had issued a decree that on the morrow the city should surrender unconditionally. [Pg 101]

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."

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BUTTERFLIES.—Life-size.

Melitæa chalcedon.	Papilio thoas.	Limenitis arthemis var. lamina.
Thecla crysalus.	Papilio philenor.	Cystineura dorcas.
Anthocharis sara.	Argynis idalia.	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. It's 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.

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From col. Chi. Acad. Sciences.

AMERICAN GRAY FOX.
⅙ Life-size.

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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 Nehasane 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.

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From col. Chi. Acad. Sciences.

GRAY SQUIRREL.
5/9 Life-size.

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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.

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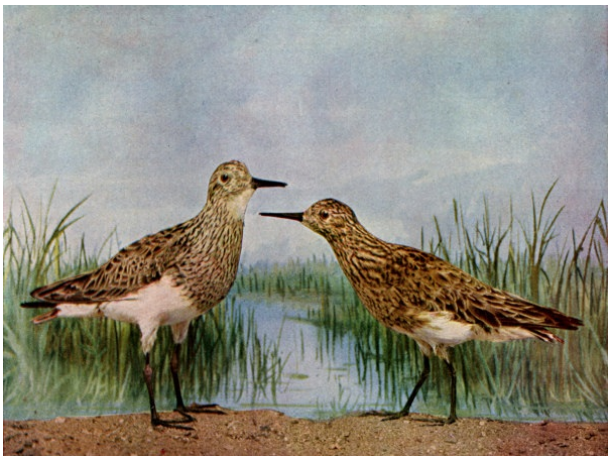

From col. Chi. Acad. Sciences.

PECTORAL SANDPIPER.
½ Life-size.

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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 adjustment. 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.

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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 Flat-fish 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 [Pg 119] 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 a valley, centuries ago,
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 plashes
The boys run dabbing 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.—*Antilope 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.

Transcriber's Note:

- Minor typographical errors have been corrected without note.
- Punctuation and spelling were made consistent when a predominant form was found in this book; otherwise they were not changed.
- Ambiguous hyphens at the ends of lines were retained.
- Duplicated section headings have been omitted.
- The Contents table was added by the transcriber.
- Only references within this volume are hyperlinked.

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