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THIRTY VOLUMES

VOLUME THIRTEEN

THE DEVELOPMENT OF OBSERVATION AS A MEANS TO SUCCESS.
DEFICIENCY IN OBSERVATION CURED BY PRACTICAL STUDY OF
NATURE. THE IMPORTANCE OF THE POWER OF RELIABLE
OBSERVATION IN FINDING THE MATERIAL FOR THE OTHER
FACULTIES TO WORK INTO THE FABRIC OF SUCCESS.
WHY THE OBSERVANT OUTSTRIPS THE UNOBSERV-
ANT IN THE RACE FOR SUCCESS WHERE OTHER
TALENTS ARE EQUAL. NATURE HERSELF A
STIMULATING EXAMPLE OF PERFECT SUCCESS



*"Come forth into the light of things,
Let Nature be your teacher."*

WORDSWORTH

*"To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language."*

BRYANT: Thanatopsis

*"Go forth under the open sky, and list
To Nature's teachings."*

IBID

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ANIMALS AND BIRDS
WILD AND DOMESTIC

INTRODUCTION TO THE BEAST AND BIRD SECTION

By ERNEST SETON-THOMPSON

Author of "Wild Animals I Have Known," "The Trail of the Sandhill Stag," "Biography of a Grizzly," "Art Anatomy of Animals," "Mammals of Manitoba," "Birds of Manitoba," etc., etc., etc.

"WHATEVER shall I do with my boy, he is just crazy to go a-hunting?" Such is the despairing question of many a mother whose heart is tender toward the Wildwood Folk, as well as loving and indulgent toward her vigorous, roustabout son.

It is a serious matter to tell a mother how to bring up her child, but the question is one of such importance and such recurring persistency that those who write on the ethics of hunting should at least attempt an answer.

First, the mother may rest assured that the fact of her boy wanting to go out and kill something does not by any means prove that he is a little reprobate. Indeed, observation inclines me to think that all boys who amount to anything afterward do pass through a period when they are "just crazy to go a-hunting."

We must remember that our ancestors have been hunters for many ages, so that the chasing instinct is very deeply ingrained. To hunt was their stern duty—their necessity, so that it became part of their natures.

We cannot expect to root out this age-old growth in one generation. We may be convinced that it is wrong to kill animals for sport,—that is, for the pleasures incidental to doing it,—but still we have the habit; it is inborn with every one of us, and is only to be conquered after a struggle. The stronger and more energetic the boy, the more likely is he to be a bloodthirsty little savage, during that time of life when he is passing through the Stone Age epoch—from nine to sixteen usually.

But what are we to do? This is certain, we cannot *crush* it out. It is always dangerous to attempt forcible crushing of a strong, natural, and not unhealthy craving. Usually the treatment would depend upon the boy. One general rule always holds good, that is, develop him,—get him through his seven years of savagery as fast as possible. Proper training may condense the seven years into half as long, just as improper may prolong it indefinitely.

Second, since this destructive energy is there and cannot be wholly stopped, we must divert it to a desirable channel. This is a well-known and sound principle of economics. That desirable channel seems to be what we call Nature Study.

Nature study is so nearly in the same line as hunting, that it is the easier to substitute. It fosters all the fine art of woodcraft without the

brutalities. The more a boy follows woodcraft and learns the beauties and interest of wild life, the less he will be disposed to destroy that life.

This will apply to most boys, but there will always be a few who will not rest satisfied with anything short of real hunting—real killing for sport. Here again it is hard to know what to do; but I think it may be the right thing to let such have one taste of it. Keep the boy back as long as possible, at least until well into his teens, then let him have a little of the chase. Few boys that have ever seen a beautiful harmless wild animal shot down—needlessly done to death, will ever again feel the same way about sport. It may not end their desire for it, but it certainly will set them thinking.

It must not hastily be assumed that sport is wholly brutal and degrading. On the contrary, there is much about it that is elevating and developing. If it were not so, we should have abolished it long ago, as we did the arena and the bull-ring. The healthy outdoor exercise and surroundings, the contact with nature's beauties, the pleasure of pursuit, that is, the matching of one's wits with those of the animal, the exhilaration and excitement of that competition, all are good things. The bad things are the unnecessary cruelty and destruction.

I should not say much about these at present, but that the destructive ingenuity of man is so active that he has made it possible for an irresponsible small boy to annihilate the most rare and magnificent animals, and consequently many beautiful and valuable creatures are threatened with extinction. Therefore all thoughtful people should do their utmost to stop this extermination—to prevent the obliteration of a national heritage that properly preserved would supply pleasure to all generations.

And this we can do only by sternly repressing the coarser forms of the murdering mania and then diverting the remaining energy into better, higher channels—above all, as already suggested, the channel of nature study, that is, the intimate, friendly study of the natural objects about us, the study that follows and learns to use the eyes and the understanding, instead of the gun,—that realizes that life is precious; that the living bird in the bush is a wonderful, beautiful, mysterious creature, and the dead bird in the hand has lost most of what made the living bird so precious.

But there is an important craving in human nature, that must be kept in view. However convinced we may be that it is wrong to kill, however purely scientific may be our interest, however superior to the slaughtering mania,—the blood-madness,—no one who studies anything is wholly satisfied without more or less possession. He wants to see it close at hand, to touch it, to own it. That is a natural and a really justifiable inclination, to stop which would be to greatly hamper the knowledge seeker. Here again it may be best to allow the feeling some measure of vent. But if this is done, there is one rule that should be applied rigidly to all killing or collecting of birds, beasts or fishes—nothing should be wasted.*

*Of course I am not now speaking of vermin, that is, certain animals that have become numerous and so noxious as to be a pest, but of the ordinary wild creatures about us.

If killed for food, they should be carefully and unwastefully used for food. Or if killed in the name of science, they should be wholly, and to the best advantage, devoted to scientific purposes.

For example, if your boy shoots a woodpecker under plea that he is studying natural history, we may accept his plea at its face value. Perhaps this justifies him. But if so, he is bound to get all the natural history he can out of the specimen to atone for the destruction of life. I would always insist that he skin, or, in some way, fully and permanently preserve it, and that he further make it of value by attaching to it a label stating when and where he killed it.

This is really of vast importance. First of all, it makes the boy's excuse a reason. Second, it limits greatly the possible amount of destruction. Third, it directs his attention to the beauties of the creature he killed. Fourth, it really kindles and feeds his interest in natural history, and, last, it adds to our knowledge of the creature.

Here perhaps the mother may stop and incredulously ask: "How is it possible for us beginners to lend aid to science?"

To this I should say: There are many departments in which only the expert can make further advance; but in the matter of nature observation, all who have eyes to see and tongue to tell can be of assistance.

To everyone there come rare opportunities to learn—chances to see into some mystery that has baffled all others. One never knows what they may be or how they may come; but a thousand instances might be cited to prove the statement.

Not only do facts come, but rare specimens turn up in odd ways. I once saw a milk snake disgorge a jumping mouse, and so learned for the first time that this mouse was found in that region; and I gave lasting value to the observation by preserving the mouse's body in alcohol.

The value of a single nature study observation does not seem great, or even real. And yet we have always found that those who were storing up little scraps of truth were providing building material for some noble structure that they themselves had no conception of. It always has been so, and it always will be so. Those who in the past blindly gathered up the little facts in natural history were unconsciously making possible our modern science of Pathology and Sanitation, and so relieving mankind of a weight of woe.

So those who continue the good work, making careful investigations of visible nature, are helping us to comprehend the laws we live under, and are preparing the way for some new, great boon to mankind.

It will be seen from this that I attach special value to the object lesson in nature study. All educators do. Viewed from any point, the actual thing, the specimen presented, is worth far more than the statement that such an object exists.

I would have every boy and girl interested in nature study, collect and save the specimens that appealed to him, or that come in his way. Specimens labeled with date and place are the best and largest facts. But to

preserve them takes time and trouble. So much the better. On p. 2625 will be found full instructions for preserving birds and beasts. Of course it will be remarked that this is starting the boy in the direction of making a museum,—a home museum. Why not, if his tastes lie that way? It is the safest corrective of the hunting craze. Most boys have the mania for collecting. With some it may take the form of postage stamps, and, with others, business cards or autographs. This is another case where the energy is awaiting ready produced and it is wise to turn it to the most useful channel.

If the house affords no facility for the boy's museum, and few homes do not, there is in nearly every town to-day a public museum that will be glad to receive the boy's contributions, tell him the names and properly care for them.

Furthermore, be it remembered, that sport is not wholly bad, but, as already indicated, there is in it much that is good. If we could get sport without the bad parts, we should have a diversion to be cherished always. It seems that we can do so. We can now get all the elevating influences without the brutality, by what we call the New Hunting. The weapon of the new chase is not the gun, but the camera. The camera has come forward as the animal's friend, and to this extent the mother's friend, for it enables her to divert the boy's attention from the savagery to the fine art of the chase, without turning him into a molly-coddle.

Another important side to the subject is the literature. Sporting literature has had much to do with keeping hunting and killing in good repute, and it is, in part, to regenerated sporting literature that we must look for the cure. It is quite easy to stock the boy's library to-day with books of the better sporting kind, books which foster woodcraft and woodlore without glorifying slaughter, and yet without outraging the child whose keenly discriminating instincts resent the nauseating pills of overstrong morality slightly coated with natural history. It is not necessary to wholly exclude books that treat of sport in the ordinary sense, but it is well to remember that wild-lore is the main thing,—the important safety valve for the sporting energy, and that by teaching the boy the rudiments of woodlore, we can add to his life a great and lasting pleasure to replace the much smaller and lower pleasures of hunting.

If all children lived in the country and had no opportunities to see any but the animals and plants of their own land, I should confine their studies largely to those. But it happens that half our children live in town where they have access to museums, pictures and collections of birds, beasts, fishes, plants and natural curiosities from all parts of the world, and I should, therefore, lead each child in the direction of a general knowledge of the strange creatures of the globe, remembering always that the object lesson is the best of lessons, and that when the object is not at hand, a good picture of it is the next best thing.

This plan is the one now commended by the educator, as well as by convenience, and sustained by the choice of the child. This, therefore, is the method adopted by the projectors of THE SUCCESS LIBRARY.

In this volume (V), I have edited carefully the sections devoted to mammals and birds.

Sound science, corrected in the light of the latest researches, is the basis of all the articles, but this necessary substructure, or, at least, any possibly repellent and technical features, are kept out of sight, and light, but trustworthy accounts are given of all those things that are likely to first catch the eye and attention of a growing child of healthy mind and body.

The part devoted to the animals, as children usually call the beasts or mammals, comprises eighty-two pages, with twenty-three colored illustrations. The text is from the pen of Mr. Frank Roe Batchelder, the well-known naturalist. The accounts are given in simple language and the picturesque side of each animal, the side likely to appeal most to the child, is duly kept in front.

The number of birds treated by Mr. Batchelder is yet larger. One hundred and thirty in all are described, forty-four illustrated.

I have read every word of these articles and can guarantee the general statements throughout. The animal stories are by several well-known writers. I have gone over them, and while I assume no responsibility for style or scope, I can vouch for the accuracy of the lessons conveyed.

The proper field of this work is to give a brief, popular digest of any subject, and then to refer the reader to the works necessary for exhaustive research. The best works for further guidance in taxidermy, bird-photography, and the natural history of our country, are:—

- Blanchan. "Bird Neighbors." Published by Doubleday, Page & Co. Price \$2.00.
- Blanchan. "Birds That Hunt and Are Hunted." Published by Doubleday, Page & Co. Price \$2.00.
- Blanchan. "Nature's Garden." Published by Doubleday, Page & Co. Price \$3.00.
- Chapman, F. M. "Bird Life." Published by Appleton & Co. Price \$1.75.
- Chapman, F. M. "Handbook of Birds of Northeastern America." Technical and popular. Published by Appleton & Co. Price \$3.50.
- Coues, E. "Key to North American Birds." Full descriptions of all North American birds, their nests, etc. Both technical and popular. (Second and third editions.) Published by Cassino. Price \$8.00.
- Dana. "How to Know the Ferns." Published by Charles Scribner's Sons. Price \$1.50.
- Darwin. "Insectivorous Plants." Published by D. Appleton & Co. Price \$2.00.
- Davies, O. "Birds and Eggs." North American birds.
- Dugmore. "Bird Homes." Published by Doubleday, Page & Co. Price \$2.00.
- Grant. "Our Common Birds." Published by Charles Scribner's Sons. Price \$1.50.
- Holland. "Butterfly Book." Published by Doubleday, Page & Co. Price \$3.00.

- Hornaday, W. T. "Taxidermy." Full, authoritative treatise on the art of taxidermy. Published by Charles Scribner's Sons. Price \$2.50.
- Jordan, D. S. "Manual of Vertebrates," a technical work, describing all the beasts, birds, reptiles, amphibia and fishes in Eastern North America. Published by McClurg & Co., of Chicago. Price \$1.75.
- Keeler. "Our Native Trees and How to Identify Them." Published by Charles Scribner's Sons. Price \$2.00.
- Lounsbery. "Guide to the Trees." Published by F. A. Stokes Co. Price \$2.50.
- Lounsbery. "Guide to the Wild Flowers." Published by F. A. Stokes Co. Price \$2.50.
- McCook. "Tenants of An Old Farm." Published by G. W. Jacobs & Co. Price \$1.50.
- Merriam. "Birds Through an Opera Glass." Published by Houghton, Mifflin & Co. Price 75 cts.
- Merriam, C. H. "Mammals of the Adirondacks." A work giving life histories of all the beasts or mammals in the Adirondack region. Without descriptions. Published by Henry Holt & Co., of New York. Price \$2.00.
- Miles. "Natural History." Published by Dodd, Mead & Co. Price \$1.50.
- Miller. "Bird Ways." Published by Houghton, Mifflin & Co. Price \$1.25.
- Miller. "In Nesting Time." Published by Houghton, Mifflin & Co. Price \$1.50.
- Miller. "Little Folks in Feathers and Fur." Published by E. P. Dutton & Co. Price \$2.50.
- Parkhurst. "Bird's Calendar." Published by Charles Scribner's Sons. Price \$1.50.
- Roberts, Charles G. D. "The Heart of the Ancient Wood." Published by Silver, Burdett & Co. Price \$1.50.
- Rowley, Jno. "Art of Taxidermy." An excellent guide. Published by Appleton & Co. Price \$2.00.
- Seers. "Fur and Feather Tales." Published by Harper Bros. Price \$1.75.
- Seton-Thompson, Ernest. "Wild Animals I Have Known." Published by Charles Scribner's Sons. Price \$2.00.

ANIMALS

THE HORSE

ASIDE from his usefulness, we admire the Horse for his beauty, his patience and his strength. What a beautiful creature he is as he gallops about the pasture, with flowing mane and tail, or as he comes to be fed or petted, his head held high, his ears pricked up, and his large eyes full of expression!

Breeds of horses differ from one another as much as do races of men. Some kinds are especially prized for their beauty and their speed; others for their great strength and powers of endurance; and still others for their docility and intelligence.

We have race-horses, horses bred and trained for pleasure-driving alone, or for riding to saddle. In the latter class are the horses known as "hunters." These are fine courageous animals trained to leap ditches and jump fences. They carry the hunter over plowed fields and through brush and mire for long distances without faltering or tiring. One of the horse's greatest uses, however, is in drawing heavy loads. There is a very large, strong breed of horses called Percherons. You see them drawing coal-wagons, loads of stone or iron, or great bales of merchandise-burdens far beyond the strength of the light-limbed trotting or driving horses. They are sturdy, if not graceful creatures, with heavy legs and large hoofs, and they do valuable work for man, even though they cannot trot swiftly and jump fences.

THE DONKEY

THE Donkey is so nearly related to the horse, that scientists have given him a Latin name which means "half horse." His average size is much smaller than that of a horse, though in some of the most improved species, he grows quite as large. In place of the pretty flowing mane of the horse, he has a short one that stands erect, and his tail is covered for most of its length with short hairs like those on his body, and has a tuft of long hairs on the end. His ears are among his most distinctive features.

In his natural wild state he is a fleet-footed, well-formed animal, and in both swiftness and endurance compares favorably with the fastest horses. In Persia he is hunted as game, and the flesh is esteemed as a special delicacy.

THE COW

WE MAY not feel so much admiration for the Cow as we do for the horse. She certainly is not so active and graceful, nor does she seem to take as much interest in the people about her, as the horse does. Yet the Cow is one of the most useful animals given to man.

While there are many breeds of Cows, or Cattle, there is less difference between them than between the breeds of horses. Cows are valued first for their milk-producing qualities. The Jersey and Guernsey Cows give very rich milk. They were first brought to America from the islands of Jersey and Guernsey in the British Channel. The Alderneys give large quantities of milk that is especially rich in butter. The Shorthorns, or Durhams, and the Galloways are some of the best beef-producing breeds. The Galloways are black, shaggy creatures that remind one of Buffaloes.

The wild Cattle of the Texas plains and other parts of the West are descended from herds that were brought from Spain by the early explorers of this continent.

THE DOG

THE Dog is the most affectionate of the domestic animals. The ape is more nearly like man in the form of his body, but the Dog is more nearly like him in the love, devotion, obedience and forgiveness of injury which he shows to those who care for him.

It is thought by some that the Dog was once a wild animal, like the skulking jackal, the fierce wolf or the cunning fox; but when we think how gentle and kind our Dogs are, we wonder whether this can really be true. At any rate we know that for centuries the Dog has been a domestic animal, and a faithful friend of man. The Greek poet, Homer, who tells of the wanderings of Ulysses, the King of Ithaca, describes the delight of the old Dog Argus, when his master returned after many years. Even in the Bible the Dog is mentioned as a household animal.

While we have only a few breeds of horses and of cattle, we have scores of kinds of Dogs. Some kinds are more intelligent than others;





some are good watchdogs, though poor hunters; still others are excellent hunters, but of little use as watchdogs; yet all show great devotion to their masters. Even when beaten and starved, the Dog clings faithfully to the person to whom he feels he owes obedience.

Most of us keep Dogs for the pleasure of their company, but they are of practical use in many ways. In Holland, strong Dogs are harnessed to little carts in which they draw cans of milk through the streets. The Eskimos harness their Dogs to sledges, and in Newfoundland Dogs are often used for drawing loads.

In Scotland the shepherds have large flocks of sheep to tend. They are poor men and cannot hire help, so they train Dogs to do it. Their intelligent Collie Dogs watch the sheep even better than men or boys would do. They seek out sheep that have strayed from the fold, and drive them safely home. As a herd-dog, the Scotch Collie has long been one of man's best servants.

A good Shepherd Dog is exceedingly useful on a farm. He is often so trained that he goes to the pasture and drives the cattle to the barn as carefully as any man could do it.

The Dogs that are used for hunting are very intelligent. A pointer will find a bird in a bush, and then, with head and tail out straight and fore-paw bent, remain perfectly still until his master gives him a signal to "flush it," that is, make it fly so that he may shoot. If the bird is either killed or wounded, the Dog brings it to the hunter. The work of the Dog in bringing the game to the hunter is called "retrieving."

The fox-hound will follow the trail of the fox over hills and valleys all day long; and when he finds the scent again, after losing it, he utters a loud mournful bay or cry.

The bloodhound, which has a wonderful sense of smell, is especially alert in following man, and is sometimes used for tracking escaped criminals.

Whippets are Dogs which are trained to run races on a track. They are held in check until the word to go is given, and when released they set off at great speed toward the goal.

The wonderful Dogs of St. Bernard have been famous for many years. These Dogs were bred and trained by the monks in a monastery in the Alps. They were sent out to find persons who had lost their way in the snow. On finding a bewildered traveler, they would guide him to the monastery, where he could obtain shelter; or, if they found him unconscious in the snow, or unable to travel, they would run barking back to the monastery, and lead the good monks to the place where the traveler lay.

Another service for which we have to thank our dog friends is that of hunting out and killing rats. The Skye Terriers and the English or Black-and-tan Terriers are the best of these rat catchers. They have very keen scent and can "smell a rat" when no man would suspect its presence. A good terrier will dig into the ground to find the rat that has hidden in its hole, and when he catches it, will hold it in his mouth and shake it to death.

The Skye is a shaggy Dog, while the Black and Tan has short, close hair, and, as his name indicates, his coat is black, marked with tan-color. This marking is usually very distinct, and consists of a spot of the lighter color over each eye, the lining of the ears, the muzzle and the under parts of the body, with more or less of the same color down the inside of the legs.

The Newfoundland Dog also is famous for the intelligence he shows in saving human life. He will spring into the water to rescue a drowning person, and is generally successful in his attempt.

Dogs like the Mastiff and Great Dane are noble-looking and noble-minded creatures. They are large and strong, and are faithful watchdogs. When one of them is left in charge of a house or other property, it is not safe for a stranger to interfere with it. They are not disposed to be quarrelsome, however, and to their friends they are pleasing companions.

THE CAT

FOR more than three thousand five hundred years, Cats have been the pets and companions of men. The first Cats of which we know were those of the early Egyptians. Seventeen hundred years before Christ was born, the Cat was regarded in Egypt as a sacred animal, and the work of painters and sculptors remains to tell us of the proud distinction in which the people held him. There was a Goddess of Cats, called Pasht, and so highly were these animals regarded, that when they died their bodies were embalmed, like those of their owners. Within recent years, thousands of mummies of Cats have been discovered in Egyptian tombs.

The Cat is a pretty, graceful creature. He is very dignified and is quiet and slow in his movements, when he has passed the days of kittenhood. A Cat does not ordinarily run, except to escape danger or to capture his prey.

Men who have studied the structure of animal's bodies, tell us that the Cat is more perfectly formed for his purpose in life, and is more powerful in proportion to his size, than any other quadruped. It is

not hard to believe this, when we think of the great strength and agility of lions and tigers, which are only Cats of larger size.

A Cat's paw is full of interest, if we examine it closely. Ordinarily, it is soft and velvety, but if we press it gently, out come the sharp white claws that are concealed beneath the fur. The Cat has muscles with which he can push out or draw in the claws, at will. The dog's claws are quite different. They are blunt and strike the floor when the dog walks, so that they make some noise. But the Cat draws in his claws when he walks, so they may not touch the floor, and he has a soft ball on the bottom of his feet, to make his tread noiseless; for nature has taught him to creep very softly near his prey, that he may not frighten it, before it is too late for it to escape.

The Cat's eyes are so formed that he can see well in places that seem to us quite dark. Our eyes have round holes in the center, which we call the pupils, but in the Cat's eye the pupils are narrow slits. When the light is very bright, the narrow slits become mere cracks, letting in very little light, but in the dusk the slits widen and the pupils of the Cat's eyes grow large and round. This lets in all the light there is.

The Cat has the delicate feelers which we sometimes call "whiskers," to guide him when he is in absolute darkness. The slightest touch on these feelers tells him to go cautiously, so he makes his way safely in dark places.

THE SHEEP

THE Sheep has lived in both the domestic and wild states from the earliest times. The Mountain Sheep, or Bighorn, described under the head of Wild Animals as a native of the Rocky Mountains, is the only wild sheep found in our own country. There are other varieties found in the different mountainous countries of other parts of the world

Among the domestic breeds of our country, are the Merino, the Cotswold, the Southdown and the Shropshire. The Merinos have shorter, more closely matted wool than many others, while the wool of the Cotswold sheep is long and shaggy.

The flesh and the wool of the Sheep were highly prized by the people of Bible times. Sheep were accounted an important part of the property of almost every man of wealth. The great number of sheep raised made the occupation of the shepherd a very common and necessary one. David, King of Israel, and author of the Psalms, was a shepherd. The birth of Christ was announced to shepherds,

while they were tending their flocks by night. At that time the Sheep, or its young, the Lamb, was regarded as the symbol of innocence, and as it was the custom to make burnt offerings, a Sheep or a Lamb was usually chosen for the sacrifice.

Formerly the Sheep was raised chiefly for food and not so much for his wool, although coats and other garments were made from the entire skin.

THE PIG

OUR domestic Pig is the result of much careful attention on the part of breeders. The Wild Boar, of Europe, and the Razor-backs, or wild hogs, of the United States, have slim bodies, long legs and long snouts that give little promise of the present perfection of form of the highly improved breeds. Berkshire, Poland-China, Chester-White, Suffolk and Essex are some of the popular varieties of the domestic Pig. The great corn-producing section of the United States is naturally the center of the pork producing industry.

The Pig is a sociable animal, among its own kind, but does not seek companionship with man. His intelligence is of a high order, for he may be taught to do tricks in the circus, similar to those done by trained dogs and horses, but naturally he has the selfish and sullen disposition of his wild ancestors, and like them sometimes has long tusches with which he can inflict serious wounds, when attacked. From his long snout and sensitive nose, we should expect him to have a keen sense of smell, and so he has, for he can scent truffles under the earth and root them out, when men or dogs could not find them without his aid. In countries where truffles are much sought as a table delicacy, pigs are sometimes kept solely for the purpose of hunting them.

THE GOAT

MANY varieties of wild Goats are found in the mountainous countries of Europe and Asia. They are sure-footed animals and make long leaps from rock to rock with the greatest ease or certainty. The hunter is often unable to follow them to the dizzy heights where they take refuge from pursuit.

It is not certain from which of the wild breeds the common domestic Goat has come, though the Persian wild Goat, or Asiatic Ibex, appears to be his nearest wild relative.

The Ibex is found in the mountains of central Asia. He is smaller than the true Ibex of Europe but much larger than our

common Goat, and has long, curving horns which grow to the length of three or four feet.

The flesh of the Goat is good for food, though its flavor is not so mild as that of beef and lamb. At one time it was the flesh chiefly offered in the markets, so that those who sold meat were called goat-fleshers, that is *buccarius*, whence our word butcher.

The Goat's milk is very rich — much richer than cow's milk. It is considered to be a very healthful food, and for this reason it is often given to young children. The skin of the animal is in great demand for use as leather. Leather made from the skin of the young Goat is very fine in quality and serves many useful purposes; of this the familiar "kid gloves" and "kid boots" are important examples.

In some countries of Europe, the poorer people depend largely upon the milk and flesh of the Goat for food. These creatures, like sheep, can live on scanty herbage, and in the mountains, where cows could not be kept for lack of sufficient feeding-ground. Goats find plenty to eat and repay the peasants well for the care bestowed. Robinson Crusoe had on his island a herd of Goats, by which he was well provided for, as he got from them meat to eat as well as milk to drink and skins for clothing.

The hair of some species is very valuable for weaving into cloth. The long soft hair of the Cashmere Goat is especially prized for making shawls, and the beautiful silky hair of the Angora Goat is used in the manufacture of many fine cloths, and in its natural state is a very pretty ornamental fur.

THE DEER

THERE are many kinds of Deer, and they are found in all the continental parts of the northern hemisphere and South America.

They were formerly found in all parts of our own country and are still to be seen even in states as thickly populated as Massachusetts. As the fiercer wild animals have been killed off and driven to the mountains, the Deer has had a better chance for life. In Vermont, where Deer are protected by game laws, they have increased in number and have become so bold that they often leave the woods and feed in the farmers' grain fields, thus doing no little damage to growing crops.

Deer vary in size according to their species. The common kind, which we sometimes call the Virginia Deer, is about as tall as a calf, is very slender and graceful, and has long, delicately formed legs. The Fawn, or young Deer, has a spotted coat, but as he grows older

this changes to a dark solid color, which becomes yellow and white on the underparts. The food of these animals is acorns, nuts, fruits and grass in summer, and the tender buds and twigs of bushes and trees in winter.

The male Deer or buck has horns called antlers, which vary greatly in size and shape among the different species. In the common Deer they are from one to two feet in length, and have many branches or prongs growing from the main horn. All Deer shed their antlers once a year, and new ones grow out to take the places of those cast off.

When frightened, the shy creature darts away at great speed, and will run for miles through the forest with his head thrown back. But when followed by dogs for a considerable time he is often overtaken and brought to bay. He makes a brave fight, however, and strikes at the dogs with his hoofs and antlers, often injuring or killing some of them. It sometimes happens that a wounded buck, maddened by pain, will turn on the hunter, and unless the hunter can find refuge behind some friendly tree, he may be roughly used, or even killed.

Deer are sometimes hunted by stalking, as in the highlands of Scotland, where the country is too rough for horses. The hunter follows noiselessly on the animal's track, and is often forced to crawl a long distance in order to get within gunshot, for Deer are suspicious creatures, and while feeding often raise their heads and look about to see if an enemy is near. They are also very keen of scent, and if the wind blow from the direction of the hunter, the animal detects the presence of a human being, even though the two are a long distance apart, and instantly takes flight.

Deer are good swimmers and often swim across a pond or lake two or three miles in width. They like water and go frequently to near-by streams to drink. They are also very fond of salt and need it occasionally as a tonic.

These animals may be tamed, and their fear of man may be so far overcome that they will eat from his hand and come running to the gate of their inclosure when they see some one approaching, in the hope of getting a piece of sugar or some other dainty. But they start in fright at the least threatening motion. They never become friendly with dogs, which are as eager to follow and worry Deer as they are fond of chasing cats.

The Moose is the largest of the Deer family. He commonly stands over six feet in height at the shoulder, and his enormous antlers occasionally weigh as much as fifty pounds, and spread to a width of six feet. This noble animal is found only in the colder climates,

rarely farther south than Maine and Canada. In early winter his coat is black, and later in the season it turns to gray. Unlike other Deer, he feeds principally on leaves and shoots of trees.

He is a long-legged animal and can travel easily through one or two feet of snow, but when it becomes deeper than that, several Moose join with each other and form what is called a "yard." This is a place in the deepest part of the forest, where the animals tramp down the snow for a considerable space until it is hard. A wall of untrodden snow is thus left to form the sides of the yard, but is also found at many places inside the yard. They also make narrow paths to other places in the forest, where they go to feed. Moose spend the entire winter in these yards, and, with a solid floor under their feet, do not fear the wolves which often come to attack them. The Moose can fight nobly with his hoofs and antlers, and, when wounded, will attack a man and trample him to death, if he is unable to escape.

The Wapiti, or American Elk as he is called, is another large Deer which formerly was found throughout this country, but has now been driven to the far western states. He is a magnificent creature, much larger than the common Deer. His branching antlers spread to a width of four or five feet. They are more graceful than those of the Moose, and give his head a noble appearance.

The Caribou is another large Deer with immense antlers. He is found in Canada and in the forests of Maine. The Caribou has a greater advantage over the hunter than the Moose has, in that he is able to run swiftly over the snow. The Moose sinks deep in the snow at every step and is soon overtaken, but the Caribou has large hoofs that spread apart, and limber hind legs that help to bear his weight, just as the rabbit is supported by the lower half of his hind legs. This enables the Caribou to travel with little difficulty over the snow, as well as across swamps that a Moose could not pass.

The Reindeer is a species of Deer that man is able to tame and apply to his own uses. He is closely related to the Caribou, and is found only in very cold countries, like Norway, Lapland and Siberia. Like other members of the Deer family, he feeds on grass, leaves and twigs, but he also eats moss and sea-weed. In winter he scrapes away the snow that covers the ground and feeds on the moss and lichens that he finds underneath. The Reindeer is as valuable to the Laplander as the camel is to the Arabs, or as the horse and the cow are to us. Both the flesh and the milk of the animal are used for food, and his skin is used for making clothing and harness. The Eskimo also use it for covering their tents. When harnessed to a sledge, the Reindeer can travel over the snow very swiftly, and he is

able to maintain for many hours a speed equaling that of a horse. The Reindeer has a thick, rough coat and endures the severest cold without hardship.

In Asia is found a pretty little Deer, no larger than a goat, which is called the Musk Deer. He has no horns, and looks very like the females of other members of the Deer family, except that he has two long tusks sticking down like those of a walrus in miniature. The Musk Deer is provided with glands from which we obtain the perfume called Musk.

The flesh of the Deer, called venison, is much sought after for use on the home table, as well as in the hunter's camp. The tanned skin makes a fine, soft leather, which is used for many purposes by the Indians. They make from it moccasins, leggings and jackets, which the Indian women ornament with bead-work. When Morgan's famous riflemen went from Virginia to join the Continental army at Cambridge, in 1775, their only uniform was a deer-skin suit.

The antlers of the deer are not smooth, like the horns of a cow, but have a rough surface. They are very hard and are much used in making knife-handles and other useful articles.

ANTELOPES

THE Antelopes are neither goats, sheep, nor oxen, although they have characteristics of all the three; yet are more beautifully formed and more graceful in their movements than any one of these. In their swiftness and gracefulness, some of the Antelopes are like deer. They are the most timid of all animals, and are able to run very swiftly, so that they can escape from any of their foes, unless they approach by stealth and surprise them. The true Antelopes resemble the goat, in that they have long, slender horns, which are sometimes straight, and at other times curved in graceful lines, but never branching like the antlers of a deer. They have slender legs, with small hoofs and a slender body.

There are many species of Antelopes, having different names. Many are found on the wide, open plains of South Africa. The Eland is the largest of the African Antelopes. He is larger than a cow, while others again are no larger than a hare.

The Antelope known as the Chamois, from which the familiar chamois skin is obtained, is a native of the mountains of Europe. He displays wonderful agility in climbing over the rocks in the most dangerous places.

In different parts of Asia, Europe and Africa, other kinds of Antelopes are found, and in our own country we have the Pronghorn Antelope and the Rocky Mountain Goat, which belong to the same family. The Pronghorn Antelope has been so steadily hunted that he has almost disappeared from the United States, but the Rocky Mountain Goat, is still found among the snow-crowned ranges of Idaho, Montana, British Columbia, Alaska and other parts of the far Northwest.

One of the characteristics of the Pronghorned Antelope of America is great curiosity, and it is this which often makes him a prey to the hunter, when, by the use of his fleet legs, he might easily escape. A man lying face down in the grass and waving his heels in the air will attract the attention and excite the curiosity of these timid creatures, so that in order to see what those waving legs mean, they will approach within gunshot.

In Africa, the natives sometimes cover their bodies with the skin of the ostrich, and thus are able to approach near enough to the herd of Antelopes, to shoot one or more of the animals before the herd takes alarm. Antelopes eat grass and tender shoots of trees. They keep as far from civilization as they can, and soon die if held in captivity, without opportunity to run about freely.

All of these beautiful creatures fear man, and well they may, for he has hunted them with so little mercy that many species which were common at one time are nearly extinct. While their skins have some value, and their flesh is good for food, thousands have been shot solely because the hunter wanted their heads and horns to mount as ornaments for his home or clubroom. Even in Africa the splendid Waterbuck and Sable Antelope are becoming rarer year by year, and it is probable that in a few years they will have entirely ceased to exist.

THE ROCKY MOUNTAIN SHEEP

THE Rocky Mountain, or Bighorn, as he is often called, is, as his name indicates, one of the largest of American wild animals.

His home is in the Rocky Mountain region of British Columbia and the United States. Before every train carried to the West hunters armed with high-power rifles, he was to be found in great numbers throughout the hilly and mountainous regions beyond the Missouri River.

The size and stateliness of the animal command the admiration of all who see him. He has a head like that of a sheep, with huge, curving horns which sometimes reach a length of four feet, and measure

seventeen and a half inches around the base. His body is larger than that of the common deer, since he averages about six feet in length, and three and a half feet in height at the shoulder. He weighs from three hundred to three hundred and fifty pounds. He has a stubby, upturned tail, about two inches in length. A fine wool grows close to the skin of the Bighorn, and he has an outer coat of hair like that of the deer. This hair is short in summer, and becomes long, thick and rough in winter.

The Mountain Sheep is very shy, and seldom permits a hunter to approach within shooting distance. He climbs the steepest mountains, and bounds gracefully and easily over chasms and boulders, alighting safely on narrow ledges of rock. He will stand for hours on some mountain peak and watch the movements of men or animals far below. All sheep, even our domestic variety, like a hilly country, but the rougher and more mountainous his home is, the better is the Bighorn pleased with it. The animal descends to the valleys early in the morning, to feed on the tender grass. In the middle of the day he returns to the mountains, and again descends at sunset to continue feeding.

There was formerly a superstition, which is no longer credited by sensible people, to the effect that the Bighorn could leap from great heights, and by alighting on his horns, rebound, and regain his feet without injury. The belief in this idea was probably based on the fact that the Bighorn takes long leaps and that his great horns are often found to be badly splintered. We know, however, that this is the result of his battles with other Mountain Sheep, for he is brave and determined, and even man finds him a dangerous antagonist in a close encounter. With his great horns, he can knock down an enemy, or hurl him over a precipice.

The flesh of the Mountain Sheep is said to be the most delicious meat obtained from any animal in the West; but the hunter may creep from crag to crag for hours, without being able to obtain even a shot at this sure-footed and agile creature, so that it is but seldom his flesh goes to form a part of the camp dinner.

THE AMERICAN FOX

“**S**LY REYNARD!” we call him; and hundreds of stories and poems have been written, and hundreds of paintings made, which have for their subject this crafty little fellow, who is one of the best known of the wild animals. He is a member of the dog family, and you will see that his head is much like that of the dog,



FROM COL. MR. F. KAEMPFER

MOUNTAIN SHEEP.
1/10 Life-size.

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NOTICE.

HOW TO OPEN A BOOK.

From "Modern Bookbinding."

Hold the book with its back on a smooth or covered table; let the front board down, then the other, holding the leaves in one hand while you open a few leaves at the back, then a few at the front, and so on, alternately opening back and front, gently pressing open the sections till you reach the center of the volume. Do this two or three times and you will obtain the best results. Open the volume violently or carelessly in any one place and you will likely break the back and cause a start in the leaves. Never force the back of the book.

"A connoisseur many years ago, an excellent customer of mine, who thought he knew perfectly how to handle books, came into my office when I had an expensive binding just brought from the bindery ready to be sent home; he, before my eyes, took hold of the volume and tightly holding the leaves in each hand, instead of allowing them free play, violently opened it in the center and exclaimed: 'How beautifully your bindings open!' I almost fainted. He had broken the back of the volume and it had to be rebound."

although his snout is longer and more pointed. His sharp teeth are like the dog's, and he seizes his prey in the same way.

There are many varieties of Foxes. The Red Fox is the European kind. The American Red Fox is found in the northern states and in Canada. In the South the Gray Fox takes his place. Then there is in the West a tiny animal called the Kit Fox, whose fur is gray on the back, yellow at the sides, and white underneath. The Red and the Gray Foxes are the only ones hunted in this country.

The Fox's tail is his chief ornament, and hunters prize it as a trophy of the chase. It is long and bushy, so much so that it sometimes sweeps the ground as he walks, and it serves him as a rudder when he is jumping or running swiftly.

Time and money are lavishly spent in breeding horses whose chief use is to carry the hunter over the fields and hedges, in pursuit of the nimble Fox; and for every Fox to be found in the more thickly populated parts of the country, there are at least two dogs that have been bred and trained for the sole purpose of following his scent and running him down.

A few people have attempted to make us believe that the Fox is not so cunning as he has been believed to be, but they must be grumblers who dislike to see the deserving get credit for cleverness. Very often the Fox is clever enough to escape from the hunter and dogs, although sometimes he is killed after a hard run for his life.

In the South, the hunters ride on horseback after the hounds. Foxes follow the same paths in going about the country and these paths are called "runways." In some parts of the North the hunter looses his Fox-hounds, and taking his station near a runway where he expects the Fox to pass, waits until the dogs shall drive the quarry past him, when he shoots him down, but in Europe it is considered a shameful thing to shoot a Fox.

The animal exhales a strong odor, which often lies for an hour or more upon the ground over which he has passed, and along this trail of scent the keen-nosed hounds will follow for hours. When dogs are after him, the Fox has an opportunity to show his cunning, for he knows very quickly, when he hears the yelp of his pursuers, that he is being hunted. Sometimes he runs to the top of a hill, and then, leaping over a bush on the summit, turns quickly on his own trail and runs back in the direction from which he came. The eager dogs follow the trail to the bush, leap over and go pell-mell down the farther side of the hill. Not until they have nosed about for some time do they understand that they have lost the scent and must go back to the bush to find it. Meanwhile the Fox, running at full speed, has gained a start, and may be able to get away safely and

baffle the dogs in their pursuit. Foxes know that their strong odor gives the dogs their scent, and when pursued they will sometimes run to a heap of manure and roll about in it, so that when they start off again, the scent of the animal is lost and the dogs do not know which way to go. Another of Reynard's tricks is to run along by a wall and then, leaping upon it, trot along the top for some distance before he returns to the ground. This also baffles the dogs and may give the Fox a chance to get away from them.

He is very suspicious of all kinds of traps, and will often pass by the most tempting bait, when he suspects that a snare is concealed beneath it. If caught in a steel trap, however, he will twist and gnaw off the imprisoned leg and make his escape on the other three rather than remain and be captured. The fur of the Fox is fine and soft and that of the Silver Fox, which is a variety of the ordinary Fox, is especially valuable. Reynard's flesh is not good for food.

The Fox makes his home in a burrow in the ground. He does not always take the trouble to dig a hole for himself, but uses the abandoned den of a badger, or woodchuck. Reynard is seldom seen out of cover in the daytime, unless driven forth by dogs, but at night he goes in search of food.

He eats rabbits, mice, birds, eggs and other good things. He is fond of fish, and catches them very cleverly by waiting patiently beside a stream until a plump trout shows himself in the water, when, with a quick leap, he snaps up the fish and carries it away to feast on at his leisure. He hunts birds, too, and many a plump quail or partridge becomes his prey. He catches rabbits and even attacks young lambs. His fondness for poultry and eggs earns for him the cordial dislike of the farmer. No matter how securely the hens and ducks may be shut up in the poultry yard, Reynard will, if necessary, burrow under the fence and seize upon a chicken or duckling, with which he hurries away in triumph. As he likes fish, flesh and fruit, he shows that he appreciates most of the good things that we ourselves eat.

BEARS

BEARS of one sort or another are found in wild or thinly-settled countries throughout the continental part of the northern hemisphere. They make their homes in the hot countries of the equator, the regions of the temperate zone, and even within the arctic circle. There are many different kinds, however.

The most ferocious and most dreaded Bear in the world is the Grizzly, which is found in the Rocky Mountains. No animal of the

western hemisphere compares with him in strength and ferocity. The Grizzly has a long, tapering snout and small, evil-looking eyes which give him an unpleasant appearance. He has a heavy, slouching gait, and does not look as if he could move very swiftly; he can, however, run with remarkable speed.

The Grizzly is the only bear that will always attack a human being at sight. Many a man who has gone out to hunt the Grizzly Bear has had the tables turned and found that the bear was hunting him.

With his powerful forepaws, which are armed with long, sharp claws, the Grizzly can tear a man's scalp loose at one blow, and his vicious bite inflicts a terrible wound. When infuriated by wounds, the Grizzly becomes a terrible antagonist. Even though struck by bullets and torn by dogs at every step, he will rush upon the hunter, in a last desperate effort to strike one crushing blow at his enemy, and oftentimes he is able to close in upon him so that the latter cannot use his rifle, but must depend upon his knife to kill the animal before the Grizzly kills him.

Like other bears, the Grizzly is fond of honey, berries and grain; but he also eats young animals and fish, and will kill and feast upon a cow or a horse. The mere track of the Grizzly Bear in the soil is a sufficient warning to other animals to beware. Not only the timid deer, the elk, the fox and the wolf, but even the mountain lion and the wildcat fear the terrible Grizzly and avoid him at all times. As the lion is king of the desert, so the Grizzly Bear is monarch of the mountains, for only man is bold enough to attack him.

The Indians esteem it a strong proof of a man's courage that he has killed a Grizzly Bear, and they make necklaces of the bear's claws, which they wear about their necks and which they exhibit with pride as a proof of their bravery.

The Black Bear is the variety most common in the United States, and while still found occasionally in Maine and northern New Hampshire, is more often seen in the sparsely settled mountainous sections of the West. He is a powerful animal, but, unlike the Grizzly, he seeks no quarrel with man, and unless pursued and wounded, or famishing with hunger, he is not disposed to attack human beings.

He has a great liking for blueberries and for honey, and will climb trees and be at great pains in order to rob a bees' nest. He is a daring thief, and will come down from his den on the mountain to steal a young pig or a lamb from the farmer. A bear cub can be brought up to be quite tame, and may be taught to do many tricks.

The Polar Bear, whose home is in the regions of ice and snow, is a large animal which often measures ten or eleven feet in length and

weighs nine hundred or a thousand pounds. His principal food is the flesh of the seal or the walrus, which he attacks and kills, and fish, which he is expert in catching. The Polar Bear moves very swiftly over the snow and ice, and his white coat makes it possible for him to lie in wait for his prey, or approach near to it, without being noticed. He will fight like other bears, when compelled to do so, but if unmolested will not, unless very hungry, attack a man.

In other countries, we find different species of bears, but all have certain characteristics in common. They live in dens or caves, to which they retire during the winter season, if there is one, and remain there asleep, or in a torpid condition, until the warmth of the spring brings them forth again, very hungry and eager for prey.

Some boys in Maine who were going across lots, one winter afternoon, were overtaken by a snowstorm and compelled to seek shelter. They managed after a time to find their way to an old barn or shed which afforded them some protection from the storm, and as it gradually increased in violence, it became evident that they would have to spend the night there. The wind blew the snow in upon them, and they suffered greatly from the cold until one of the boys suggested that they loosen a board in the floor and seek shelter under the barn, where the wind could not reach them. This they did and soon were snugly housed. It was dark under the barn floor, but they did not mind that. They noticed a strong animal odor in their new quarters, and one of the boys, moving a few feet away from his companions, found himself resting upon a huge bundle of fur. The fur proved to be the coat of a large bear which was having his winter sleep under the barn. Roused from his torpid condition, the bear stirred and growled and the boys lost no time in climbing back to the upper side of the barn floor, where they remained shivering until daybreak. When morning came they made their way home. After getting warmed and having breakfast, they returned to the barn with their guns and drove the animal from his refuge. The boys secured a fine bearskin, and thought themselves fortunate indeed to have escaped so well.

The bones in the bear's hind legs are shaped much like those of a man's leg, and this enables him to stand erect and look about him more easily than when he is on all-fours. When attacked at close quarters, he raises himself on his hind legs. The dogs rush up to tear him, but he crushes them in his powerful embrace, and if the hunter comes within reach the bear gives him a hug that may easily break the man's ribs.

The bear is remarkable for his "sweet-tooth," and besides honey, which he takes so much pains to get, he is fond of candy, cakes and

other confections. The animal's skin is valuable, and makes a warm robe for use in winter, as the long thick fur gives excellent protection against the cold. Bear's grease, which is obtained from the fat of the animal, is used as a dressing for the hair.

THE AMERICAN BISON

A DARK line on the edge of the prairie, growing wider from moment to moment; then a confused mass of moving objects; a cloud of dust; the confused mass comes nearer; now it is distinctly seen to be a great number of animals; a multitude of shaggy heads and waving tails; countless powerful beasts rushing on at great speed, and trampling under foot all that lies in their path;— what is all this? It is a stampede of American Bison!

Such a scene was common on the great prairies of the West twenty-five years ago; to-day we know what it was like only from the stories of old hunters who saw the Bison in his glory; for no such mighty herd sweeps across the prairie to-day or ever will again.

The American Bison, so often miscalled the buffalo, was the most magnificent feature of distinctively American animal life. He belonged exclusively to us as much as do Niagara Falls and the Mammoth Cave, which are wonderful things, to be seen only in America, but we hunted and exterminated him for the sake of gain, and now that we want him for the sake of nature, he is gone, and cannot be replaced.

The pioneers who first crossed the prairies of the middle West found the vast herd of Bison feeding upon the rich grass of the Mississippi Valley. They were amazed at the number of these animals, the like of which they never had seen before. For many years he furnished them with food and gave his skin to protect them from the weather. The native Indians had known him for generations—they could not remember when the Bison had not been with them.

Until thirty years ago, these animals continued to herd in vast numbers on the western prairies, moving farther westward year by year as the country became more thickly settled, and when the Union Pacific Railway was built across the continent, they divided into groups. The value of the Bison's skin had become known, and the railroad carried to the prairies hundreds of hunters who slaughtered the animal in great numbers, in order to obtain the skins which were sold in the East. Thus pursued by the hunter, the Bison fled from the vicinity of the railway, some turning northward, toward

Canada, and others moving to the south. In the three years, from 1873 to 1876, these animals were slaughtered in such numbers that hundreds of thousands of skins were taken.

By 1880 the Bison had become scarce, and to-day it is almost impossible to find them in freedom; no large herd exists anywhere on the face of the earth. A few Bison made their way into the Yellowstone National Park, in Wyoming, and there the government protects them; some were found until lately in Texas and in the wild spots among the Rocky Mountain ranges. A few are supposed to exist in other places, but as a conspicuous feature of natural wild life they have disappeared forever.

If you have an opportunity to see Bison in some zoölogical park, by all means do so, and study these wonderful creatures, for there is reason to fear that within the lifetime of persons now living the last one may be lost to us.

The Bison is not a buffalo, and should never be called by that name, for the buffalo has legs of equal length, long-curving horns and a coat but thinly covered with hair, while our American Bison has high foreshoulders, causing his back to slope to the rear, a shaggy mane covering the head and forequarters of his body, and short, round, up-curving horns. Moreover, the wild buffalo is not found in this country.

The Bison is a grass-eating animal and "chews his cud" like our domestic cattle. He was accustomed to follow the streams, preferring a well-watered country, and one of his amusements was "wallowing." A "buffalo wallow," as old hunters describe it, was the Bison's bathtub. The animal selected a shallow depression in the soil, where an inch or two of water had collected, and then, lying in the pool, rolled from side to side, digging up the earth with his horns and hoofs, and bellowing with delight. This rolling, or wallowing, would be continued for hours at a time, until the soil had absorbed all the water in the pool, and a bed of thin mud was formed. When the Bison emerged from the "wallow," his shaggy coat would be plastered with mud, which the sun soon dried. It is possible that the animal not only enjoyed his wallow, but found in the coat of mud an excellent protection against the stings of flies and other insects. Bull Bison would sometimes fight for the possession of an inviting wallow, the victor claiming it as his special property for the time being.

Before white men brought them the deadly rifle, the Indians killed the Bison with the bow and arrow. When a herd of Bison was sighted, the Indians, who hunted in bands, would separate and surround the herd. Then closing in on the frightened animals, they would circle about the herd on their swift Indian ponies, driving

their arrows into the Bison, up to the feather. They continued the slaughter until the entire herd was killed, except for a few animals that might be able to break through the line of horsemen and flee over the prairie. The meat thus obtained provided an entire Indian village with food for several days, and the skins were tanned and used as coverings for the tents, or tepees, in which the Indians lived, as well as for many other useful purposes, such as the making of lariats, or lassos, saddles and bridles for their horses, quivers in which to hold their arrows and buckets in which to carry water.

The white man did not need the Bison for food, but he quickly learned the value of the skin, which is very strong and durable. Bison or "buffalo" robes were very common throughout the country at one time, for when the general slaughter of the herds began, the great number of skins put upon the market made the price comparatively low, and even the poor man who needed a robe for his sleigh in winter could afford to own two or three Bison skins. Many of those who read this will remember sleigh-rides that were made more enjoyable because the riders were snugly tucked in under shaggy "buffalo robes." These skins were also made into coats which furnished almost as good protection against the cold as a bearskin.

The color of the Bison ranges from a dull yellow to black. It is always black on the head, and a great herd of Bison presented a picture of thousands of black heads, above which could be seen the brown backs, and also the short tails which the animals from time to time waved in the air. When he runs or charges on an enemy, the Bison lowers his great head.

On the plains, the Bison attended strictly to his own affairs and a herd would move past a camp, grazing within a few feet of men and horses without offering to molest either, if no offense was given them. Once wounded, however, the Bison became a dangerous creature. Bellowing with rage, his tail held up like a danger flag and his head lowered, he would rush upon the hunter, whose only safety lay in escape through the intelligence and speed of his horse. Awkward as he looks, the Bison can run rapidly for a considerable distance. To shoot at his head is useless, for the great thickness of the skull causes the bullet to glance off as from a rock. If the hunter is on foot, he must wait till the animal comes near, and then dodge and run for any shelter that offers. The Bison's eyes are so placed that, with his head lowered for a charge, he cannot see objects in front well enough to alter his course quickly. This defect in sight has saved the life of many a hunter, who had been thrown from his horse and was "charged" by an angry Bison before he could recover the rifle he had dropped.

The Bison moved from place to place, seeking feeding-ground where the grass was richest, and thus roamed over hundreds of miles of fertile country. His home was the whole wide sweep of prairie. Now, where he once fed on the tender grass, cattle range over the prairie, or the rich soil is under cultivation and produces millions of bushels of corn and wheat.

The opening up of the western country has brought us large gain, but every American must feel a sense of loss in the disappearance from the face of nature of our noblest wild animal.

THE TRUE BUFFALOES

THE true Buffaloes are best described as wild oxen, and their habits are much the same as those of ordinary cattle. They eat grass and tender plants and "chew the cud." The best known of the buffaloes are found in Southern Europe and Asia to-day.

Near relatives of this animal are natives of India and Africa. Their horns are long and pointed, and in the Cape Buffalo, the spread of the horns measures three feet. In the true or Indian Buffalo, the horns have a spread of four to five feet.

The Cape Buffalo is as large as the domestic ox, and an even more powerful animal. When wounded, he will turn and defend himself, and in doing this he shows no little cunning. While the hunter is following a wounded buffalo through the tall grass, the animal will sometimes go back and take a position near the track which the hunter is following, and then, without warning, charge upon him with great ferocity.

In the Philippine Islands, there is a small species of this animal called the Water Buffalo, which is domesticated by the natives and used for drawing carts.

THE COTTONTAIL, OR AMERICAN RABBIT

JUST look at Snap, the terrier! Why is he so excitedly digging away the earth from that opening in the ground?

Snap has discovered a Rabbit's burrow, and if we give him time he will make the hole large enough to enter and will go in pursuit of Bre'r Rabbit. But instead of letting him do that, we will call him away, and perhaps Bre'r Rabbit will come out and give an account of himself.

The Cottontail Rabbit is a very timid creature. His long ears enable him to hear the least sound very distinctly, and the dropping

of a leaf, or the slightest rustle in the bushes, will startle him. When he is frightened, he makes no noise, but remains perfectly still, or raises one little paw before starting away on a hasty run to a safer part of the woods.

The European Rabbit burrows in the ground and makes his nest at the end of a long tunnel. Where a number of Rabbit families have their burrows near each other, with connecting passages under-ground, we call the place a rabbit-warren. But our common Rabbit is the Cottontail. It is quite different and never forms warrens.

Wild Rabbits usually have a gray or brown coat, which is less conspicuous than the white or black fur that some of our tame Rabbits have. This coat, being so nearly like the ground and the leaves in color, enables the animal to move about without being so readily seen by his enemies. The Rabbit has long hind legs, or rather, he has very long hind feet. It is on these latter that he rests when he sits up and looks at us so sharply, wondering if any harm is coming to him. A lover of nature thus writes:

“We were riding through the woods, down in Virginia, one summer day, the horses walking slowly along the dusty road, when close by we saw a little brown Rabbit or Cottontail sitting up and watching very intently. We expected to see him dash away through the bushes, but perhaps he had never seen horses or people before, and so was not afraid. At any rate, he allowed us to pass very close to him, keeping his long ears pricked up and his head turned a little to one side, as if he were saying to himself, ‘What strange giants are these?’ We kept very quiet, so that he might not be frightened. But Master Roger, spying him, clapped his hands and cried out, ‘Oh, Brown Bunny! Papa! there’s Brown Bunny who ran away from Mr Wolf!’ Even then the little brown Rabbit did not stir, and looking back when we had gone beyond him, we could see that he was still sitting by the roadside, wondering who those people in the carriage were. We thought he was the bravest Rabbit we had ever seen, but perhaps he was a very young Bunny, who had run away from home and had not yet learned to be afraid.”

Nature has made the Rabbit a gnawing animal, like the squirrel. He has six front teeth, four in the upper jaw, of which only two show in front, and two in the lower. These teeth are very long, and are as sharp as knives. Their edges are formed like the edge of a chisel, and as fast as these edges are worn away by constant gnawing, the teeth grow out from the jaw, so that they are kept at the proper length all the time. In order that he may use his gnawing teeth to better advantage, the Rabbit’s upper lip is divided at the

center, so that it may not be in the way when the Rabbit wishes to gnaw anything, such as the bark of a tree.

It is with these sharp gnawing teeth that he does so much damage to young shade and fruit trees. A Rabbit enjoys sharpening his teeth upon a tree and sometimes strips the bark from young trees as high as he can reach all the way around the trunk. The Rabbit often does this when his other kinds of food are hid in the snow. He is not satisfied to do this with one or two trees, but will chisel the bark from a dozen or fifteen trees in a single night. Sometimes he eats the bark, but at other times he seems to strip it off simply because he enjoys the exercise, and likes to get a fine edge on his teeth. The owner of the trees does not enjoy this so much as the Rabbit does, especially if they are valuable young fruit trees.

Cabbages, lettuce, carrots and other green vegetables are favorite food with the Rabbit, though he eats grain too, and often does much mischief to the farmer's crops. The Rabbit has many enemies, such as the weasel and the mink, which make their way into his burrow, and give him a fatal bite. Then there are eagles and large hawks, which pounce upon him and carry him off to their nests.

He has no means of defending himself, so must depend for protection upon his cunning in hiding or upon his fleet foot to carry him out of reach of danger. The natural provision for his safety is that he sleeps with his eyes open, and his enemies cannot take him unawares. The Rabbit has a keen sense of smell. You must have noticed how his little brown nose is constantly sniffing at everything about him, and he also has "whiskers," which help him to find his way underground or in the dark.

The European Rabbit, from which our tame Rabbits come is noted for the rapidity with which it multiplies. In Australia, where it was introduced some years ago, the species became such a pest that the government offered rewards to persons who would suggest the best means of getting rid of them, for extensive crops were being destroyed and the farmers were in danger of being impoverished. Just as he girdles trees for the sake of sharpening his teeth, or for amusement, the Rabbit will bite into and destroy hundreds of growing plants which he cannot eat; and he is so mischievous in this way that the farmers in Australia are compelled to hunt and kill Bre'r Rabbit without mercy.

Tame Rabbits are gentle creatures and their coats are often very handsome, some being black and white and others all black or all white. The proper way to lift a Rabbit is by his long ears, which are very strong, and at the same time he should be supported underneath with one hand. To make up for having such long ears,



From col. Chi. Acad. Sciences.

GRAY RABBIT.
 $\frac{1}{2}$ Life-size.

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the Rabbit has only a stub of a tail. In our wild Rabbits these tails are covered below with white, fluffy fur, from which they get the nickname Cottontail.

The Rabbit is sold in great numbers for food, and excellent food it is. Many people make their living by hunting wild Rabbits, which they sell in market, and others do even better by carrying on Rabbit-farms, where they raise the tame or European Rabbit as a farmer raises pigs. Rabbit-skins are sometimes-used, in place of the more expensive skins of other animals, in making fur goods, and the hair of the animal is also used in making felt. There is a species of these animals called the Angora Rabbit, which has long hair like the Angora cat, and this is combed from the animal and sold for wool.

THE AMERICAN OR NORTHERN HARE

THE Northern Hare is at first sight much like the Cottontail Rabbit. But there are several points of difference between them.

The Hare is larger than the Rabbit, and does not burrow in the ground as the latter does, but makes his home in a "form" as it is called—a snug nest of leaves and twigs, which rests on the ground in some spot where it is surrounded by bushes.

The hind legs of the Hare are even longer and stronger than those of the Rabbit and he is able to take long jumps with the greatest ease. But a most important difference is that the Hare turns white in winter and the Rabbit does not.

The Prairie Hare, which we have in the northwestern part of the United States, is called a Jack-rabbit. He is a large and strong fellow, weighing several pounds, and is a famous jumper. When startled he throws up his long ears and bounds through the air at such speed that dogs seldom overtake him.

In cold countries the Jack-rabbit's coat also changes from brown in summer to white in winter, so that it is not conspicuous when seen against the brown earth or the snow, according to the season.

There seems to be something about the Jack-rabbit that excites laughter, for travelers and hunters tell many a humorous tale about the animal. Perhaps it is because his long ears give him a donkey-like appearance, or because the kick of his powerful hind legs is like that of a mule. His great alarm when he is suddenly disturbed, and the astonishing speed at which he makes off, are somewhat amusing.

Mark Twain has written a humorous description of a Jack-rabbit that he started up, in which he says: "He frequently dropped his ears, set up his tail and left for San Francisco at lightning speed.

Long after he was out of sight we could hear him whiz." This is a case of stretching the truth, of course, but it gives an idea of the Jack-rabbit's speed. The flesh of most Hares makes good eating, that of the tame or Belgian Hare being especially fine. The skin is tanned and used for some purposes as leather. In America we have many different kinds of Hare. The subject of the illustration is the northern Hare in its white or winter dress.

THE WOODCHUCK

ONE of the most familiar of the digging animals, or burrowers, is the Woodchuck, or Ground-hog

He is found throughout the greater part of the Eastern United States and is especially common in the New England States, where he is almost always called a Woodchuck.

The Ground-hog is about eighteen inches long and has a bushy tail that adds four inches more to his length. His fur is of a grizzly color, except on the under parts of his body, where it changes to reddish brown, while his head, tail and feet are covered with hair of a darker color. He lives in woods, fields and meadows, and digs a burrow in which to spend the winter. In the woods he usually selects the slope of a hill for his home, and digs the hole at the foot of a tree or under a rock. He curves the tunnel downward for perhaps ten feet, and then gives it an upward slope. At the end he makes a comfortable chamber, which he lines with soft grass and leaves, and rarely ventures very far from the shelter of his underground home.

He comes out both by day and by night and feeds on grass, weeds, pumpkins, corn, roots and vegetables, often earning the strong ill-will of the farmer by burrowing in the fields and damaging the crops with his sharp teeth. The Ground-hog is a clumsy looking creature, and moves over the ground in an awkward fashion. He is naturally shy, but if cornered and compelled to fight, he will defend himself bravely, using his sharp teeth to good advantage.

When the farmer or his boys discover a Woodchuck's hole, they at once set about capturing the animal. Sometimes the dog begins to dig him out, and the boys bring spades and help in the hunt. At other times, water is poured into the holes to drown the animal, or a turtle is caught and to its tail is fastened a wire on which is tied a wick saturated with oil. This is lighted, and the turtle is placed in the Woodchuck's hole. The turtle tries to run away from the fire and so carries the torch to the end of the burrow, when the

Woodchuck, equally anxious to escape the flames, leaves his retreat and dashes out, only to be caught by the men or the dogs.

The Woodchuck takes a long winter nap, like the bear. In the North, he sometimes retires to his burrow as early as the first of October. He sleeps for five months and reappears in March. Farther south, where the winter is shorter, he does not sleep so long, and is likely to leave his hole in February, to see if warm weather is really coming. This gave rise long ago to an interesting superstition, with which most of our boys and girls are familiar. It is said that each year, on Candlemas Day, which is the second day of February, the Ground-hog leaves his burrow to foretell the weather. If the day be warm and cloudy, so that the sun is obscured, he decides that spring is at hand and that he must remain awake; in this event there will be an early spring. But if the Ground-hog, on emerging from his hole, finds the air clear, and the sun shining brightly, he catches sight of his shadow on the ground and it frightens him back to his burrow, where he will go to sleep again; and this is a sign that the coming of spring will be delayed for several weeks, and that there will be cold and stormy weather before the Ground-hog ventures from his hole to stay.

It is possible to tame this animal and make a pet of him. He will sit up on his haunches, like a dog, and will beg for sugar; jump through a hoop, or even submit to be harnessed to a toy wagon. The skin of the animal is loose and very strong, but has no great value. It is used to some extent in making whip-lashes. The flesh is sometimes eaten, and by many people is thought to have an excellent flavor.

THE LEAST WEASEL

THE Least Weasel has a bad reputation, for he is a notorious chicken killer, but he is an interesting little animal, in spite of that.

There is in our country no smaller animal which may be called a beast of prey. The Weasel is but seven or eight inches long and very slender. His head and neck are of about the same diameter as his body, and as his legs are short, he can enter very small holes and kill the animals that live in them, without finding himself in too close quarters. He catches rats and mice, rabbits, squirrels, moles, fish, snakes and lizards; and other small animals which burrow in the ground like himself find him a dangerous enemy.

The Weasel is detested by the farmer, whose poultry yard is a favorite hunting-ground for the tiny animal. He has been known to kill thirty or forty chickens in a single night, doing far more damage

in this way than a fox or a mink would do. He will suck the contents of an egg quickly and neatly, through a small hole which he makes in the shell. His sharp teeth enable him to bite a chicken's neck in two with ease, and, when attacked, is ever ready to use his teeth on dogs or men. He is not disposed to run away when he hears other creatures coming toward him, but raises himself on his hind legs, and looks sharply about to see who is approaching.

The Weasel makes his home in wood-piles, walls, or heaps of stone, or in burrows. He goes about both day and night, and is so small that he is not likely to attract attention, even in the daytime.

Weasels have been used to prey upon rabbits, where the latter had become so numerous as to be a pest, but they killed not only the rabbits, but many game-birds and poultry, as well, and were so blood-thirsty that the results of using them as hunting animals were not entirely satisfactory.

THE COMMON MOLE OF EASTERN AMERICA

OF ALL the animals that dig holes in the earth in which to make their homes, the Mole is the greatest burrower. The little creature spends his life in the darkness underground, yet he is a very active animal and works almost unceasingly.

There is a popular impression that the Mole is blind, but this is not the case, for he has tiny eyes not much larger than pin-heads, which are so hidden in his fur that they are difficult to find. His senses of smell and hearing are well developed, so that he is enabled to find his food without the use of his weak eyes.

The Mole does not merely dig a tunnel in the earth and make a nest of it, like the otter or the weasel, but constructs an elaborate series of underground passages, which lead to a large central chamber. As he digs these tunnels he throws the loose soil up through a shaft to the earth outside, forming at irregular intervals the little heaps we call "Mole-heaps." By the constant pressure of his body, the earth in the tunnels and in the chamber is made hard and smooth, so that even after a heavy storm it will not cave in. But the weight of a horse or other heavy animal is sufficient to make the crust of earth over the burrows to give way, and this causes the farmer some annoyance in plowing and planting.

The Mole's body is shaped something like that of a pig. His head, which ends in a pointed snout, is apparently not divided from the body by a distinct neck, and this, together with his seeming lack of eyes, gives him a peculiar appearance. He pierces the earth with

his pointed snout and then tears it away with his fore feet, which are large and strong, and are armed with claws especially suited for this use. His progress in digging is very rapid, and he makes his way through sand almost as fast as a fish does through water.

The food of the Mole consists of worms and insects which he finds in the course of his burrowing, together with small birds, frogs and snails, which he catches outside at night. He has a tremendous appetite for so small an animal, and seizes upon and eats his prey in a ravenous manner. He can run very rapidly underground, and will fight ferociously with other Moles, or with animals, like the weasel, which attack him. On the surface of the earth, he is awkward and clumsy, no doubt because he is out of his element, and he is especially helpless in the daytime, because of the pain he suffers from the strong light of the sun. The Mole is a good swimmer and will sometimes take to the water to escape a pursuer.

The fur of this animal is always very clean, which is to be wondered at when we think how much of his time is spent in forcing his way through earth. The fact that he is not soiled by contact with the earth is explained when we examine his fur. Instead of the hairs being large at the bottom and tapering toward the outer end, or of even thickness throughout, as in other animals, they are small where they leave the skin and increase in thickness toward the center, growing smaller again at the outer ends. This is the reason his fur is not ruffled by being rubbed in any direction, and explains why it does not take up the earth as readily as the hair of other animals does. But there is still another reason why "dust does not stick to him." Under the Mole's skin there is a strong muscle-membrane, and from time to time he moves this muscle violently so as to shake the earth from his fur.

Several species of the Mole are found in the United States, including the common Shrew Mole, the Silver Mole, whose fur is of a silvery gray color, and the Black Mole of Oregon, whose fur shows changing reflections of purple and brown. There is also a kind called the Star-nosed Mole which has a nose shaped at the end like a star with several points. In Africa, near the Cape of Good Hope, is found a Mole whose fur reflects beautiful hues of green and gold.

THE PLATIPUS

THE Duck Mole, or Duck-billed Platipus, is not really a mole at all, but belongs to a wholly different order. He is found in Australia, and seems to be a combination of animal, fish and bird, for he not only burrows in the earth, like the common Mole, but spends

much of his time in the water, like a fish, has a bill like that of a duck, and lays eggs, like a bird.

The Platipus is much larger than the American Mole, and, including his tail, is sometimes two feet in length. He has a broad, flat tail, and is provided with stubby toes, made for digging, and so webbed that he can swim the more easily.

His strong beak, or bill, is used in seizing frogs and other prey, as well as in digging, and when the animal is attacked, he strikes sharp blows with it. The eggs laid by the Platipus are soft-shelled, like turtle eggs. The creature's outer fur is dark brown, with a tinge of silver at the tips of the hairs, and the inner hair which is gray, is soft and fine like that of the seal.

THE SKUNK

THE Skunk is an independent little animal, never troubling to go far out of his way to accommodate others, and as a rule his rights are respected and he is let severely alone. He looks from a little distance like a black and white cat with a bushy tail.

He is a common animal in the United States, and sometimes makes his appearance in the streets of cities, although his home is in the woods and fields. A hollow tree, a crevice in the rock or a wood-pile serves him for a dwelling, and if none of these is at hand he will dig a burrow in the ground, as a weasel does, for the weasel and the Skunk belong to the same family. Night is the Skunk's time to go in quest of food, although he sometimes appears by day, as well. Insects, worms, berries, roots, small birds and animals furnish him food, and he has a well-developed liking for poultry and eggs, so that the farmer's chickens are often stolen by this night raider.

The Skunk does not use his teeth nor his claws to defend himself from his enemies, for he has a much more effective means of keeping them at a distance. If frightened or angry, he stands his ground, stamps in an excited fashion and throws his long bushy tail over his back, as a squirrel sometimes does. When the enemy comes nearer, the Skunk throws from a gland near the root of his tail a most offensive secretion, the odor of which is overpowering. If it is a dog that has presumed to disturb the Skunk, the intruder's nose, eyes and mouth are filled with the horrible stuff and he rolls on the ground in agony or rushes away to find water into which he may plunge. Other animals than the dog receive similar treatment, and so powerful is the Skunk's secretion that the animal into whose eyes it has been thrown is temporarily blinded.



FROM COL. CHI. ACAD. SCIENCES.

COMMON MOLE.
3/4 Life-size.

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The Skunk is so innocent-looking, and so little afraid of being injured, that persons sometimes approach him and are covered with the fluid before they realize their danger. A young lad, whose home was in the city, once paid a visit to his uncle in the country, and while returning from a neighboring farm, where he had been to call on a lad of his own age, he spied by the roadside what he thought was an Angora cat. The creature seemed to be hopping about and ready to play, so he ran forward to pet it, when suddenly the air was filled with a stifling odor, and his clothes were drenched with the secretion of a Skunk. He ran to his uncle's house, terrified by his experience. His clothing, including his new suit, underwear, shoes, and hat, were buried in the ground, and not until several weeks after his return to the city had the earth absorbed the odor from the garments so that his uncle could send them to him for further use. His hair and skin also retained the odor for some time.

A lady and gentleman driving in the country had a similar experience. Dusk was coming on, and by ill luck the horse's hoof disturbed a Skunk, which was crossing the road. Instantly, the air was filled with the familiar pungent odor, and the clothing of the gentleman and his companion, the cushion and robes of the carriage, the harness and the horse's hide, were drenched. The cushions, robes, and harness were buried under ground to remove the scent, and the carriage was repainted, but even after several successive coats of paint had been applied, the odor could be detected.

It is easy to understand why the Skunk, with a means of defense like this, is always allowed to choose his own side of the road when a person meets him. The animal retains his secretion when good-natured, and may be tamed, but there is too much likelihood that he may at any time imagine he has been insulted, to make him an entirely safe companion. He takes good care that his own person shall not be soiled, by throwing the secretion behind him.

The fur of the Skunk, when prime, is of considerable value. In some Skunks the fur is entirely white, and is then worth little; in others, black is mingled with the white, and in still others, black is the chief color, with spots or stripes of white. The fur of the black Skunk is the most valuable. To offer for sale "Skunk's Fur" would not sound very attractive, but the furrier calls it "Alaska sable" and under that name many ladies admire it greatly. The skins are worth a dollar each, and in some places men carry on "Skunk farms," where they raise the animal in order to obtain its fur.

THE COMMON MINK OF THE EASTERN STATES

FOR so small a creature, the Mink has a remarkable appetite. He is always on the lookout for something to eat, and as he runs about both by night and by day, it is hard to say when he sleeps. The Mink is from twelve to sixteen inches long, with a small head and a large tail. His habits are much like those of the otter. He has the same kind of burrow, in the bank of a stream, with a tunnel leading to the water, for the Mink's toes are partly webbed and he is a good swimmer. He does not always take the trouble to dig his own burrow, but instead, drives a muskrat from his hole or kills and eats him, and then settles himself comfortably in the muskrat's abode. At other times, he makes a nest under the roots of trees, or between rocks, and as he often pays visits to the farmer's poultry yard, he may be bold enough to make a nest under the barn, so that he may live near his hunting-ground.

The Mink finds food both in the water and on land. He catches fish, frogs, muskrats, crawfish, snails and water-insects, and is fond of ducks, chickens, and eggs. He even catches birds, and can climb trees to get at their nests, although he usually prefers to remain on the ground, unless chased by dogs or other enemies.

The fur of the Mink is a rich dark brown or black, in color, and up to the time that sealskin came into general use, was one of the most popular of the fancy furs, a single skin of the best quality being worth ten or twelve dollars.

THE BEAVER

THE Beaver looks very much like an enormous rat. His body is from two to two and one-half feet in length, and sometimes weighs as much as sixty pounds. His most remarkable feature is his broad flat tail, whose principal use is as a sculling oar in swimming and diving. The Beaver is a gnawing animal, and has strong front teeth, with which he often cuts down large trees. His hind feet are webbed, to assist him in swimming, for he is one of the animals that live partly in the water and partly on the land.

Formerly the Beaver was found in large numbers throughout the eastern and middle portions of the United States, but his fine fur is so valuable that he has been exterminated by hunters and trappers in the more thickly settled states. He still thrives, however, in the northern part of the United States, in the Rocky Mountains, in Canada, and

in the region around Hudson Bay. You may have seen a picture of the Beaver on some of the Canadian postage-stamps, where it was used as a symbol of the industry of the Canadian people.

The Beaver makes his home in brooks or rivers, and sometimes on the shore of a lake or pond. He must have a sufficient depth of water, so that in winter he will have room to swim beneath the ice. To make sure of this, he dams the stream which he has selected at a suitable place in which to build his house ; this is to make the water deeper. In building his dam and his house, the Beaver shows remarkable intelligence. First, he selects a number of large trees, sometimes two feet in diameter, growing near the banks of the stream, and with his sharp teeth he gnaws through them near the ground, making the deepest cut on the side next to the stream, so that when the tree goes down it will fall into the water. Woodchoppers follow the same plan in cutting down a tree, so that it will fall in the desired place. When the Beaver has felled the tree, he cuts off the limbs, and then divides the trunk into short logs. All of this he does with his teeth. If there are no large trees growing near the stream, the Beaver digs a canal leading into the forest, so that he can float the trees when he has felled them. Several Beavers now unite to drag and push the logs to the place they have selected for their dam, where they weight them down with a great number of stones. In this way they build a foundation, which is sometimes ten feet wide, across the stream. They then add more logs and branches, and fill up the spaces between them with stones and mud, until the whole is cemented together in a solid mass. Other branches and leaves which float down stream from above, lodge against the dam and help to strengthen it, so that, as time goes on, it grows stronger, and grass, and even trees, grow on the top. As soon as the dam is well advanced, the water above it rises and forms a pond, and the Beaver is then ready to build his house, which is called a "Beaver lodge." He begins by making a foundation on the bottom of the stream, just as he did in building the dam, and then adds branches, moss, and stones, which he cements together with mud. The house is built higher and higher, until it has risen several feet above the surface of the water. The Beaver plasters the outside with mud, until it is perfectly smooth and round. In winter, when the snow covers the ground, it looks like a small Eskimo hut made of sticks.

The Beaver lives in the part of the house that is above water, in a chamber which he lines with grass and leaves, so as to make it snug and comfortable. At the top of the house, he leaves an opening for ventilation, and over this opening he places branches to keep out the snow and rain.

Beavers live in colonies, and work together in building their dams and huts. Six or seven may live in one hut, but fifteen or twenty huts may be necessary for a whole colony. The door of each hut is under water, and all of these doors open into a trench dug in the bottom of the stream, where the water is not likely to freeze in winter. The walls of the house are very thick, and when the cold has frozen the mud with which they are plastered, the Beaver's worst enemy, the wolverine, cannot break through them. Even hunters find it a difficult task to cut through these walls, which are often five or six feet in thickness.

The Beaver has lungs for breathing air, as we have, but he can swim for some distance under ice, and when he needs fresh air he rises to the top of the water and expels the air from his lungs. This forms a bubble under the ice, and the air in the bubble is soon made fresh by the oxygen it absorbs from the ice and the water. The Beaver then draws it into his lungs again, and swims on as before.

This animal feeds chiefly on the bark of trees and on plants that grow in the water. In order to have an ample food supply in winter, it brings plenty of the smaller trunks of poplar trees and anchors them in the bottom of the stream, near his house.

When warm weather comes, the Beaver leaves his snug house and makes a summer home by burrowing in the bank of a stream. This burrow has a door under water, and the Beaver sometimes takes refuge in it during the winter, when the hunters or the wolverines frighten him from his hut in the stream.

Like other animals which spend a part of their time in the water, the Beaver has two coats of fur. The outer fur is long, and reddish-brown in color. That next to the skin is fine and soft, and is very valuable. Felt hats were originally called "beavers" because the fine fur of this animal was used to make their covering.

Beavers do the most of their work at night, and they are never idle during their working hours. To say that one has worked "as hard as a beaver" means that he has been very busy indeed.

THE MUSKRAT

THE Muskrat, sometimes called the Musquash, is somewhat like a beaver of smaller growth. He is found throughout the United States, except in the extreme south, both in the country and on the outskirts of cities.

He is as large as a kitten, and has a long, flattened tail, not so broad and flat as that of the beaver, but still useful to him as an oar.





He has strong teeth for gnawing, and cuts down rushes, as the beaver fells trees, to build a kind of lodge.

The Muskrat has an advantage over the beaver in making his home near civilized communities, for, in addition to feeding on water-plants, and the bark of trees, he often makes a dinner of carrots, potatoes, apples, and other fruits and vegetables, which he finds in the fields. The Muskrat is so called because he carries about him a strong odor of musk.

It would seem that this fact would prevent his flesh from being useful as food, but at most seasons, if the animal be skinned and cleaned at once after it is killed, the flesh is found to be free from the musky odor, and is highly esteemed as food among the Indians and white hunters and trappers.

The Muskrat's skin, although not as valuable as that of the beaver, commands a ready sale. Its price is very low, but such quantities are collected that the trade in the skins is important. The soft fur nearest the skin is sometimes dyed and made to serve as an imitation of sealskin. Muskrats are fond of play, and may be seen at night gamboling in the water, swimming and jumping like frogs.

THE AMERICAN OTTER

DID you ever wonder why a duck swims so easily? It is because there is a web of skin stretching between his toes, so that he has a broad paddle with which to beat back the water. Nature has provided some animals with feet very much like those of the duck, which enable him to swim easily and swiftly and naturally. These paddle-like feet have been given to animals which are expected to get the greater part of their food from the water.

The American Otter is one of these web-footed animals. He is found in the United States and in Canada, making his home along the banks of streams. The entrance to this home is three or four feet below the surface of the water, where he digs a tunnel leading upward, at a gradual slant, into the bank. At the end of this tunnel he makes a comfortable chamber, which he lines with grass and leaves, and, as he likes to have his home well ventilated, he digs a small shaft upward from this nest to the surface of the ground, for an air-hole.

When the stream near which he lives is flooded, the water sometimes rises so high in the Otter's tunnel that he is forced to abandon his home for fear of being drowned. In such cases, he goes outside and finds temporary lodging in the trunk of a hollow tree. When

the water goes down, he returns to his nest in the bank, or makes a new burrow in some other place. As he knows the water in the stream may rise suddenly, he sometimes builds three or four houses, hoping that at least one of them will not be flooded.

If an Otter is frightened while on the bank, he quickly dives into the water and makes his way leisurely to his home. It is no easy matter to find the entrance from outside, so that when he has once escaped to the water, he is generally safe from pursuit.

The Otter is as heavy as a small dog, but stands lower; he has a very blunt nose and a long, thick tail, which tapers toward the end. This tail serves as a rudder by which he may steer himself in the water, and Nature has taken such care to make him a good swimmer that she has also made his joints flexible, so that he can turn his legs in almost any direction.

After sunset, he goes out to find his dinner. By beating the water with his broad tail, he frightens the fish so that they quickly hide under stones or beneath the edges of the bank. The Otter knows about these hiding-places, however, and as soon as he thinks the fish have been frightened by the noise he makes, he darts into their retreat and soon finds his prey. Holding it in his mouth, he swims to the bank and there takes his own time to eat it. He catches frogs and crabs, as well as fish, and sometimes secures a small bird.

The Otter becomes a fierce creature when he is attacked. He will snap and bite at his pursuer, and is often able to seize a dog's nose and make him howl with pain. But the Otter is easily tamed, and will stay contentedly about the house, playing with the dog and the cat and performing little tricks, which he learns readily. He seems to have a liking for fun, and enjoys sliding down hill as much as any boy or girl does.

"Sliding down hill!" you exclaim. To be sure; boys and girls have no right to monopolize that sport, if the animals wish to share it with them. The Otter selects as high a ridge as he can find, and then, lying flat on his body, just as a boy does on his sled, he doubles his forefeet under him and away he goes over the snow. He will continue this sport for hours, until he is thoroughly tired out. He would like to slide down hill the year around, and in summer, if he can find a sloping bank of smooth clay, he uses that for a slide, in place of the winter's snow. He also slides on the ice, running a few feet to get a start and then throwing himself down flat.

The Otter's fur is very valuable, and men hunt him wherever he is to be found. He really has two coats of fur. The under coat, next to the skin, which keeps him warm in winter, is very fine and soft—almost like down. Over this there is an outer coat of coarser hair,

long and shining, which Nature has given him to help him to glide more easily through the water. When the Otter's skin is taken to market, the furrier pulls out these long, coarse hairs and leaves only the soft, fine fur. This is a rich dark brown in color, and makes very handsome garments, which are also very expensive.

THE RACCOON

THE Raccoon is a member of the bear family, but, unlike the bear, he has a long and bushy tail. We usually shorten his name to "Coon." Dogs called "Coon-dogs" are trained to hunt this animal. The Coon's fur is long, and is gray or yellowish-gray in color, except for a band of black across his face. His tail also has rings of black at intervals throughout its length.

This animal usually makes his home in a hollow tree, and prefers to be near the water, for he eats frogs, clams, oysters, and turtle's eggs. He will turn up stones to get at the spiders and bugs underneath, which he eats as an occasional relish. He is fond of nuts and fruits, birds' eggs, and green corn, and preys on small animals, such as rabbits and squirrels, and on birds. Like the bear, he has a fondness for sweet things, and a taste of honey pleases him greatly. When he eats he sits up on his hind legs and holds his food in his forepaws, just as you have seen a squirrel do with a nut.

The Coon's claws are sharp, and he is a good climber. The track he makes in walking is much like that of a baby's foot.

The Coon is found in nearly every part of the United States. In the North, he lies dormant in winter, as the bear does, but in the South he is active through the entire year.

Night is the Coon's time to go abroad. The strong light of the sun makes him blink, and if he chances to be far from home when day breaks, he will climb a tree, curl up in a ball, and, protected from the sun by the thick foliage, remain there until the next night.

Coon-hunting is a favorite amusement among farmers' boys. A moonlight night is the time usually chosen, and a reliable "coon-dog" is set on the trail, while the hunters follow with axes, clubs, and torches. The Coon will sometimes run a considerable distance before he seeks safety in a tree, but when the dog has "treed his Coon," he barks loudly to attract the hunters to the spot. It is not easy to get a shot at the animal, for he lies concealed among the branches in the darkest part of the tree, and as he clings firmly to his perch with his long claws, he cannot be shaken off. So it is necessary to chop the tree down, and while this is being done, the hunters and dogs

watch for the Coon to leap and run when the tree falls. Once on the ground, he is soon shot or is dispatched by the dogs.

A young Coon may easily be tamed, and will become a very interesting pet. He is very curious as to what goes on about him, and is an expert pickpocket, often searching with his nose for candies or other goodies, which he thinks he may find in his master's clothing. He may be taught to do tricks, such as to go to a basin of water and wash his face with his paws, or to stand erect when told to do so.

Coon skins are of some value in making fur garments, and always bring a small price. Hunters often make caps and other articles of wearing apparel from these skins. The flesh of the Coon is edible, and, among the colored people of the South, is considered a great delicacy.

THE OPOSSUM

IN MANY respects the Opossum resembles the Raccoon, although he is not so bright and clever an animal. He is usually about the size of a large cat, and has grayish fur, which is tipped with white, so that it appears a dingy white. His very short legs bring his body close to the dust.

The most remarkable part of the Opossum is his tail, which is about fifteen inches long, and without hair, for the most part, but covered with small scales. By means of this tail, which he wraps around the limb of a tree, he often hangs head downward and eats persimmons or other fruit at his ease.

The Opossum is found in the middle and southern parts of the central and eastern United States, where a "possum hunt" is considered as great sport as a "coon hunt."

The Opossum lives in a hollow tree, or makes a nest under an overhanging rock. He dislikes the sun even more than the Raccoon does, and goes in search of food only at night.

He feeds on rats, mice, eggs, nuts and berries, and is fond of grapes and persimmons. At times he raids a hen-coop, but usually remains only long enough to get a chicken, which he carries away to eat.

The colored people of the South are very fond of the flesh of the Opossum, and have many an exciting night-hunt after him in the woods. Roast "possum," with sweet potatoes and green corn as side dishes, makes a repast of which they are very fond.

This is one of the few animals found in North America that has a pouch in which to carry its young. The kangaroo, which is a native of Australia, is provided with a similar pouch. As soon as the little Opossums are born, the mother puts them into her pouch,



FROM COL. CHI. ACAD. SCIENCES
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OPOSSUM.
1/8 Life-size.

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FROM COL. F. KAEMPFER.

GOPHER.
5/6 Life-size.

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and carries them there until they are about five weeks old, when they are able to run about on the ground. When they first go out for a walk with their mother, they wind their tails around hers, and the whole family presents an amusing sight as its members trot along thus linked together.

In South America is found a variety of this animal called the Crab-eating Opossum, from the fact that crabs are his chief article of food. He lives near swamps and streams, where he may readily catch crabs, and spends the greater part of his time in trees, except when he descends to find food. His fur is shorter, and his claws longer, than those of the Opossum found in the United States, and he has a long snout which gives him a rat-like appearance.

THE STRIPED GOPHER

THE Striped Gopher is a bright-looking little fellow, about the size of a squirrel, and his fur is marked something like that of the ground-squirrel, or chipmunk. His long tail, however, is not so bushy as that of the squirrel, and his ears are less pointed.

He is found chiefly in the northern part of that section of the United States which lies between the Mississippi River and the Rocky Mountains. His head, ears, and eyes are shaped much like those of the common rat, and in his cheeks he has two remarkable pouches, in which he carries his food from the place where he obtains it to his underground storehouse.

Like the mole, he burrows underground in many directions, and throws the earth up, at frequent intervals, in little hillocks. The nest of the Gopher is usually found four or five feet under ground, and the entrance tunnel twists about like a spiral staircase. He lines his nest with grass, and in an adjoining chamber he keeps his winter's store of food, which consists of seeds, nuts, roots, and other vegetables.

The farmer is the sworn foe of the Gopher, for the little animal not only undermines the soil, but feeds on the roots of the vegetables, and grain, often doing great damage to the crops and to many kinds of trees. He keeps out of sight as much as possible, and is enabled to avoid observation no little by the color of his coat matching the dry grass. He sits erect on his hind legs, at the entrance to his burrow, like a squirrel, and at the first appearance of an enemy whisks back into his hole.

The Gopher may be tamed and makes an attractive pet, but when kept in captivity, he will gnaw his way to liberty through almost anything, except iron or stone.

THE AMERICAN BADGER

THE Badger is one of the burrowing animals, and is found principally in the northwestern part of the United States. Wisconsin is sometimes called the "Badger State," because of the great number of these animals found within its territory.

In size, the Badger is a little smaller than the fox. He has a long, narrow head and a short tail. Above ground he seems to be a clumsy, sluggish animal, but when he begins to dig, he becomes active and energetic. He makes his home in a burrow in the ground, and where there is a large colony of Badgers, their operations underground cause much trouble to the farmer, as they undermine the soil and injure growing crops.

The Badger catches rats, mice, gophers, moles and other small animals, and is very fond of honey. He digs open the nests of wild bees, which he finds in the earth, and devours both the honey and the wax. Apparently he pays no attention to the swarm of angry bees which surround him when he raids their nests, his thick fur affording ample protection against their stings.

Clumsy as he looks, the Badger is a cunning fellow, and is very clever in avoiding the traps which are set to catch him. If captured alive, he readily yields to good treatment and becomes quite tame.

A white stripe extends from the Badger's nose over the top of his head, and stripes of black run backward from his eyes. Except for these marks, the fur of the animal is gray.

Badger skins have at times been in high favor for use in making fur garments, which were quite expensive, but the skins are now worth only about one dollar each.

The hair is used to a considerable extent in making paint-brushes, a "Badger blender" is one of the requisites of an artist's outfit.

THE RED SQUIRREL OR CHICAREE

OF ALL the smaller animals of our native woods, none is so bright and enterprising as the Red Squirrel. He has a pert manner, which almost makes us think that he considers himself a very fine animal. He takes great care to keep his coat clean and glossy, and his big bushy tail, which he curves so gracefully over his back, is always fluffy and tidy as can be.

Besides the Red, there are several other species of Squirrel in this country, including the Gray Squirrel, the Fox Squirrel, and the Chipmunk, or Ground Squirrel, which has a suit of fawn color striped with

black and white. The Squirrels of other countries are much like our own, and the world over the habits of the Squirrel family show little variation. They spend the greater part of their lives in trees, frisking from branch to branch, and making long jumps with apparent ease. In making these jumps, their bushy tails serve them well, both as a rudder to steer them and as a parachute to break the fall, like that used by a balloonist. That these are the real uses of the tail is shown by the fact that they cannot jump so far nor be so sure of landing safely, if the tail is cut off.

The long, sharp claws of the Red Squirrel are very useful to him in climbing. By their aid, he can scamper up the trunk as fast as he can run on the ground. The Squirrel never trots and rarely walks, but goes over the ground in a succession of bounds, just as do his relatives, the rabbits and hares. He is wonderfully quick in all his movements, but he has need of all possible safeguards against his enemies, for of these he has many dangerous ones besides man and his gun. Among these are the hawk and the owl, which swoop down upon him from the air, and catch him unawares.

Nuts, fruits, grain, the tender buds of trees, birds' eggs, and even mice, furnish food for this nimble little creature. It is interesting to watch him as he eats a nut. He sits up on his hind legs, with his tail curved over his back, and, holding the nut in his fore-paws, he attacks it with his two long, sharp, front teeth, which are especially designed for gnawing. He first drills a small hole in the shell of the nut, and then breaks away the shell a little at a time, until he can get at the sweet kernel, which he eats with the greatest relish. Having finished eating the nut, he jerks his long tail, and, in a twinkling, he is off again for another nut. Red Squirrels make their nests underground or in hollow trees, and it is said that they have three or four separate nests, so that if one should be discovered and raided by an enemy, they may still find shelter. Nature has taught the Squirrel to store in his nests during summer and autumn a supply of food to last through the winter, when the ground is covered with snow.

He coolly takes for his own use nests built by the crow or other birds, sometimes selecting a woodpecker's nest in a hollow tree; or else burrows in the ground and makes the underground nest warm and comfortable with a lining of leaves and grass.

As soon as nuts are ripe in the fall, the Red Squirrel begins to lay in his winter's stock of provisions, and he never makes the mistake of putting away worm-eaten or moldy nuts. Sometimes he steals the farmer's corn and stores that away along with his other supplies.

It is surprising to see how large a store of nuts this Squirrel will lay by for winter use, several quarts being sometimes found in his

nest. He must make many trips to the chestnut grove or the hickory nut trees, and to the cornfield as well, before he is satisfied that his supply is sufficient.

Sometimes the Red Squirrel is bold enough to make his nest in the farmer's barn, but if the farmer discovers the thief who steals his grain, Mr. Squirrel is in danger of being captured or shot. We may imagine that it is only the lazy Squirrel, which does not want to be at the trouble of making a nest in the woods and storing up his own provisions, that dares actually to settle down in a barn, prepared to live through the winter on the grain somebody else has worked or paid for. Yet there are people just like that kind of Squirrel. The little fellow is very shy, and is so much afraid that he may be intruded upon that he always makes a private back-door to his nest, through which he may escape if an enemy comes in at the front door. If captured, however, and kindly treated, the Red Squirrel, after a time, becomes very friendly.

Perhaps you have been to Central Park in New York, and have seen the Gray Squirrels frisking about under the trees. They are so tame that they fear no one, for any one harming them is punishable by law. In the State House grounds at Richmond, Virginia, are hundreds of beautiful Gray Squirrels, some of which are so tame that they will eat from the hands of strangers. No one ever thinks of harming them, and dogs are not welcome on the premises, for both dogs and cats seem to regard the Squirrel as lawful prey, and can never be wholly reconciled to their presence in the household as pets.

It seems a pity to think of eating such bright little creatures, but it will not do to deny that squirrel-pie is a very appetizing dish. The fur of the Black and Gray Squirrels is valuable and is used in making muffs, boas and tippetts. The fine fur from the Squirrel's tail is used in making certain kinds of brushes.

Perhaps you wonder why this little animal is called the Squirrel. The man who first gave it a name spoke Greek and he called it, in his language, *Skiurus*, a word which means, "The one under the shadow of his tail." The name Chicaree was suggested by one of their many chattering notes.

THE FLYING-SQUIRREL

THE Flying-Squirrel has a body much like that of other Squirrels, and the same long, bushy tail, but he has also been provided with a strong membrane or skin which extends outwardly from his body and stretches from leg to leg. When the Squirrel jumps into the air and stretches out his feet, this membrane is extended so



om col F M Woodruff

RED SQUIRREL.
Life-size.

RIGHT BY A. MUMFORD AG



that it offers a large surface to resist the air, and instead of going straight down when he jumps from a height, he sails through the air in much the same way that we often see a barn-swallow or a hawk do. He uses his tail as a rudder and steers himself. In this way it holds the Squirrel up so as to alight where he wishes.

If you do not understand just why this is so, take a lead pencil and drop it to the floor. It will go straight downward. Now push the pencil through two holes at the end of a sheet of note paper, and holding the paper in a horizontal position, drop it with a gentle push forward. You will see that the paper holds the pencil up and that it will float down in a slanting direction much more slowly than when the pencil had no paper to support it. To the Flying-Squirrel the membrane stretched between his feet acts as the sheet of note paper does—it not only holds the Squirrel's body up so that he may not fall too rapidly, but also makes it move sideways for a long distance, and this is what is known as the flying of the Squirrel.

The Flying-Squirrel does not frisk about in the trees during the day, as other Squirrels do. He remains quietly in his nest until night comes, and then goes out to look for nuts and other food. In other respects his habits are like those of the Squirrels we see by day.

The Flying-Squirrel we have in this country is a little creature whose body is about as large as that of a chipmunk; but in other countries they have Flying-Squirrels that grow to be as large as a cat.

The fur of this little creature, which covers not only the body but the upper side of the membrane, is very soft and fine, and its owner takes the best of care of it. He washes his face with his paws, as a cat does, and combs his fur with his long claws, and then smooths it down with the soles of his feet.

The owl, which also goes abroad at night, is one of the most dangerous enemies of the Flying-Squirrel, and if puss happens to be in the neighborhood, she also will watch for an opportunity to pounce upon the little animal as she would upon a mouse.

THE BAT

AS THEY circle about in the air and fly almost against our faces, sweeping down upon us in a most startling way, and all without noise, the common Bats of our country are weird creatures and seem ready to do us harm. But, on the contrary, they are the most harmless creatures imaginable, and may even be tamed so as to become very much attached to their masters.

“As blind as a bat” is not a truthful description of a person who cannot see, for the Bat has eyes, although he depends less upon sight than upon his marvelous sense of feeling.

These queer creatures sleep during the day, in dark places high up under the rafters of a barn or in a garret, and there we may be able to catch one and see what he is like.

From their swift flight through the air, we might think that they had wings like birds, but birds have feathers, while Bats are covered with soft fur. Their wings are not like those of a bird, but consist of a tough, leather-like membrane or skin which extends from the sides of the body to the ends of the feet.

The legs are very slender. The hind feet are provided with claws, and from the extremity of the fore legs or hands are four long, bony fingers that pass through the membrane which forms the wings and support it. At the top of the wing is the thumb, with a sharp claw that is a very useful hook. Bats can fold their wings by drawing them close to their body as you would close an umbrella. When they rest or sleep, these odd creatures hang head downward, holding to their perch by means of the claws of their hind feet. They walk with difficulty, and present an awkward appearance as they move over the ground, dragging themselves forward by means of the hooks on their wings. They dislike to rise from the ground into the air, because although they can do it, it is not without considerable difficulty.

Bats' wings seem to have a delicate nervous organism that enables them to feel that they are approaching an object before they have actually touched it, and then they quickly alter their course and fly in another direction. They depend much more upon their sense of feeling than upon sight, and this explains why a Bat which has almost touched us will suddenly wheel away to avoid contact.

One remarkable thing about the Bat's fur is that when closely examined under the microscope each hair is seen to have the twisting form of a screw.

As we watch the Bat's flight, it seems aimless, as we never see the creature alight, but it is while flying that the Bat gets his food. He feeds wholly upon insects, chiefly those that fly by night, and at every sudden turn we see him make, we may assume that he has captured an insect for food.

In cold countries, where there are no insects flying through the air in winter, Bats must do without food, so they retire to some dark place and sleep throughout the winter, hanging head downward. They never willingly remain in a horizontal position for more than a few minutes at a time. It seems probable, then, that some bats follow the example of the birds and serpents on the approach of cold weather.





Bats increase in number as we go farther south, and in tropical countries they exist in great swarms. Travelers have seen Bats fly from the caves in which they made their homes, in so dense a column that at a short distance it gave the appearance of a thick volume of smoke rising in the air, the swarm numbering probably millions of Bats.

The common Bats of our country, shown in the illustration, have bodies only two and a half or three inches long, but their wings, when extended, measure from eight to twelve inches across the widest part. In warmer climates, there are much larger kinds. In the Philippine Islands are huge Bats which have a body the size of a kitten, and whose wings measure from three to four feet across. They feed ravenously upon fruits and it has been feared that they might be brought to this country, where they would be a terrible pest to the farmers. The United States government has taken steps to prevent their introduction here.

THE MONKEYS

SEVERAL species of the creatures called Monkeys bear a marked resemblance to man in both form and face, and for this reason they have long been the subject of close study on the part of naturalists and others. Monkeys are found chiefly in tropical countries, where they have existed from time immemorial, and vary in size from the tiny marmosets, no larger than a squirrel, to the powerful Gorilla, which is as large as a man.

These queer creatures usually dwell in forests, but, in some cases, make their homes on rocky cliffs. Their food consists principally of plants, fruits, nuts and other vegetable matter.

Monkeys have four hands and are thus especially fitted for climbing, and for grasping objects securely. Most Monkeys spend the greater part of their time in trees. With one hand the animal can cling to a branch, while he makes use of the three others as he may desire. Monkeys have a natural tendency to walk on all-fours instead of standing upright like a man; their fingers turn in, so that they walk on their knuckles instead of on the palm of the hand.

Of all the kinds of monkeys, the Gorilla and the Chimpanzee most nearly resemble man, and the skeleton of one of these animals looks very much like that of a human being, except that the arms are longer than the legs and hang below the knees when the creature stands upright.

The Gorilla is found only in the wildest parts of the central forest of Western Africa. He is the largest member of the Monkey family,

and is sometimes nearly six feet in height. His body is proportionally larger than that of a man, but his legs are very short. His skin is black and is covered with hair of the same color. It is this covering of hair, with which all Monkeys are provided, that immediately distinguishes this animal from man. Many of these creatures have hairless faces, however, and this gives them the appearance of being dressed in a complete suit of fur, with a close-fitting hood. Some of the smaller varieties of Monkeys are nearly hairless, and this fact is pointed to by naturalists as a proof that under certain circumstances the hair disappears and their bodies become nearly naked, like that of man.

The Gorilla is exceedingly fierce, and cannot be tamed after he has grown to full size. If wounded by the hunter, he proves a dangerous enemy and sometimes it requires a quick and sure rifle-shot to save the hunter's life, for one blow of the Gorilla's mighty arm will crush a man's skull. He can hurl a large stone with great force at an approaching enemy, and will even use the heavy limb of a tree as a weapon. When he is wounded or angry, his roar is terrifying, and as he advances upon his enemy, roaring and beating his breast with his enormous hands, he is an object to inspire dread in the stoutest heart.

Next in size to the Gorilla are the Chimpanzee and the Orang-outang. The Chimpanzee is the larger of these, being easily about four feet in height, but sometimes much more. His arms are more like a man's than those found in any other Monkey, and his large ears, eyebrows, eyelashes and whiskers are much like those of human beings. This creature has a lively and intelligent disposition, and is apparently very fond of human society. For many years there was in the Zoölogical Museum in Central Park, New York, a Chimpanzee named "Mr. Crowley," whose intelligence made him famous. When he died, many of the newspapers of the country gave him an "obituary notice," just as they would have done if he had been a public man. A Chimpanzee may easily be taught to eat with a knife and fork, use a napkin at table, smoke a pipe, drink water from a glass and do many other things that men do. He will accept a piece of cake with a polite bow and eat it with every evidence of good breeding. A gentleman living in Africa once had a tame Chimpanzee which always desired to clean up the room after his meals, and would sweep with a broom, dust off the furniture, and set things to rights as a housemaid would do.

The Orang-outang is a species of Monkey found only in the islands of Borneo and Sumatra. He lives in swampy forests near the coast, and spends his time in the treetops. He is one of the largest apes,

though he is not as tall as the Gorilla. His motions are slow, and when in captivity he becomes very melancholy, in marked contrast to the lively Chimpanzee. His name means "the wild man of the woods."

The Gibbon, or Long-armed Ape, is found in southeastern Asia and the Indian Archipelago. He is a gentle and very active creature, and swings from tree to tree, devoting most of his time to sport. His voice approaches nearer to that of a man than do those of the other Monkeys.

All of the Monkeys mentioned thus far are without tails, and these kinds are sometimes called Apes to distinguish them from those having long tails. The Baboon belongs to the tailed class. His head is shaped very differently from that of the Chimpanzee, and is so much like a dog's that he is often called the "dog-faced" Monkey. Chimpanzees, Gorillas and other Monkeys, have noses which, though flattened, resemble our own, but the Baboon's nose is more like that of the dog, the nostrils being at the end of the nose, and not underneath. Baboons are found chiefly in Arabia, and Africa, and in the wild states they are always "bad Monkeys." They are malicious and quarrelsome, and seem to have intelligence enough to know when they are doing mischief and appear to delight in it. The leopard is one of their most dangerous enemies, but if attacked either by him or by a human being, they will defend themselves in a courageous and cunning manner. The Baboon eats fruit and vegetables, and delights to raid a vineyard or an orchard. He also eats eggs, insects, chickens and even the deadly scorpion, whose poisonous tail he first breaks off. The Baboon often becomes very tame, but as he grows older he becomes more and more sly and mischievous. He is fond of alcoholic liquors, and if allowed to do so will drink until intoxicated. While he does not hesitate to stand his ground on ordinary occasions, and will slap and bite a dog until he howls for mercy, he is very much afraid of snakes and all other creeping things; even a small lizard causes him great uneasiness and alarm. Baboons spend less of their time in trees than other Monkeys do and as a rule make their homes among rocks.

The Mandrill is a baboon that is remarkable for his bright coloring. His cheeks are blue, his nose is red and his beard is yellow, so that he presents a curious and not very pleasing appearance. He is a very savage and powerful creature.

The hair of most Monkeys is gray or black in color, but there are exceptions to this rule. The Diana Monkey, found in Africa, is dark brown on the back, and bright orange on the under part of his body, and is striped with bands of black and gray, while his beard

is pure white. The Bhunder Monkey, a native of India, has hair that is olive-green, brown and yellow. He is regarded as sacred by the natives; they never molest him, even when he has done great damage to fields and vineyards.

The Monkeys of the new world are all small in size, and are remarkable for their long, prehensile tails.

The South American Spider Monkey, so called because his arms and legs are very long and slender, has a long tail which he uses like a fifth hand, grasping objects with it or hanging by it from a branch, thus having his four hands free for other purposes. The old world Monkeys use their tails to steady themselves, only those of America can suspend their whole weight by that member.

Other species of Monkeys that are found in South America are the Howling Monkey, which has a strong voice and howls dismally in the night, and the Marmoset, a small, graceful little Monkey, which has tufts of hair on the back of his head that give him the appearance of having a ruffled collar.

These little Marmosets are easily tamed and are very playful creatures. A Washington lady had one given to her as a pet and he soon gained the freedom of the house. He was not larger than a squirrel, but his tail was eight or ten inches long. He would swing downward from the gas-fixture sometimes, and then make a long jump, usually to the head of the nearest person. One day his mistress's husband was shaving, when the Monkey jumped from the chandelier and dropped on the man's bald head. There was no accident, but after that the man made sure of the Monkey's whereabouts before he began to shave, for he feared his nerves might not stand a second shock of the same kind.

Monkeys seem to be able to communicate their ideas to other Monkeys very readily, and a few years ago, Professor Garnier made some interesting experiments to ascertain whether these animals have a language that could be made intelligible to human beings. He secured phonograph records of the "talk" of Monkeys in museums and zoölogical gardens, and then went to Africa, where he shut himself into a great cage of iron bars, in the forest, and reproduced on the phonograph the sounds previously recorded by the instrument from the chatter of Monkeys in captivity. The wild Monkeys, Professor Garnier says, listened and chattered in reply, and he claims to be entirely satisfied that they have a rudimentary language in which they talk to each other as we do.

Monkeys are always interesting creatures because of their smart, clever ways and their resemblance to human beings. They are very curious, and when allowed to run at large, pry into all sorts of things

which do not concern them. A great naturalist once put into the cage occupied by his Monkeys, some tin boxes containing poisonous snakes. He showed the Monkeys the contents of the boxes and then replaced the covers. The Monkeys knew perfectly well what the boxes contained and were afraid of the snakes, but they could not resist the temptation to open the boxes and peer in. They would then run about in an ecstasy of fear, but if the covers were again placed on the boxes they could not keep away, and would slip them off again and again, each time trembling with fright.

When we see trained Monkeys, riding on the backs of ponies at a circus, we wonder if they are not frightened, but it is not improbable that they are enjoying themselves, instead, for a Monkey will of his own accord jump on the back of a dog or of a pig and ride about with every manifestation of delight in such amusement.

THE WART-HOG

THE Wart-Hog is found in Africa, and gets his name from peculiar warts or wens which grow upon his head and snout. He is a kind of wild boar, and has long, curved tusks, much larger than those of the wild boar found in other countries.

He is not so brave an animal as the wild boar, however, and will run away in preference to fighting. He rarely attacks men, unless forced to do so in self-defense.

When pursued, he will seek a hole in the ground, very likely the hole of some other animal, but instead of rushing in head foremost, he turns and backs into the hole, so that he may be ready to rush out, if he thinks it is wise to do so, without turning around in narrow quarters.

His long tusks, and the warts on his snout, give him a fierce look, though, as we see from his habits, he is not greatly to be feared.

THE WILD BOAR

THE Wild Boar is a brave beast, and his splendid courage arouses the admiration even of the hunters who are pursuing him to take his life, while his fierceness makes him a dangerous animal to encounter at close quarters.

He is like a pig or hog, but has longer legs than the fat swine which we raise for pork, and can run more swiftly.

When he is young, his coat is a reddish brown, but as he grows older it becomes a grizzled gray, with black underneath.

He is armed with tusks three or four inches long, which protrude from his upper jaw, and with these he can inflict terrible wounds. He is hunted with dogs, and before he can be killed he usually succeeds in tearing open, and putting out of the fight, several of the dogs which fasten their hold upon him.

The Wild Boar is found in most European countries, and is represented by a near relation in India. He makes his home in the woods, near brooks and rivers, where he can occasionally go to take a mud-bath, which he enjoys as much as any pig does.

He feeds on chestnuts, acorns and roots, and also helps himself to the fruit and crops of the farmer, sometimes doing great mischief. He keeps within cover of the woods during the day and comes out to feed at night, and in some countries the farmers ring bells, blow horns and fire their guns at night, during the season when the crops are ripening, in order to frighten the Boar away from their fields.

Unless he is surprised when feeding, or has his young near by, he may not offer to attack man, but his temper is uncertain and he never shows cowardice, so that, at the slightest hint of being disturbed, he is ready to rush upon his enemies.

When we know that he does not hesitate to fight the fierce tiger, we can understand how brave he is; and he is as strong and powerful as he is brave. Sometimes he gets the better of even a tiger in a fight.

In India hunting the Wild Boar is a favorite sport. The hunters ride on horseback or on the backs of elephants. They attack him with long spears, and sometimes, when driven to bay, he will rush boldly upon the spear in a desperate effort to reach the hunter. At such times he often crushes a horse's leg in his powerful jaws, or rips open his shoulder with his terrible tusks.

In olden times, Boar-hunting was a favorite pastime in England and in France. Men called "beaters" were sent out to arouse the Boar from his haunts and then the dogs were let loose upon his track. The hunters followed, sometimes on horseback and sometimes on foot. When a savage Boar was thus hunted down and finally chose a thicket of bushes in which to make his last fight, the dogs would leap upon him, fastening their teeth in his hide and biting at his legs, while the hunters came nearer with their spears, ready to give him a fatal thrust. The Boar never failed to kill several of the dogs, and would then charge fiercely upon the nearest hunter, who needed to be cool-headed and courageous to withstand the animal's dangerous assault. The hunters were often seriously wounded, or even killed, in this barbarous sport.

When he chooses to run instead of standing his ground, the Boar can give both dogs and horses a long and hard chase.





THE COLLARED PECCARY

IN AMERICA we have no wild boars, such as are found in Europe and in India, but in their place we have the Peccary. He is really a small wild boar, however, and will fight as fiercely and as bravely as the famous old boars of Europe.

The Common or Collared Peccary is about eighteen inches in height; no larger than a young pig. His tusks are not curved, like those of the European boar, but have very sharp edges, and he uses them more for cutting than for tearing. In attacking a dog, for example, he depends upon a quick bite with his jaws more than upon a thrust or cut with his tusks.

The Peccary is found in Texas, and in Central and South America. He usually makes his home in a hollow log, and remains there during the day, coming out at night to look for roots and acorns, and to prey upon the farmer's crops.

The Peccary is a good swimmer, and as he is a wandering animal, moving from place to place to find new feeding-grounds, he often swims across wide rivers.

Peccaries travel in herds and when attacked will surround the hunter without hesitation. They charge upon his horse, whose legs they cut with their sharp tusks; and if the hunter is dismounted, he may be very glad to escape by climbing a tree.

Small though they are, they are dangerous animals to meet, for they will fight on the slightest provocation, and unlike nearly every other wild animal, they have no fear of guns; neither the flash nor the report frightens them.

The hog and the wild boar make a sound something like "woof! woof!" but the little Peccary utters a hoarse cry like that of a goat.

The flesh of this wild pig is not very palatable, and Peccaries are hunted mostly because of the mischief they do to crops.

THE PORCUPINE

PERHAPS you have heard the quotation about the man whose —
"Each particular hair did stand on end
Like quills upon the fretful porcupine."

It is his bristling sharp quills, given to him as a means of defense, which make the Porcupine a hard object for other animals to attack.

Different species of this animal are found all over the world. The common Porcupine, of which we hear oftenest, is as large as a cat,

and has sharp claws and gnawing teeth like those of the squirrel and the rabbit. He lives in burrows which he digs in the ground, and comes out only at night in search of food. Roots, fruits and plants are his favorite diet, and he sometimes does more or less mischief to the vegetables in the farmer's fields and garden.

The sharp spines, or quills, with which the animal's body is covered, are several inches in length. The quills are very sharp, and by an action of his body the Porcupine can set them up on end as a protection to his body so that few animals care for a close encounter with him. A dog or even a lion, is likely after an attack on this animal to find his head stuck full of quills which have barbed points that work in deeper, and unless immediately removed, they may kill the creature that assailed the Porcupine.

When the Porcupine is going peaceably about his own business, the spines lie flat on his body, pointing toward the tail, and as the creature moves through the bushes, the quills make a peculiar rustling noise, which is at once recognized by other animals. When they hear this they are careful to give the Porcupine a wide berth.

In America, we have the Canadian Porcupine, a tree-climbing variety with long, thick fur all over its body, as well as the spines, or quills, on the tail and the upper parts.

The food of this Porcupine consists chiefly of the bark of young trees. He often strips the upper branches of a tree clean of bark, and as he repeats this many times on different trees, an entire forest where the Porcupine has his feeding-ground, may be seen leafless and blasted as if by fire.

The animal may be tamed, and will stay about the house, making friends with other household pets, but he resists any attempt to play too roughly with him and may fill the dog's head with spines by a switch of his tail, as a punishment for too great familiarity.

THE EUROPEAN HEDGEHOG

THE Hedgehog is sometimes confounded with the Porcupine, but he is really a very different sort of animal, except that he has a similar weapon of defense in the form of spines. He is more nearly related to the moles than to the Porcupine.

The Hedgehog makes a nest of hay and leaves in some sheltered place, under a hedge for example. The first part of his name comes from this fact, and as he has a snout resembling that of a pig he is called a Hedgehog. The Hedgehog eats insects, worms, beetles, mice and small snakes.

He is not as dangerous a creature as the Porcupine, for he does not leave an enemy with a skin full of quills. He simply rolls himself up in a ball, and neither dog nor cat can do more than get well pricked when he tries to bite the prickly animal. No amount of prodding will induce the Hedgehog to unroll. When his enemy is tired of trying to get beyond the sharp points of the quills, and goes away, the Hedgehog calmly returns to all-fours and goes to look for another mouse. He may be kept in the house like the Porcupine and is a much more agreeable pet to have about.

THE EUROPEAN WILD CAT

IT HAS been said that Puss, our familiar household friend, is a near relative of the Wild Cat, but the fierce little animal found in the forests and on the mountains of Europe and Scotland has a very different disposition from that of our quiet and good-natured pet, and most naturalists agree that the Egyptian cat is the ancestor of the familiar cat by our firesides.

The Wild Cat looks very much like a large "tiger" cat, as his fur is striped and spotted in the same way. His tail, however, is much shorter and is bushy, almost like that of the fox.

The Wild Cat walks through the forest with the same slow and stealthy tread as the domestic cat, and springs upon his prey in the same manner. He hunts chiefly at night, and catches mice, squirrels and rabbits. Sometimes he makes his way to the farmyard, and creates havoc among the fowls. Often he bites off and eats only the heads of the hens and chickens, leaving the bodies untouched, then perhaps, at his next visit, he will carry off a plump hen bodily. He is strong and fierce enough to attack larger animals, and will even kill sheep.

He does not like man, and cannot be tamed. His home is always in some dark nook or rocky cavern, far up on the mountain, or in the densest forest, and he shuns the haunts of men.

The skin of the Wild Cat has but little value, and his flesh is not good for food.

THE AMERICAN WILD CAT

THE American Wild Cat is also known as the Bay Lynx. He is simply a small lynx, smaller and browner than the Canadian Lynx, but larger than the Wild Cat of Europe. Like all the Lynxes, he has a very short tail.

THE CANADA LYNX

THE name Lynx is given to an animal of the cat tribe which is found in Canada and the northern parts of the United States, in Europe and in Africa.

The common Lynx of our own country is the Canada Lynx. He is about three feet in length, and has a short stub of a tail. He has long fur, gray in color, and his ears, which are his distinguishing feature, are long and tipped with a number of stiff hairs, which bristle up and give the animal a fierce appearance, when he is roused. He is, in fact, a fierce animal, and even in captivity gives an angry snarl when approached. If disturbed, he will spring upon a man, and may inflict serious wounds.

The Lynx is usually found in the wildest parts of the forest. During the day, he does not retire to a cave to sleep, but dozes, curled up on a ledge of rock, from which he can easily see any approaching danger.

This fierce cat catches rabbits, squirrels and birds, for his food. He is not over-particular as to what he eats, however, and will follow the more powerful puma through the forest, at a safe distance, waiting until the puma has killed an animal and made a meal, when he will devour such parts of the meat as the puma has left.

The Lynx does not run, but, arching his back like a cat, moves over the ground in leaps. Having lithe limbs and long white claws, he both swims and climbs readily. He often climbs a tree and settles quietly on a branch, until a bird alights near him, when, with one quick blow, he stuns the bird and then eats it, after partly stripping off the feathers.

He is quick and cunning, and hunters are seldom able to get near enough to shoot him. Sometimes, in the winter, when very hungry, he descends from the mountains, and preys upon the farmers' sheep or poultry.

In Africa the Lynx's coat is of a reddish color, from which he is given the name "Red Cat."

THE OCELOT

OCELOT is the name given to an animal of the cat tribe, which is much like the northern Wild Cat. He lives in the warmer portions of the Americas, from the Rio Grande to Brazil.

The Ocelot has a skin of tawny yellow or reddish gray, outlined with black rings and stripes. He is heavier than the Wild Cat of the North, but is never as large as the leopard of Asia.



From col. Chi. Acad. Sciences.

AMERICAN OCELOT.
1/5 Life-size.



He is a fierce creature, and cannot be tamed, no matter how long he may be kept in captivity. He is an expert climber and springs from trees upon the birds or small animals upon which he preys. He is a persistent foe of the South American monkeys, and lies in wait to catch them, as they spring from branch to branch.

Like all the cats, he is a graceful creature. His beautiful skin is much sought after as material for fashionable fur goods.

THE PUMA

IN THE Western Hemisphere there are no animals of the cat tribe so large and dangerous as the lion of Africa and the tiger of India, but there are several species of smaller animals which resemble them in some degree. The largest of these animals found in North America is the Puma or "Mountain Lion." It does not range south of Mexico, but is found in many parts of the United States and Canada. It is also known as the Panther or "Painter," Jaguar, Cougar and Mexican Lion. All these names are applied in different parts of the continent to the same animal.

Mountain Lion is to us the most significant of all these names, for this fierce cat is oftenest found in the Rocky Mountains, and has a tawny skin, with white lips and dark tail tip, like those of the African Lion.

This animal is about six feet in length and one hundred and fifty pounds in weight, and though not as large as the African Lion, is nevertheless a strong and dangerous beast. He is not fond of fighting in the open, but hides in trees and will suddenly spring upon animals passing below. He rarely, if ever, attacks a man.

Although a Puma will follow a hunting or camping party for days, partly out of curiosity and partly in the hope of getting a chance to attack the horses, he does not usually attack them if the hunter shows that he is aware of the animal's presence. Hunger, however, makes the animal bold and fierce, and when he has been long without food, even the presence of a man will not keep him from killing an animal that he wishes to secure for his dinner.

Besides being a flesh-eater, and a hunter of other animals, the Puma likes fish, and, unlike some other cats, does not object to going into the water. He will enter a stream, and watching his opportunity, seize a fish with his sharp claws and retire to the bank of the stream to devour his prize at leisure.

The Puma has now disappeared from the eastern states, excepting perhaps in the Adirondacks, having retreated before man and

his gun; but in the Rocky Mountain region and in British Columbia and Mexico he still flourishes, and hunters tell exciting tales of encounters with the animal. Occasionally, a Puma descends to the settled country and attacks a herd of cattle. He can easily kill a cow or a pig, and the farmers are sometimes compelled to organize a "panther" hunt to save their stock from the ravages of these animals.

His skin, which is smooth and is covered with short hair like that of the lion, makes an interesting trophy for the hunter, though it is not especially valuable in the market.

THE JAGUAR

THE Jaguar is to Central and South America what the puma, or mountain lion, is to the northern part of this Hemisphere. Although he resembles the puma in many of his habits, the two animals are deadly enemies, and fight fiercely with each other.

The Jaguar has most of the characteristics of the tiger and the leopard, and his coat is one of the most beautiful of those found on fur-bearing creatures. The color is dark yellow, or orange, with spots of black, and the Jaguar has a flattened head like that of the leopard. His powerful legs and jaws enable him to crush his prey in much the same way as the leopard does.

He is fond of water, and is usually to be found near the banks of streams, although he travels many miles from them in search of prey. He hunts in the dark, and while prowling through the jungle he roars and growls. His voice is a terrifying sound to the hunter who may be spending the night in the forest.

There are man-eating Jaguars, as there are man-eating tigers. This terrible cat no more hesitates to attack a man than he does to attack a horse or an ox.

It is not safe to spend the night in a South American forest without kindling several fires about the camp, for the Jaguar detects the scent of man and horses from a great distance, and will make a bold attack on a camp unless kept off by the bright light of camp-fires. The horses fear the Jaguar as much as they do the tiger and if one be in the neighborhood, will prance and neigh with terror. He in this way often gives the alarm to the sleeping hunter.

The soft and beautifully marked fur of the Jaguar makes a magnificent rug or robe, and for this reason the skin has considerable value.

THE LEOPARD

THE Leopard is another member of the family of powerful cats which eats flesh. He is found in Asia and Africa. All have one feature in common, however,—their fur, whether its ground is yellow or orange, is spotted with dark brown or black rosettes, and sometimes a broad black stripe runs down the back to the tail.

A cave on a rocky hill is the Leopard's favorite home, but it must be near the jungle, where he can hunt for game; and near water, where he may go to lie in wait for other animals as they come to drink.

His body is six feet or more in length, and his head is flattened, like that of the South American jaguar, which resembles the Leopard in many ways.

Cunning and stealthy in his habits, crouching among the branches of trees, and stealing through the forest with cat-like tread, the Leopard is not a pleasant neighbor. His food is the flesh of any animal he is able to kill, and monkeys, small antelopes, goats, sheep, dogs and cattle all become his prey. Sometimes he kills and eats a man, and when he has become a "man-eater," he is more dangerous than ever, for he will be constantly on the alert to find human prey.

In the jungle, the hunter sometimes hears a peculiar hissing, which resembles the noise made by the sawing of wood. It is the sound uttered by the Leopard as he walks about in the forest.

Although he is generally so sly and cautious in his movements, the Leopard is not cowardly, and sometimes displays great boldness in attacking his prey. One of these animals has been known to approach a camp at night, and spring over the bodies of men lying asleep on the ground, in order to seize a goat tethered in the camp. The Leopard is an accomplished climber, and he sometimes carries a goat or a sheep into the branches of a tree, where he may eat it at his leisure. He is so much at home in trees that he is sometimes called the "tree-tiger."

In India is found the Cheetah, or Hunting Leopard, which can be tamed and trained to hunt other animals for his master. In earlier times, when men indulged in more cruel practices than they do now, these hunting Leopards were brought to Europe and used in hunting deer. The Cheetah's head was covered with a hood, so that he could not see, and he was then taken to the forest, where the hood was removed and he was set upon a deer and usually tore open its throat in a few seconds. But after a time, men became disgusted at the thought of using so sly and ferocious a creature in the chase, and

the practice was abandoned. The Rajahs, or native Princes, of India, however, still keep Cheetahs for use in killing wild game on the open plains.

The beautiful fur of the Leopard makes his skin valuable, and it is much sought after on that account. As in the case of the other flesh-eating animals, his flesh is not good for food. If captured when young, Leopards may be easily tamed, notwithstanding their natural fierceness. They are often seen in museums and menageries, and are among the most graceful of all the wild animals.

HYENAS

THERE are three kinds of Hyenas, the Spotted, the Striped and the Brown. They are found in India and in Africa, and are among the most repulsive animals of which we know. They look something like a large wolf dressed in the skin of a member of the cat family, and have a sloping back which gives them an ungainly appearance.

The Hyenas have powerful jaws, and their teeth are somewhat like those of the dog, but much larger. They are flesh-eaters, and eat fresh or decayed meat with equal relish.

They are fierce and ravenous brutes, but so cowardly that they always prefer to steal their food rather than to fight for it. They sneak up to a village in the night and seize a sheep or a goat, or perhaps a calf, and drag it away. They will even enter the tents and houses of human beings, and with one sharp bite tear away the cheek of a person who is sleeping. They hesitate to attack an able-bodied man, but will spring upon an old and feeble person as they would upon a sheep or a goat.

The Hyenas' tastes in food are not nice, and they are especially hated as grave-robbers, for they will dig open graves and devour the bodies of the dead.

They utter long, mournful howls when prowling about in the night, and a troop of Hyenas will sometimes surround a camp and howl throughout the night. They are afraid of fire, like almost all wild animals, and will keep at a distance as long as they see the blaze.

The Hyenas' skins are very handsome. They are a tawny or orange color, striped or spotted with black, but owing to the fact that these animals feed upon carrion, their pelts have an offensive odor and are not valuable.

Hyenas are sneaks and bullies among animals, but can be tamed, and will even make friends with dogs, which are their natural enemies.

THE WOLF

THE Wolf is very much like a large, fierce dog, and at a little distance you might easily believe him to be a rough-coated hound with pricked ears. He is a flesh-eating animal, and it is partly because nature has given him an appetite for chickens and lamb that he has succeeded in getting himself so thoroughly disliked. He is, in fact, a midnight prowler and raider, and will enter the farm-yard at night and kill and carry off a chicken, a young pig, or a lamb, without difficulty.

He is a swift and steady runner, and when pursued gives the best dogs and horses a long chase. When he is himself pursuing his prey, he becomes a terrible foe because of his determination and his apparent ability to run forever without stopping.

In most countries the Wolf is careful to avoid man at all times, but in some, such as Siberia, where they have not learned to fear firearms, they are dangerous even to man, when pressed by hunger.

The Wolf gives out a peculiar and pungent odor, not at all pleasant to the smell, and horses, which especially fear Wolves, catch their scent and begin to run wildly for safety long before the driver of the team understands the cause of the fright.

Stories of the terrible ferocity of Wolves come to us from Russia and Siberia, where these fierce creatures exist in great numbers. In one case, it is said, a company of ninety soldiers, sent out to exterminate a pack of Wolves that had been attacking travelers and killing farm animals, was surrounded by Wolves, and although hundreds of the fierce creatures were shot down, they were so bold and came on in such numbers that the soldiers were overcome, and all of them killed.

Wolves have been known in nearly all parts of the northern hemisphere, but they are gradually pushed back as a country becomes thickly settled, and hang about the borders of civilization, where they can prey upon domestic animals. They are as sly and cunning as the fox, and are so suspicious of traps that they can rarely be captured.

They are hunted with a fierce breed of dogs called Wolf-hounds, for the ordinary dog will not attack an animal which may kill him with one vicious bite. These dogs are large, powerful animals and are especially trained for Wolf hunting.

A young Wolf may be taken and brought up among dogs, and will behave fairly well for a time, yet, in the end he will show that he is a Wolf, after all, especially if he has a chance to kill sheep.

There are several varieties of the Wolf—called respectively White Wolf, Black Wolf, Red Wolf and Gray Wolf as their fur differs in

color in different localities. There are also many kinds of Wolf that differ in other ways as well as in color.

The Coyote is really a small Wolf found on the American prairies. He makes his home in a burrow in the ground, and usually appears only at night. As soon as darkness comes, he sneaks around a camp, in the hope of finding a chance to steal something to eat, and very often a circle of Coyotes will surround a camp and keep up a most dismal and provoking howl throughout the night. A rifle-shot sends them scattering with their tails between their legs, like frightened dogs, but after a while, they sneak back again.

The Coyote can feign death so naturally as to deceive even those who know his habits well, and suffers almost anything to be done to him in hope that the hunter will leave him for dead, when he will spring up and run away.

While the Coyote is not as savage as other Wolves, not so likely to attack a man, he is a very skillful thief. In the far West, he hangs about forts and villages, snapping up here a chicken and there a pig, and even feeding from the garbage, for he by no means is select in his tastes.

His fur is coarse and is of a yellowish-gray color and he has a bushy tail.

The Coyote is larger than the fox and he has the unpleasant odor common to the Wolf family.

THE LION

THE name of "King of Beasts" has been given to the Lion because of his majestic appearance and his great strength.

It may be hard at first to realize that the Lion belongs to the same family as our domestic cat. He is very much like a cat on a large scale, being as tall as a good-sized calf. He has the same general form as the cat, though his mane makes his head look proportionately larger, and his body is catlike and graceful. His tongue is rough like the cat's. He has sharp claws, and his long teeth are very strong and sharp.

His coat is of a tawny color. He is so strong and agile that he can attack and overpower animals much larger than himself.

He creeps stealthily upon the animal he has selected for a meal, just as the cat creeps near a mouse or a bird, and pounces upon it with a single spring. He does the greater part of his hunting by night. If you have ever heard a Lion roar in the menagerie you can imagine what a terrifying noise it must be to other animals which



From col. Mr. F. Kaempfer.

BLACK WOLF.

19 Life-size.

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hear it in the forest and know that the "King of Beasts" is in their neighborhood.

The Lion is found in Africa and in some few southern parts of Asia. He thrives only in hot climates, and if taken to cold countries, like our own, must be warmly housed in winter.

He is a flesh-eater and never eats grass or vegetables, but when wild game is scarce will steal up to a village and carry off a goat or a sheep. The Lion will not attack human beings by daylight, unless followed up and forced to fight, but in the night he becomes bolder and will spring upon a man, whose head he crushes with one bite of his powerful jaws.

The mother Lion is called a Lioness, and her cubs, when born, are about as large as half-grown cats. They soon become active and pretty little creatures, and play with each other much as kittens do. They may be kept quite tame for two or three years, but when the Lion has reached full growth, at the age of six or seven years, the only safe place for him is behind bars, no matter how good-natured he may seem to be.

The skin of the Lion makes a handsome rug, but the flesh is not good to eat, and the chief commercial value of the animal comes from the fact that he brings a good price when delivered alive to the owners of menageries, or the director of zoölogical parks, where he may be kept on exhibition.

There are men and women who make a business of taming and training Lions, and under their patient teaching these huge cats sometimes learn to do astonishing tricks. When we see one of these animals kept in a cage, however, we cannot but feel sorry for him, for in his native state, before he is brought from his home in the wilderness, he loves to prowl over a long reach of country, and will travel many miles in a single night. In his menagerie cage he paces restlessly back and forth, no doubt wishing he were back in the desert or forest, where he might enjoy the freedom for which nature intended him.

THE TIGER

THE Tiger is even more like an enormous cat than is the lion, and is still more ferocious. He is found in Asia, principally in India, Siam and China. He lives in the jungle or thick forest, and usually spends the day-time in a cave or a den among the rocks, and does his hunting at night. If wild game is scarce in the jungle, he will approach a village in the hope of killing a cow or goat. A Tiger that has once killed and eaten a human being is called "a

man-eater," and is greatly feared by the people in the vicinity in which he has his haunts. It is said that a man-eating tiger that has once tasted human flesh prefers it to any other, and will take great risks to obtain it.

The Tiger is a large animal, and sometimes reaches a length of ten feet from his nose to the tip of his tail, and weighs from four hundred to five hundred pounds. His coat is a beautiful one, striped with orange-yellow and black, while the fur on his chest is white.

If you have an opportunity to see a living Tiger, you will notice that he has very large and powerful shoulders, as well as large sharp claws. He can thrust out and draw in his claws as a cat does. As these claws are strong and sharp, he is enabled to grasp his prey and hold it securely while he gives it a fatal bite. Tigers sharpen their claws by standing close to the trunk of a tree and drawing them rapidly through the bark. They seem to enjoy doing this, and it keeps their claws as sharp as razors.

The Tiger's eyes are very large. In the night they shine in the darkness like yellow lamps, and the animal, like the cat, can see nearly as well at night as in the daytime. In India, Tiger-hunting is a pastime. The hunters usually ride the backs of elephants and are thus able to go through jungle-grass and into places that would be inaccessible to a man on foot or on horseback.

Hunting the Tiger is dangerous sport, however, for the Tiger sometimes springs upon the elephant, and the hunter himself is in danger, unless he can succeed in shooting the savage animal. A plan that is sometimes followed is for the hunter to conceal himself in a tree, while natives, called "beaters," surround the Tiger's den, and with hideous noises frighten the animal from his retreat. As he moves along the path near which the hunter is concealed, he is shot before he suspects his danger. Tiger cubs, like baby lions, are amusing little creatures, and are as playful as kittens, but they grow strong very rapidly, and soon become rough in their play.

The Roman Emperors introduced Tigers into their gladiatorial sports, compelling men to fight these fierce animals in the open arena, with sword and shield for their only defense. Needless to say, many men were thus sacrificed to gratify the savage tastes of the spectators.

A Tiger's skin makes a very handsome rug, and has considerable value. The flesh is not used for food.

THE RHINOCEROS

“**A**S TOUGH as Rhinoceros hide” is a common expression, and it means that the thing to which allusion is made is very strong and tough indeed.

Rhinoceroses are found in Africa and in India. In some ways they are like a very large wild boar, but, unlike the latter, they have at the end of their snouts a remarkable horn. The Rhinoceros found in India has only one horn, which is usually about fifteen inches in length, but the African Rhinoceros has two, one behind the other. The larger horn, which is in front, sometimes measures thirty-six inches in length, while the other is often only half as long. With these horns, the Rhinoceros is accustomed to tear up the earth as he walks along, and they are so strong that he makes the ground look as if it had been plowed.

The Rhinoceroses spend no time in running after men, unless men first run after them, and are disposed to go quietly about their own business, if not disturbed. Grass and tree branches being their staple food, they spend the night in feeding, and often wander many miles into the forest. In the morning they make their way back to the water, where they drink and splash about for some time, and then again retire to the forest, where they spend the day in sleep.

The hide of the Indian Rhinoceros, while it is thick and hangs in folds about his neck, is not remarkably tough until it has been taken from the animal and dried. Then it becomes very hard. In Africa the natives use the dried hide of the kind found there for making shields, and to those tribes whose battles are fought mostly with the bow and arrow and the assegai, or dart, these shields afford good protection, for the dried hide easily stops such missiles.

The African Rhinoceros has a feathered friend called the Rhinoceros Bird, which follows him about, perching upon his back and pecking the parasites from his hide. The great animal has but poor powers of sight, although his scent is keen, but the Rhinoceros birds are always on the lookout for the big fellow's foes, and if an enemy approaches, they rise in the air, screaming loudly, whereupon the Rhinoceros rushes off into the thickest of the forest, and in this way often escapes the hunter. Sometimes, however, instead of trying to escape, the Rhinoceros will turn and charge on the hunter, when, unless the latter can get out of his way, or the animal is shot down, he may kill his pursuer. He moves swiftly, in spite of his clumsy looking body and his short legs. He rushes viciously at his enemy, with his head held so that the long, sharp horn points straight at him.

Sometimes the Rhinoceros takes a notion to turn the tables on his pursuer. He forces the hunter to take refuge on a rock or in a tree, probably with his gun out of reach, if he had to run for his life. Then he waits patiently about the place, sometimes pretending to go away, but rushing back with head lowered for a charge, if the man shows signs of leaving his place of safety. He will, perhaps, rip the bark from the tree with his horn and dig out splinters of the wood, just to show what he could do if he tried. But he is such a dull animal, after all, that if some new object comes along and attracts his attention, he may forget all about the hunter in the tree and go off without giving him another thought.

The natives eat the flesh of the animal, but it would not be very appetizing to us, who are accustomed to beef and lamb.

THE HIPPOPOTAMUS

THE Hippopotamus is an animal as large and unwieldy as his own name. He is found in Africa, and makes his home near riverbeds, for he is fond of water, and spends half his time in it. At night the Hippopotamus wanders along the banks of the river, feeding on grass and reeds, and sometimes he strikes off across country, but is sure to end his journey near water, before daybreak. He spends much of the daytime in swimming or floating lazily in a quiet pool, though he sometimes crawls out to bask on a sandy beach in the sun, or roll luxuriously in the oozy mud.

The Hippopotamus has an enormous mouth, and when he opens it to its full extent, it looks like a small cavern. His eyes and nostrils bulge out from his head, so that when he floats in the water only his forehead, eyes and nostrils, and the upper part of his back, can be seen. The rest of his body is submerged, and he might easily be mistaken for a floating log.

A large Hippopotamus is but little inferior in weight to an elephant, but his legs are so short that his size is not evident. He is naturally harmless, but with his mighty jaws, if made angry, he easily crushes in the side of the hunter's canoe.

Unless attacked, however, or disturbed while caring for his young, he is not disposed to interfere with man. He is not a very clever animal, and spends his time in what seems to us a very lazy fashion.

The flesh of the Hippopotamus has a mild flavor, and is very much prized by the natives of Africa. Sometimes the people of an entire village join in surrounding a herd of Hippopotami, kill them all, and then feast for several days on the meat.

Hippopotami live in family groups of four or five, and sometimes in herds of twenty-five or thirty.

They are hunted for their skins, from which leather is made, and in recent years they have been slaughtered in great numbers.

THE ANT-EATERS

THE Ant-Eaters are found chiefly in South America, where they make their homes along the banks of streams. One species, called the Great Ant-Bear, attains the size of a small bear and has a body shaped much the same as Bruin's, but with the addition of a very long and bushy tail. The Little Ant-Eater, which does not grow to be as large as the Ant-Bear, unlike the larger animal is a tree climber.

These creatures live principally upon white ants, and nature, therefore, omitted to supply them with teeth. In South America ants are not the tiny creatures with which we are familiar, which throw up little mounds of brown earth, perhaps half an inch high, but are much larger, and build great ant-hills of clay, sometimes ten feet in height. Other animals do not disturb them, but the Ant-Eater tears the hill open with his strong claws and the ants immediately run out in great numbers to see who has disturbed their house. The Ant-Eater puts out his long, slender tongue, which is coated with a sticky solution, and in a moment it is covered with ants. He then draws in his tongue and thus obtains a mouthful of food. He repeats this operation several times until his hunger is satisfied. He has no teeth, but his tongue serves well to catch his prey.

In Africa is found the Ardvark, or Earth-Pig, which is also an Ant-Eater animal. He is shaped much like a pig, and has a long snout, and a long, slender, sticky tongue, like the Ant-Eater of South America. Unlike his American relative, however, he has teeth, and eats, not only ants, but other food also.

The Earth-Pig is about five feet in length. His home is in burrows in the ground. The flesh of this animal is said to have a fine flavor, and he is much sought after by hunters.

THE NINE-BANDED ARMADILLO

THE Armadillos are ant-eating animals, though they are also fond of worms, caterpillars, lizards and snakes.

They range from five inches to three feet in length. They have usually a long snout and a long, tapering tail. Their most remarkable feature, however, is the coat of mail which covers the upper part

of their bodies. This is made up of a series of hard, bony scales or plates, which resist the teeth of much larger animals. When attacked they roll themselves up into a ball and thus defy many of their enemies, for they cannot bite through this bony shell. The Armadillos have no protecting shell underneath, however; the only cover there is hair, and if a dog or fox succeeds in turning them on their backs before they can roll into a ball, they are easily killed.

These little animals are found only in America, most of them in South America. One species only comes as far north as Texas, and that is the one shown in our picture. He makes his home on sandy plains or in fields near the woods, but never in the forest itself. He lives a more or less solitary life in a burrow in the ground, from which he comes only at night, or on dark cloudy days, for the light of the sun is disagreeable to him. As he is very fond of the ants, he sometimes makes his burrow directly under an ant-hill, so that his dinner may be always ready. He licks up the ants by hundreds, and their bites do not affect him at all.

The Armadillo is an expert digger, and he can in a few minutes make a burrow, even in the hardest earth, large enough to contain his body. Once in the burrow he cannot be pulled out by the tail, for he thrusts his long white claws into the ground and is strong enough to maintain his hold almost indefinitely. So his pursuer must dig him out. The native Indians are very fond of the flesh of the Armadillo, and some white people think it a palatable dish.

THE GREAT KANGAROO

THE Kangaroo has a long body and a small head, and his hind legs are much longer and stronger than the fore legs. Perhaps his most distinct feature is his remarkable tail. This member is thicker than a man's arm and several feet in length. When he sits erect, he rests partly upon his strong hind legs, and partly upon his powerful tail. He has a smooth coat which is generally of a dark leaden gray or reddish brown on the back, and shades to a lighter color underneath.

Australia is the home of the Kangaroo, and so many thousands of these strange animals roamed about the island only a few years ago, that the sheep-raisers were forced to kill them off as fast as they could, in order to save the grass for their flocks; for the Kangaroo is a grass-eating animal and bites off the grass so close to the roots that he leaves nothing for other animals to graze upon. When he feeds, he stoops over and rests on his fore legs, while he nibbles the



FROM COL. F. M. WOODRUFF

ARMADILLO.

PREPARED BY H. H. HERRING



grass. He moves over the ground, not by walking, but in a series of hops. When feeding, he pushes his long hind feet forward between his fore legs, and then, balancing himself by means of the heavy tail, which rests upon the ground, and is almost as useful as another leg and foot, he hops forward a few feet at a time, to reach fresh grass.

When alarmed, the Kangaroo makes great bounds, sometimes covering twenty feet in each leap, and does not touch the ground with his fore feet during his flight. The great tail not only helps to push him forward, but serves as a rudder by which he can direct his course.

Another remarkable feature of the Kangaroo is that the mother has in her breast a sack or pouch of loose skin in which she carries the baby Kangaroo for several months, until he is old enough and strong enough to take care of himself. If the little Kangaroo is playing in the grass and becomes frightened, he bounds back to his mother, and leaps head-foremost into the pouch. It is a very pretty sight to see the baby Kangaroo peeping from this retreat.

The Kangaroo is neither a fierce animal nor a very intelligent one. He always makes the greatest possible efforts to escape a pursuer, but if run down and forced to fight, he defends himself as best he can. This he often does successfully, except, of course, against the hunter's leaden bullets. With his short forearms, he will seize a dog, and squeeze him so tightly as to render his enemy helpless, and if he is near water, will hold the dog's head under water until he drowns. He sometimes seizes with his fore legs, an animal or a man, and then, bringing up one of his powerful hind feet, which is armed with a long, pointed nail, strikes a terrible blow, which is of sufficient force to kill a man.

The Australian farmers have suffered so much loss from the Kangaroo that they have slaughtered the animal in great numbers, but, though the Kangaroo has been driven away from the more thickly-settled parts of the country, he still exists in great numbers in the wilder wooded parts.

This queer animal is easily cared for in captivity. He is not especially sensitive to cold weather, and, if well cared for, will live many years. Kangaroo skins, when tanned, make excellent leather, which is used in making the softest of shoes and slippers.

There are many kinds of Kangaroos, but the others are much smaller than the Great Kangaroo and are in all ways less important.

THE ELEPHANTS

WHAT would the circus or the menagerie be without Elephants? Why, a good deal like the Fourth of July without fireworks—something of a show, but with the best part lacking.

The Elephant is to many the most interesting of all the wild animals. He is the largest of those now living on the earth, and we have reason to think that he is one of the very, very great-grandchildren of the mastodon, an animal that lived here not so very long ago. The mastodon, like the Elephant, had tusks and a trunk, and was of great size. There are two distinct kinds of Elephants living to-day. The common Indian Elephant with small ears, and the larger African Elephant with enormous ears.

Formerly both were found in great numbers, but Englishmen who are fond of hunting big game have slaughtered so many for "fun," and the natives have killed so many to get their ivory tusks, that in Africa they are much more scarce than formerly, and in India the government has found it necessary to protect them by allowing them to be hunted only at intervals. In India, Elephants are trained and made useful in many ways, so that we have reason to hope that this interesting animal will not be allowed to become extinct, like the bison of our Western prairies, or the fast-disappearing zebra and giraffe of Africa.

Elephants sometimes live to be one hundred or more years of age. Their usual height is from eight to ten feet, although they have sometimes been known to reach a height of twelve feet. "Jumbo," the famous African Elephant that was kept in London for many years and then traveled in this country with a circus, was eleven feet in height, and weighed more than six tons. Think how easily an Elephant could crush a man, or even an ox, simply by stepping on him!

The Elephant's thick skin hangs loosely on his body. His great ears, which flap back and forth like fans, are in keeping with his huge body, but his eyes and tail seem absurdly small for so large a creature.

His trunk is one of his most valuable possessions. It is long enough to reach the ground when he stands erect, and is so flexible that he can move it in any direction. It serves him as a long nose and as an arm, also, for with it he can pick up very small bits of food, which he then thrusts into the oddly-shaped mouth, located behind his trunk. The Elephant can also fill his trunk with water and throw it into the air, so that it falls on him as a cooling shower; or if he is inclined to mischief, he can blow the water with considerable

force at any one near him. Protruding on either side of his trunk are the tusks, which are really two upper front teeth, which grow very large.

These tusks are sometimes from five to eight feet long and a pair of them weighs from one hundred and fifty to one hundred and seventy pounds. From them we get ivory for making billiard balls, chess-men, the sticks of fans and many other delicate and beautiful objects. These tusks, therefore, are valuable, and to get them men have slaughtered the Elephant without compunction. Nature gives the animal his tusks as a weapon, and as a tool with which to dig up roots. He eats grass and the tender branches of trees, but does not prey upon other animals.

Elephants will flee from the approach of man, for they are intelligent creatures and know that he is their worst enemy. Sometimes, however, there is a "rogue" Elephant,—a name applied to an Elephant of vicious temper, which goes about seeking to do mischief. A "rogue" will charge fiercely on a man who approaches him, and as he comes running forward, with his huge body swaying from side to side, he is a very dangerous enemy.

The Elephant likes to roll in the mud and to play in the water, but most of the time he is moving from one place to another, and he even sleeps standing. Elephants travel over great ranges of country, often going from twenty to fifty miles a day; and although they seem to be clumsy creatures, they move so swiftly, that if they have a little start the hunter will rarely be able to overtake them. One hunter tells how he followed the track of a herd of Elephants for four days, as fast as his horse could go, and only caught up with them because they made a long loop and crossed their own track.

In India, men capture Elephants by means of deep pits, which are covered with earth and leaves, spread on a thin support. The Elephants are enticed to these pits; and if they fall in, their feet are crowded together at the bottom, and they cannot get out. Another method of capture is to pursue them, on tame Elephants, and lasso them.

Once captured, the Elephant is easily tamed, and becomes a cheerful servant. He displays a good deal of affection for the master or keeper who cares well for him, but he is resentful of injury, and has a wonderful memory for those who do him harm.

Several years ago, a man watching an Elephant in a menagerie gave him a quid of tobacco. As other people were feeding him peanuts, candy and cake, the Elephant suspected no harm and put the tobacco into his mouth. The taste of the tobacco was very offensive to him, however, and he trumpeted with rage, refusing to take anything more that the spectators offered him. The man who had given him the tobacco laughed heartily, but the Elephant was very

angry. Some years afterward, this same Elephant was in another city, and the man who had given him the tobacco came near him. Although the animal had not seen the man for years, he remembered the tobacco, and, watching his opportunity, as the man leaned over the rope outside which the spectators stood, the Elephant suddenly seized him, dragged him under the rope, and then, raising him in the air with his trunk, threw him over the heads of the spectators against a tent-pole. The man was injured so that he was crippled for life, and probably the Elephant's owner would have thought he had become insane, as Elephants sometimes do, had not the keeper recognized the man as the one who had given the animal the tobacco years before.

A good-natured Elephant shows his liking for a person by fondling him with his trunk. The Elephant obeys his keeper's commands promptly, and this makes it possible to use him for doing very heavy work; as in India, where he is used in loading and unloading vessels, drawing great loads, and raising heavy weights. An Elephant easily handles with his trunk and tusks a log which a dozen men could not lift. His docility is shown by the fact that while he fears the tiger more than any other animal, he can be trained for use in hunting that fierce animal in the jungle. He carries the hunter in a box-like saddle called a "howdah," which is strapped to his back.

An Elephant is fully conscious of his own weight and of the danger in walking on thin supports. When he crosses a bridge, he tries it first with one foot and then with the other, and if he decides it is not strong enough to sustain his weight, no amount of coaxing or goading can persuade him to cross it.

As proof that he is a clever animal, we have only to watch his performances in the circus. When the largest and strongest animal in the world submits to being taught how to turn somersaults, to walk on a single row of pegs, to play see-saw, or to sit in a chair at table and ring a bell to call for his dinner, we must admit that he is entitled to great respect for his intelligence, as well as admiration for his good-natured obedience.

But Elephants are not always happy in captivity, and sometimes become very cross and unreasonable. When they get to this point, they are dangerous to the men who care for them, and sometimes are shot to prevent their doing mischief. One cross Elephant, which sulked and refused to move, had a chain placed about his neck and two obedient Elephants were given the task of drawing him to another room. The cross Elephant was so stubborn that while the others pulled on the chain, he deliberately hung back until he was suffocated, so that he really committed suicide.

If you look at the flag of the country of Siam, you will see that it bears a figure representing a white Elephant. In that country the white Elephant is held sacred, and if a man kills one, he is himself put to death. When a white Elephant is captured, he is taken to a temple, where he is cared for by priests and worshiped as a sacred animal. White Elephants are really of a dirty pink or pinkish-gray color,—a much lighter color than that of the ordinary slate-colored ones, but still very far from white. They are not a separate species but are “albinos,”—an occasional freak of nature.

THE CAMEL

WE HAVE many things that are not possessed by the people of the far East. They, however, have one animal that we have not, and that is the camel, which is peculiarly valuable to them.

The Camel is no longer a wild animal, as one might think from seeing it in the menagerie along with the elephant and the kangaroo, but has been for centuries a beast of burden, in the deserts of Africa and Arabia. In fact, the Camel has come to be known as the “ship of the desert,” because it is only with his aid that the ocean of sand can be safely crossed. There he is to the desert traveler what the ship is to the mariner.

The Camel has two noticeable features—the hump which rises on his back and his long, ungainly neck. The hump is really a storehouse of fat, and when the Camel’s food supply is cut short, nature has arranged for him to draw for nourishment on this store of fat. So, when he has had little or no food for a long period, the hump disappears and the Camel’s back becomes almost flat.

In the same way nature enables him to keep on hand a supply of water to be used at will. The Camel has a wonderful stomach, like that of the cow, and one of the compartments of his stomach is composed of cells which he fills with water when he drinks. Then, if he is compelled to go for a long time without a fresh supply, he can draw upon this reservoir in his stomach, by opening the cells one by one and letting out a little water at a time. In this way he can take sufficient water for six days’ supply.

The Camel walks in a peculiar fashion, which causes his rider, who sits on the Camel’s hump, to sway back and forth with a rocking motion, that makes some people sick. Perhaps that is another reason why they call the Camel the “ship of the desert.” This swaying is due to his moving both the legs on one side forward at the same time. Look at an ordinary horse, and you will see that he moves

the right fore foot and the left hind foot forward at one time, and then the other two feet, so that he moves without swaying much.

Although the Camel's gait is so ungainly and so slow,—for he goes at the rate of only three miles an hour,—he can, if necessary, travel for twenty or thirty hours without stopping. In the desert, people sometimes have to go many miles over dreary wastes of burning sand before it is possible to reach an "oasis," as we call a little spot where there is grass, and perhaps a few trees and a spring of water. To cross the desert sometimes requires several days, and how would people be able to make the journey themselves, or to send their goods to be sold, if it were not for the Camel? By using horses, you say? Oh, no! for the horse can go only a few hours without food and water, and he cannot travel so far at one time as the Camel. Moreover, his feet would sink in the sand, while the Camel's feet are prevented from doing this by their ability to spread widely apart and rest on the two broad, soft pads on the bottom. These pads also serve to keep the sand from burning his feet. And then, in the desert there are terrible blinding sand-storms, which are suffocating to men and to most animals, unless they can protect their nostrils. The horse has no way of protecting his nostrils, and would breathe in the fine sand, but the Camel has a sort of trap door in his nostrils, and when one of these storms comes up, he simply closes this trap door and keeps the sand out.

The Camel's natural food is grass or leaves, but he will eat prickly bushes, dates, bread and, in fact, almost any vegetable thing that is offered him. He eats much as the cow does, and if you have an opportunity to observe a Camel, you will see that his jaws slide one upon the other, for, like the cow, he "chews the cud." The Camel gives milk, which the Arabs use as we do the cow's milk.

Though the Camel carries heavy loads, he always seems to do so unwillingly. When he kneels at the command of his master, to receive his burden, he grunts and complains. He is not an affectionate creature, and often bites at one who comes too near.

In Central Asia we find the Bactrian Camel, as he is called, which has two humps on his back, instead of one. This Camel is also very useful, for he is able to endure, not only the hot sands of the desert, but ice and snow as well.

The Dromedary is not an animal distinct from the Camel, but is a breed of Camel that has been very much improved. He is especially cultivated for his speed, and is to the Camel family what our race horses are to the horse family. All things considered, the Camel is one of the most useful of the animals, and, for many thousands of people, takes the place of both our horse and cow.

THE ZEBRA

IF YOU can imagine how a small white pony would look if you striped him all over his body with a black or dark brown paint, and added long ears and a stiff, bristling mane, you will have some idea of the appearance of a Zebra. His legs are short and neatly formed, his hoofs small but very hard, and his teeth like those of the horse. His natural food is grass.

This little wild horse, for such he really is, is found in Africa. Formerly there were vast herds of Zebras, but so many have been killed, that it seems only a question of time when the last of them will have disappeared. When the Zebra is finally extinct, we shall have lost one of the most interesting and picturesque animals of Africa. The Zebra is shy and runs quickly from the hunter, but if forced to fight will turn bravely on his pursuers, for his temper is fierce, and with teeth and hoofs he can do considerable mischief to an enemy.

Zebras have been tamed and made to work in harness, but they are not strong enough to draw very heavy loads. They may be used to draw light carriages, however, and a pair of Zebras makes a pretty team. The animal's skin is sometimes tanned and used for leather, and the natives of Africa are very fond of the flesh, which has a sweet flavor. The lions are especially fond of it, and will lie in wait for hours near a stream where Zebras come to drink, in the hope of pouncing upon one of the animals.

There are several species of the Zebra, some of which are known by different names. All are much alike in form and are marked by the conspicuous dark stripes around the body and legs. One of these is called the Quagga, or Couagga. Formerly, vast herds of this animal were met with on the great plains of South Africa. Owing to the encroachment of European civilization, the Quagga, in common with most of the wild animals of that region, has almost disappeared, as have some of the primeval beasts of our own country. The Quagga closely resembles the horse in form. He is lithe and graceful, and in all respects a beautiful animal. He is fleet of foot, though smaller than the horse, and therefore not capable of as great speed.

The Quagga is favorite game for sportsmen. Gordon Cumming and other great hunters have told in books, very fascinating stories of their adventures with this roamer of the plains. His flesh is said to be palatable and wholesome. The Quagga is not easily domesticated, but this has been accomplished in some cases and he has even been trained to harness.

Perhaps the most beautiful of the Zebra family is called Burchell's Zebra, which belongs, strictly speaking, to the Quagga branch. His stripes are more distinctly marked than those of any other species and the animal presents to the eye a charmingly attractive appearance. In form and habit he does not differ from others of his class.

THE GIRAFFE

AS THE elephant is the largest, so the Giraffe is the tallest of living land animals. When fully grown he is sometimes nineteen feet in height, or more than three times the height of a tall man. He is found only in Africa, and even there he is becoming rare, so steadily has he been hunted.

He is something like a deer with a very long neck, but, in place of the deer's antlers, he has two short horn-like projections which grow between his ears and are covered with hair. His back slopes from the withers, which are very high, to the rump, which is very low, conveying an impression that his hind legs are short,—which is not the case. This strange animal's skin is fawn or orange color, shading into white on the inner and lower parts of the legs, everywhere mottled with dark spots.

The Giraffe has a small head and large, lustrous eyes, which give him an appearance of peculiar gentleness and docility—and such, indeed, is his character. His eyes are capable of a certain degree of lateral projection, which enables him, without turning the head, to see in all directions. For this reason there are very few other animals so difficult of approach. He is exceedingly watchful, wary, and timid, and at any alarm speeds away with wonderful rapidity. He is a swift though very ungraceful runner, his shambling gait being due to the fact that he moves the fore and hind legs of the same side simultaneously. Although he puts his trust in his fleetness for safety, when brought to bay he will give battle, even to a lion. His weapons are his heels, which his long, powerful limbs enable him to use most effectively.

The Giraffe has a remarkable tongue, about a foot and a half long, with which he pulls down the branches of the tall acacia trees, the leaves and twigs of which make up the greater part of his food. He is accustomed to roam over wide stretches of country in his African home, and, when captured and kept in narrow quarters, he pines for the freedom of forest and plain. So he does not live long in captivity, and, as it becomes harder each year to obtain specimens, it is to be feared that the next generation may never have a chance to see one of these beautiful animals.

The Giraffe is hunted on horseback, and only with a sure, swift "mount" can the huntsman have any hope of success. From the start, it must be a race at top speed, for if the long-limbed beast has five minutes the start, he cannot be overtaken. At close quarters, the experienced hunter will carefully keep out of range of those dreaded heels. The skin of the Giraffe, which is very thick, makes an excellent quality of leather for certain uses, especially for making sandals. The flesh is pleasant to the taste and is highly prized as an article of food.

This animal is often called the Camclopard—a word that is formed by combining the names camel and leopard. He somewhat resembles the camel in his long neck, and his mottled skin is much like that of the leopard.

The Giraffe may be seen in almost every menagerie or zoölogical garden. He is a favorite with those who look with admiring eyes upon the beasts that roam the forests in foreign lands, and without him no collection of wild animals can be complete.

THE LLAMA

THE Llama may be called the camel of South America. He is not as large or as strong as the camel of the old world, nor has he a hump on his back, but he is useful as a beast of burden, and resembles the camel in his ability to store water in his stomach and go for some time without drinking. Under his skin the Llama has a thick layer of fat, which corresponds to the fat in the hump of the camel. He is a native of the Andes, and is, therefore, suited to live on the mountain rather than on the burning sands of the desert.

His feet are divided into two toes, which help him to obtain sure footing on the rocky slopes of the mountains. When approached by an enemy, he spits out some of the contents of his stomach, which gives an offensive odor, a habit he has in common with the turkey buzzard. Llamas live in flocks, and in the wild state are very shy. Young ones are caught with the lasso, but the older and fleetier animals are not easily approached and must be killed with the rifle. There are really three species of the Llama family—the Guanaco, which is the Llama in a wild state, the Alpaca or Paco, and the Vicuña.

The Guanaco lives in the Andes, from Peru to Patagonia. In the northern part of this range, near the equator, he remains at a height of from six thousand to twelve thousand feet above the sea, where the climate is cold, even under the tropical sun. Farther south he ranges

on the plains.. His upper lip is cleft, like that of the rabbit, to permit him to use his sharp, chisel-like teeth on hard vegetable growths. His tongue is long, and with it he is enabled to reach mosses and plants which grow in the narrow crevices of rocks.

The domesticated Llama resembles the wild Guanaco in size. He is over three feet high at the shoulder, and his head, which he carries erect, increases his height by two feet. The Guanaco's coat is of long, reddish-brown hair, but the Llama may be black, white or gray. Formerly, the Llama was the sole beast of burden among the mountains of Chile and Peru, but donkeys and mules are now used to a considerable extent.

The Llama can carry only a hundred or a hundred and fifty pounds burden, and can travel but twelve or fifteen miles a day, yet his sure-footedness makes him a valuable animal in the mountains. From his long hair the Indians make their clothing; they also use his dung for fuel and his flesh and milk for food. The Llama requires very little care, and may be allowed to wander at will during the day, for he will return to his inclosure at night, as cattle do.

The Alpaca is another species of Llama, and is usually found in flocks on the tablelands of the Andes of southern Peru and northern Bolivia, at an elevation of fifteen thousand feet above the sea-level.

In color, the coat of the Alpaca is usually gray, dark brown or black. The wool, which is of fine quality, varies in length from two to six inches, and is woven into the handsome and durable cloth of the same name.

The Vicuña is the smallest member of the family and is more like a sheep than like a camel, although he carries his head high. He is only two and a half feet high at the shoulder. His coat is reddish yellow on the back and whitish underneath. A domestic life is not to his taste, and he is not easily tamed. The hair is fine and soft and makes a heavy fleece, which has an outer covering of longer and coarser hairs. The wool from the animal provides the material for the beautiful Vicuña cloths.

Several attempts have been made to introduce the Llama as a domestic animal in the United States, but the climatic conditions seem to be unfavorable for him. He lives for a time on grain and pasture, as do sheep and cattle, but he does not thrive long, unless he can get at vegetables, roots, mosses and lichens, similar to those found in the Andes.

BIRDS
WILD AND DOMESTIC

INTRODUCTION

By *FRANK ROE BATCHELDER*

BIRD life is apparently the essence of freedom. It is one of the brightest and most vivid elements of all nature. The blue vault overhead, which seems to bound the universe, is merely the elastic confines of dominion, where the little creatures reign supreme. Vast airy regions, which have never been subjugated by man, are the native element of the bird. His buoyant nature and feverish vitality lead him to expend his energies in a most prodigal manner; but the intense living and highly strung temperament tend to shorten his life, whereas the more phlegmatic animals live to a far greater age. With blood heated by a rapid circulation and quick breathing, the temperature of birds varies from 100° to 120° , while that of mammals ranges from 98° to 100° , and the normal heat of the cold-blooded reptiles is only 40° .

Birds are second in rank among the animals. They are of a lower order than the mammals, or animals which suckle their young, and higher in the scale of life than the reptiles, otherwise known as crawlers.

In classifying the birds, their power of flight would at first seem a distinction which separates them from other animals. But the bat belongs to the mammals, and he also flies through the air. The fact that the bird lays eggs is another feature often supposed to belong solely to this phase of animal life, but reptiles also claim this distinction. Snakes and turtles lay eggs, so also do two or three other animals,—for example the duckbill of Australia, about which one may read on page 2435 of this book.

What characteristic of structure, then, is peculiar to the bird? He is the only animal with feathers. This fairy vesture resists the cold of winter and protects against the summer heat. A feather is a wonderful creation. Examine one carefully and see how delicate are its filaments. Some are brilliant as a rainbow, while others are graceful and artistic in their way as a flower. Feathers are growths of the skin, bearing the same relation to the bird that the fur does to the bear or scales to the snake. Thus we may say, in describing the bird as a distinct class in animal life, that it is an animal with feathers, or that any animal with feathers is a bird.

There is another characteristic in which birds differ from other animals. The mammals and reptiles have teeth, but birds have none. Ages ago, when birds more nearly resembled the reptiles than they do now, they were supplied with teeth, but no trace of that characteristic is now found among them, except that a few species have bills with edges like the teeth of a saw.

There are three ways in which we may consider the birds and their relation to ourselves. The first is scientific, treating of their relative rank

in the animal kingdom, and analyzing their characteristics of form and motion, and their relation to each other. The second consideration is economic, dealing with their uses. We have no trouble in understanding the purpose of a wise Creator in placing birds among animals, when we see how useful they are to us in devouring millions of harmful insects, the seeds of injurious plants and many small animals which damage crops. Moreover, birds like the Gull and Vulture, are scavengers, and consume decaying flesh and vegetable matter which might breed pestilence and death, were it not removed.

The third aspect of the bird is the purely sentimental. Their songs fill the world with music, while their grace and sprightliness captivate the bird lover even more than their brilliant, varied plumage, which enlivens the landscape like animated blossoms floating on invisible stems. Little bird lovers woo little lady loves with sweetest music full of tender meaning. Little bird housewives build their nests with many chirps of anxious consultation with diminutive mates. Little mothers brood over their eggs in quiet happiness, and flutter about their young with a pretty maternal solicitude. They are winsome creatures, these birds, and in some aspects are almost human. All the waving branches of forest and woodland form a leafy canopy to shelter tiny homesteads, where bonny songsters are born and reared.

The study of birds and their characteristics! What a vast realm it opens up before us. How diverse and beautiful nature appears in this one phase alone. Herein we find all the human passions, and many, too, which find their origin above. For all the good in human nature finds its source in the All-Father. And what a diversity of crafts our little feathered brethren are impelled to follow. Life is not all song, for birds as well as men must needs take serious views of life. A systematic study of our feathered friends is valuable to old and young alike.

There are so many different species of known birds—ten thousand or more—that we cannot learn the forms and habits of all, for even if we were to travel throughout every zone, and study one new bird each day, it would take us thirty years to complete the task. That must be left for the ornithologists—people who devote their lives to the study of birds, and have no other pursuit. But every one may study the birds of his own neighborhood, and it is more than probable that whoever undertakes to do so will find that in his own locality, many birds are “common,” which he has never seen, or noticed, simply because he has never used his eyes and ears to the best advantage.

But let us see how we may take up the study of birds in a practical way. We must remember that while all birds have much the same form and characteristics, in their habits one differs as widely from the other as do various races of men.

Thus, nearly all birds make nests, but some build on the ground, while others select hollow trees, and many nest in the branches.

Some spend the greater part of their time on the ground, like the Grouse and the Rails. Others live in trees—for example, the Flycatchers

and the Parrots, while the Humming-birds seem to spend their little lives on the wing, as do the Gulls and many other birds.

The Domestic Fowls scratch the earth to find food; Woodpeckers prey upon the insects that live in the bark of trees; Hawks catch fish in the water or small animals on the land; Swallows feed upon insects, which they catch while on the wing.

So there are Perching Birds, Birds of Prey, Poultry, Shore Birds, Running Birds, Wading Birds, Swimming Birds, Diving Birds, etc.

Before we undertake to study the habits of birds, it would be well to note their characteristics of structure. The outer features are the wings, the tail, the feet and the bill.

The wings are chiefly instrumental in the power of flight. Their concave or curved form aids in sustaining the weight of the bird in the air, and the entire structure of these organs adapts them in a wonderful way to their purpose. In order that the bird which soars to lofty heights may sustain his own weight with the least exertion, nature has made his bones hollow. When he rises in flight, the bones fill with hot air, which helps to buoy up his body. Some birds are provided with air-sacs within their bodies, which they inflate when flying, on the principle of a balloon. But the power of flight is developed more in some birds than in others. The Albatross, whose outspread wings measure fourteen feet, from tip to tip, can remain in the air for hours or even days at a time, without alighting. The eagle soars aloft to great heights and floats without apparent effort, watching his prey. But there are other birds which can fly but short distances, and never rise far above the ground. The Great Auk, a bird now extinct, used his wings so little, that in time they became mere stubs. And the Penguin's wings are too small for flight, though they serve as paddles in the water. The domestic Hen makes a very noisy and fussy piece of work of a short flight. It is all she can do to fly over the fence into the next yard. Birds which spend most of their time upon the ground, like the Rail, are not expert on the wing. But nature makes up for their defects in that respect by making them swift runners. The Ostrich is the most conspicuous example of a bird which never flies; yet he can outrun a horse.

Some birds use their wings to produce music, or to express their pleasure. As example, hear the "drumming" of the Grouse and the whistling sound made by the Woodcock with his wings. In most birds the wings are so vitalized with energy, that they respond to every emotion of pleasure or excitement. The flutter of little wings is part of the bird language. With the Mocking Bird, this pantomime is always an accompaniment to his song.

The wings are sometimes used as weapons. The Goose can strike a hard blow with his wing, and, in some species of Geese, there is a horny tip at the end of the wing, which makes the blow more effective. The Eagle uses his wing in the same way, to stun or disable the Fishhawk from whom he wishes to steal a fish.

The bird's tail serves commonly as a rudder to direct his course when flying. Birds that have short tails usually fly in a straight course, but the

long-tailed birds twist and turn at all angles, with the greatest ease. The Woodpecker uses his tail as a prop, while he is clinging to the trunk of a tree; and to all perching birds the tail serves as a balance. Birds express pleasure or excitement with their tails, just as they do with their wings. You have seen the Turkey spread his tail when he desires to "show off." The Peacock displays his vanity in the same way, and, during the mating season, other birds, like the Grouse, spread the tail to excite the admiration of the females, and you will notice that the Canary bobs his tail up and down while trilling a lively song. When a bird is unhappy or "out of sorts," his tail droops. The tails of different birds present a great variety of shapes. Some are short and rounded, while others are wedge-shaped and many are forked. The short upright tail of the Sora Rail is a striking contrast to the long, forked tail of the Scissors-Tailed Flycatchers. Many birds have tail-feathers which extend in gracefully drooping plumes, or waving sprays, delicate as the finest gossamer. The Egret, the Ostrich and the Bird of Paradise belong to this class.

With the exception of the man and the monkey, whose fore limbs are arms, the mammals have four legs. Birds have wings instead of fore limbs, so that they possess but two legs. Thus we see a gradual descent in the scale of animal life, from the mammals to the reptiles, which have very short legs, or none at all. If a casual observer saw a bird's leg, which had been severed from the body, he might be unable to name the species to which the bird belonged, while a scientist would at once recognize the species by the structure of the severed limb.

The legs and toes are an important part of the bird's structure, even in those birds which spend most of their time on the wing. Swallows and Swifts are examples of the birds with small legs and feet. They seldom perch on trees and use their legs very little.

Most birds have four toes; usually there are three in front and one behind. The Parrots and Woodpeckers, however, have two in front and two behind, so arranged that they can secure a firm hold on their perches. There are Parrots which sleep with their heads hanging downward; they hold to the perch by interlocking their toes in a firm grasp. The Owls have two toes in front, one behind, and one which may be used either in front or behind, at will. As a rule, birds with only three toes have them all in front, although the Three-Toed Woodpecker has two in front and one behind. The Plovers have three toes, all in front, while the Domestic Fowl has three in front and a very short one, which is of little use, behind.

The Ostrich, having no power of flight, is provided with long, stout legs, which enable him to run very fast. If brought to bay, an Ostrich can kick hard enough to knock a man down, and then can trample him to death. The Cranes and Herons are provided with long, slender legs—long, so that they may wade in deep water, and slender, in order that they may not overweight the bird when it rises in flight. It is noticeable that the length of a wading bird's neck usually corresponds to his length of legs. Accordingly, the Heron and the Flamingo have long, supple necks.

Rails and Snipe have long legs, in proportion to their size of body, in order that they may run swiftly through the reeds and over neighboring ground, where they make their home. The Parrot uses his foot as a hand, to carry things to his mouth, or in climbing, and the birds of prey have claws which curve inward and serve them in seizing their prey. The swimming-birds, like the Duck, are provided with webbed toes, which make of the foot a broad paddle. The birds of the farmyard use their strong feet in scratching the ground to discover their food.

A bird may do without much use of its wings, like the Fowl, or without much use of its feet, like the Swallow, but to every bird the bill is all-important. It is used from the earliest stage of his life, when the young bird in the shell breaks his way into the outer world, until the bird dies. Its uses are so various, that it would be a difficult matter to enumerate them all. The most important, of course, is in seizing and picking up food, and the bird's bill is proportioned to the use for which it was intended, according to the degree of difficulty in reaching his food. So the insect-eaters, which snap at their prey on the wing, need only short bills, but the Woodcock, probing in the earth for his food, has a long, slender one, and he has the power of moving the end of the upper mandible after his bill has entered the earth, which enables him to grasp the worm with greater ease. Ordinarily, a bird's upper mandible is rigid, while the lower one moves freely. In the Parrot, the reverse of this is true. You will find the nostrils of a bird in his upper mandible, sometimes as conspicuous as those of the Duck, whereas in other birds they are hidden near the base of the bill. The Barn Swallow uses his bill as a mason's trowel, to plaster mud on his nest; the Woodpecker uses his as an auger, to bore holes, and as a chisel, to cut away wood; that of the Oriole serves as a needle, to sew together the fibers of his nest, while the Pelican has a bag attached to the lower half of his bill, in which to carry fish. The Woodpecker uses his bill as a drumstick, in making the tapping sound that is so pleasing to his ear. This little instrument is an important factor in the toilet of all birds, for it is his comb, brush and oiler. My lady's powder puff and various cosmetics are not more precious in her sight than the little oil gland on the tail of the bird. By pressing this little receptacle with his bill, he obtains oil to rub on his feathers, and with his bill he preens and caresses into perfect order.

The plumage of birds varies according to their habits and the seasons. Birds, which live upon the ground are usually clothed in colors that render them like the ground, otherwise they would fall an easy prey to hunters. Those which live among flowers or in the foliage of trees have more brilliant colors. All birds have a nesting plumage. In the chicken it is a suit of down; Robins are born almost naked. Usually, only male birds wear extremely brilliant coats, and their fine colors are put on just before the nesting season begins. When that period is over, the male bird often doffs his brave attire for a more sober coat, like that of his mate. This change of plumage is brought about by the molting or shedding of feathers. This process is gradual, only one or two feathers dropping out

at a time, while new ones almost immediately take their place. In the course of a few weeks, the old feathers have been entirely replaced by new ones. Food and climate affect the colors of the bird's plumage. Red pepper mixed with the food of a Canary will impart a reddish color to his feathers, and birds often wear white plumage in cold regions where snow prevails, while in warmer countries those of the same species have darker coats.

The migration of birds is one of the most interesting of their habits. Here, in the temperate zone, nearly all the birds with which we are familiar are migratory, that is, they move from place to place according to the season. We have some birds which remain with us the year round, like the Grouse and the English Sparrow. Then we have the summer residents, which come from the South in the spring to nest and rear their young and fly South again when winter approaches. Others, which we call winter residents, have their homes in the far North and come to us only in winter. Then there are still others, whose summer home is in the far North and whose winter home is in the South; they stop briefly with us only while passing from one latitude to the other. The instinct which prompts birds to seek favorable climates as the seasons change can never cease to be a source of wonder. For the most part, their moving is prompted not by fear of heat or cold, but rather by the fact that the change of season cuts off their supply of food, and the desire to have ample rations close at hand during the nesting period. Some travel by day and others by night; some in small groups, and others in great flocks; but all alike seem moved by the instinct to seek a new abiding-place.

Birds mate and nest at the earliest time of the year, when their food is abundant, so that while they are obliged to remain on or near the nest, they may not be forced to seek food at a distance.

In selecting a site for his nest, the bird considers whether it is safeguarded against enemies, as well as near an abundant food supply. Thus, in the case of the Woodcock, whose plumage resembles the dead leaves, the nest is placed where the setting blends so perfectly with its surroundings as to escape notice. On the other hand, the conspicuous nest of the Oriole is hung on the topmost bough of a tall tree, out of the reach of cats and other climbing animals. Think of the wonderful instinct that teaches the Weaver-bird to build his nest with the opening at the bottom, so that snakes cannot enter, and to shelter his dwelling with a stout thatch, like an umbrella. Think, too, of the laziness of the English Sparrow, who would prefer to drive another bird from his nest and occupy it, rather than build one for himself. Many of the sea birds build no nests, but lay their eggs in hollows of the rocks, in places so difficult of access that they do not fear being disturbed by enemies.

The European Cuckoo and the American Cowbird lack the home-loving instinct of other birds, and refuse to build nests of their own. Their natural depravity leads them to lay their eggs in the nests of other birds, in order that they may escape the responsibility of rearing their young. Birds differ in temperament, and some prefer to nest in seclusion, while

others, more social in their disposition, build their nests in colonies, like the Herons and the Weaver-birds. Some birds return to the same nest year after year, repairing it each season. The Eagle does this; but the Wax-wing is the very opposite in regard to attachment for places. Sometimes he does not nest even in the same neighborhood for two years in succession.

The number of eggs a bird lays is called by ornithologists a "clutch," and varies from one to twenty-five. In many cases, the mother bird performs the entire work of hatching the eggs; in others she is assisted to some extent by the male. Nearly all birds care for their young very tenderly, and keep them well supplied with food. In many cases the food is first swallowed and partially digested by the parent, who then pumps it down the throat of the young bird in the nest. In the work of providing the food, the male often takes an important part.

Nearly all birds have "call-notes"—a bird language by which they communicate with one another. Many of these notes, however, have little or no music in them, and some are harsh and discordant.

Though the sweet songsters are few compared to the great number of birds of all kinds, there are many of these delightful little creatures, nature's musicians, who cheer the world with their joyous songs.

The musical faculty is the special gift of the male bird, and is rarely well developed in the female. During the nesting season, he usually sings his best songs, as though to cheer his mate while she sits upon the eggs.

The gift of song in birds is frequently accompanied by plain or dull plumage, though the Scarlet Tanager is remarkable alike for the beauty of his coat and the melody of his song. The little ruby-throated Hummingbird, the most exquisitely hued of all our familiar wild birds, utters a little squeaking sound that is scarcely entitled to the name of song.

Although many attempts have been made to note down bird songs, none of them have been successful. Our musical notation is capable of expressing sounds of definite time and pitch, but it cannot reproduce the gurgling sounds of running water, the delicate inflections of the speaking voice, nor the warbling music of bird songs. It is possible to give a good imitation of some of them with whistles, and the violin is capable of expressing certain of the most beautiful inflections of our feathered songsters. To attempt to get any intelligent idea of a bird's song from any form of musical notation is hopeless. We must go and listen to the song again and again, until it is as familiar to our ear as the voice of a friend.

One will never realize how much pleasure comes from an intimate knowledge of birds and their ways, until he is able at sight, or by their notes, to distinguish the species by name. This intimacy with the birds of one's own neighborhood seems to give him a passport into the whole society of birds, wherever he may go.

It is not a difficult thing to learn to know these feathered creatures well, though the study of their forms and habits requires both patience and application.

How may you begin? The first thing to do is to open your eyes. Stop a minute, and think how many birds you know by sight, the Robin and the Sparrow and the Oriole and the Crow—and—and—well, you forget the others! Yes, because you have not used your eyes. The birds were about you all the time, perhaps fifty different kinds.

The best place to study birds is in some locality where there is a meadow, water and a wood near each other, for in such a place you will see more species than in a wood alone or by the water only.

Provide yourself with a good field-glass or opera-glass, but do not take a gun. It is the living birds that are interesting; a dead one is a sad sight. A practical photographer will be able to make pictures of living birds in their native haunts. Such pictures have a commercial as well as a scientific value. But unless one understands a great deal about lenses, it would be well to leave the photography of birds to experts. Wear clothing of a dull color, following the example of the female birds, and make yourself as inconspicuous as possible. An artist's small camp-stool—the three-legged kind that folds into a small bundle—is desirable, for success demands that you shall remain in one place, and keep still, for a considerable time. You should move slowly, as hasty motions alarm the birds, whose eyesight is very keen. They are watching you all the time, even when you least suspect it.

The best time of day to pursue this study is from sunrise to ten o'clock; and again just before sunset. In the middle of the day, the birds keep under cover. In the winter, of course, the reverse is true, and from nine or ten to two o'clock is the best time to watch for them.

When you sight a bird, follow its flight with the glass, and while it remains in view note its size as compared with your Canary or the English Sparrow; observe its coloring, the size and shape of the bill and feet, and listen for its call-note. Try to imitate the note you hear. Birds are thus often rendered less afraid, and their curiosity prompts them to approach a person who can mimic their own notes well. When your bird flies away, out with notebook and pencil, and jot down your observations; it is so easy to forget. You must be persistent. Go again and again to the same place, watch for the same bird and add to the notes previously made. If you have access to colored plates of birds, like those in this work, or to stuffed specimens in museums, go with your notebook and try to identify the bird you have seen. It may be difficult for a time, as birds vary greatly in plumage—but in your second season, you will find it easy to recognize old friends.

When you find a bird's nest, do not touch it or disturb the eggs. A bird always knows when its nest has been disturbed and in such cases commonly abandons it, doubtless in great sorrow and alarm to think its retreat has been discovered.

Begin your study in the spring, when the birds first appear and watch for their southward flight in the fall. In the meantime, you will be able to learn many interesting things concerning them. From year to year, you will revise your notes and add to your fund of knowledge, and you will be satisfied that you could not find better employment for your leisure hours.

BIRDS

THE DOMESTIC FOWL

THERE are scores of different breeds of the Domestic Fowl which are classified according to the countries in which they originated.

In the American class are the Plymouth Rocks, Wyandottes, Javas and Dominiques. The Hens of these classes are good layers and patient sitters. The Mediterranean class includes the Leghorns, Minorcas, Black Spanish and others; these are small, active birds which lay well, but as a rule are not good sitters. The Asiatic class includes the Brahmas, Cochins, Shanghai and Langshan, which are the largest of all classes. These varieties do not lay many eggs, and are chiefly valuable as meat-producers. These birds have feathers on their legs, which give them a rather comical appearance, as they look much like baggy trousers about their feet.

Then there are Polish, Hamburg, French, English, and Game Fowls. All have their individual characteristics, and their feathers present a great variety of colors and markings.

We trace all the different breeds of these Fowls back to the Jungle Fowl, of Asia, where he is still found in a wild state. In very early times this bird was domesticated and made to serve the use of man. The Egyptians, the Romans, and the Greeks, made good use of the Fowl, and because of the fighting qualities of the Cock or Rooster, he was held sacred to Mars, the Roman God of War.

Of the different classes of domestic poultry, the common fowl, alone, has no distinctive English name. The feminine term "hen," and the masculine term "cock" are, however, usually supposed to designate the common fowl, unless otherwise qualified, as when the "turkey-hen" or the "pea-cock" is spoken of; just as eggs are always assumed to be hen's eggs, and not those of the turkey or of the goose.

Of the genus *Gallus*, to which the common fowl belongs, four wild species are known, the Bankiva Jungle fowl, the Sonnerat Jungle fowl, the Ceylon Jungle fowl, and the Forked-tail Jungle fowl. Darwin and other naturalists ascribe the origin of the domesticated breeds to the Bankiva fowl.

The Game Fowl has been brought to perfection in England, where from very early times, it has been bred for sport and for the table, its pugnacious career being no barrier to its edibility. The breast meat is always abundant, owing to the development of the pectoral

muscles. The characteristics of the Game Fowl are a single comb, a massive beak, strong, sharp spurs, and sometimes plumage which is called "henny," the cocks assuming the plumage of the hen, but without losing their masculine combativeness. Even the hens of the game-fowl breed are pugnacious, being able to hold their own in the game pit as well as the cocks.

The Malayan fowl was the largest breed known in Europe, until the arrival of the lordly Cochins from China. The characteristics of the Malayan species are scant plumage, and very long legs and neck. The gray Chittagongs of the United States belong to this species. The interesting family of the Cochins, next in size to Malays, comprises several varieties, including Brahmas, Langshans, and the well-known majestic Plymouth Rocks. All these varieties are of large size, sometimes attaining a weight of sixteen or seventeen pounds.

All of them have small wings and tails, and abundant downy plumage. The Cochins, which came originally from Shanghai, and were crossed with the Chittagongs, produced the Brahmas, a well-defined breed which has never lost the original character of the crossing. The cross between the Cochin and a cuckoo-colored breed called Dominiques, produced the Plymouth Rocks. A stately Plymouth Rock rooster imparts dignity to any barnyard. Each feather of a fowl of this breed is marked with transverse gray stripes on a lighter ground. The cocks are of the same color as the hens, a characteristic of the Cuckoo family. The hens are famous layers.

The Hamburg family of fowls are smaller in size, have double combs, and small white ear-lobes. Spangled Hamburgs have feathers marked with transverse bands of black on a white or bay ground. This family is of English origin. It is highly prized for the remarkable laying qualities of the hens.

The Spanish breed includes Leghorns, Andalusians and black Minorcas. They have large, single, erect combs and white ear-lobes developed in the black Spanish type to such an extent that the whole face is white. Leghorns are chiefly white and brown in color. All the fowls of this breed are averse to sitting on eggs, owing to their having been bred for fertile laying.

Crested fowls, erroneously known in Great Britain as Polish, are so called because of their full-feathered crest. The comb is very small, or altogether lacking. In some breeds the wattles are replaced by a large tuft of feathers called a "beard." In color they are spangled, with a dark mark at the end of each feather. When the mark assumes a crescent shape running up both sides of the feather, the feathers are termed "laced." Another variety is entirely black with a white crest, and pendent wattles. Closely related to the crested, or Polish breed,





FROM COL. FRED KAEMPFER.

WILD TURKEY.
♂ Life-size.

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is the Crève-Coeur, which is all black, and remarkable for its laying qualities. Breeds also related to the Polish, but without the crest, are the Bredas, Guelders and the La Flèche breed, the best in France for eating.

The Dorking breed belongs chiefly to the south of England, where the fowls are raised in great numbers for the London markets. They are delicious for the table. The Dorkings have always an extra toe; those of Surrey and Sussex counties being four-toed. They are often crossed with game fowls to produce a hardier bird, and one of the highest excellence for the table.

Silk fowls have dark, bluish skins, dark, leaden-blue wattles and comb, and loose, strange-looking plumage, the barbs of the feathers not being connected by barbules. This bird is a faithful sitter and mother. Its flesh, when cooked for the table, is of excellent edible quality. Other peculiar breeds of fowls are the Frizzled, so called, because the feathers curl away from the body; the Rumpless, having no tail; the Scotch Dumpics, with very short legs; and the Long-tailed fowls from Japan, with tail feathers six or seven feet in length.

The Bantam breed is the smallest, and comprises many breeds which have been reduced to bantam size. The originals were Cochins. Some of those in Pekin, China, weighing scarcely more than a pound. There are also Game bantams, Malay and Japanese bantams. The Sebright bantam, a highly artificial breed, has the laced feather of the Polish fowl, combined with an absence of male plumage in the cocks.

Poultry raising for the market should be very profitable if properly conducted. Plenty of ground is the first requisite of success, as a hen brings forth a much healthier brood if she can make her nest under a hedge, than if she is confined in a close hen house.

THE TURKEY

WHEN the Spaniards discovered Mexico, in 1518, they saw the Turkey for the first time. The Indians had been familiar with the bird farther back than their oldest men could remember, and the fossil remains of the Turkey show that he existed long before the earliest time of which we have history.

When the colonists came to settle in the new world, they found the wild Turkey abundant, from Canada to Mexico. They killed so many of them, however, as the country became more thickly populated, that these birds gradually disappeared. It is now fifty years since a wild Turkey was shot in New England. In some parts of

the South, however, especially in Florida, flocks of wild Turkeys are found, and in some places west of the Mississippi River and in Mexico, they are still abundant.

The wild Turkey is about four feet in length, if we measure from the tip of his beak to the end of his tail. His plumage is a copper-bronze color, with metallic reflections of purple, green and copper, and many of the feathers are edged with glossy black. The naked head and neck are blue and have purplish-red excrescences about them, and a thick strip of red flesh grows just over the beak. Sometimes this bit of flesh is long and soft and hangs over one side of the bill, but at other times it is short and stiff enough to stand erect like a little red horn. The tail feathers are a dark chestnut color, barred with black, and the dusky wings are barred with grayish white. The male bird has an odd tuft of bristles which hangs from the breast. With his stout legs and well-proportioned body, his great size and splendid, burnished plumage, the Turkey is a very fine looking bird.

Our familiar domestic Turkey is, of course, a descendant of the wild Turkey found in Mexico and may be distinguished by the white tips to the upper tail coverts. There are two distinct breeds of the domestic Turkey. The Norfolk breed is the taller of the two, and its plumage is black. The little Norfolk chicks are also black, and sometimes show a patch of white on the head. The Cambridgeshire breed is a bird of gayer plumage. In color the chicks of this variety are generally brownish gray.

The Turkey Gobbler is a very pompous old fellow, as he struts about the yard. His call of "Gobble, gobble, gobble"! sounds quite like water being poured from a small-necked bottle.

The female or hen Turkey is dressed much like the gobbler, although her plumage has not so bright a luster. She must lead a very harassed domestic life, for she is compelled to keep the location of her nest a secret from her mate, as he frequently destroys the eggs when he finds them. There are also many outside enemies like the mink, the fox, the weasel and the crow, which are partial to Turkey eggs. So she conceals her nest very carefully under a bush in a tangle of vines. It is simply a hollow scratched in the ground and lined with leaves, grass or feathers. She lays ten or twelve eggs, which are larger than those of the domestic hen, and buff in color, speckled with brown.

In going to her nest, she does not take the same route twice, and she usually starts off in a direction opposite to that which leads to her destination. After wandering and circling about for a time she draws near the nest and, when no one seems to be watching

her, darts quickly into the bushes where it is hidden. She is a faithful mother, and has been known to die of starvation rather than leave her eggs. She must sit upon her eggs for four weeks before they hatch.

THE GUINEA FOWL

THE origin of the common Guinea Fowl is better known than that of most of the poultry-yard birds. He is a native of Africa, and on the west coast of that continent his untamed relatives are often found in flocks of two or three hundred. They live in woods near the rivers, and their food is grains, grasshoppers, ants and other insects

There are several species of Guinea Fowl. The one with which we are familiar is rather smaller than the average domestic hen, and usually has a slate-colored plumage, thickly dotted with round, white spots. Occasionally, however, we see him with a coat of pigeon gray, dotted with white. His head and neck are covered with a thick, white skin that is bare of feathers, and on top of his head, in place of the domestic fowl's comb, he has a small, blunt horn.

The Guinea Hen, like the turkey, hides her nest in some out-of-the-way place. This nest is only a hollow in the ground, and when it is hid under a bush or vine it is not easily found. The hen lays from sixteen to twenty-four eggs in a nesting season. These eggs are a yellowish white, dotted with brown, and have thick shells.

THE GOOSE

THE Goose is found in both the wild and tame states, in the new as well as the old world. Like the duck, he has webbed feet for swimming, yet he is not so much a water as a land bird, for he usually gets his food in the fields. His bill is short and high at the base, unlike the duck's bill, which is wide and flat. His legs are set farther forward and are longer than the duck's, so that he walks and runs more gracefully and more swiftly than the duck does.

Our domestic Goose is larger than the wild bird, as a rule, although some varieties are little larger than ducks. Toulouse and Embden Geese are among the most popular breeds. The plumage of the Toulouse is gray above and white underneath, and the bill and legs are a reddish orange-color. Embden Geese are white, with yellow legs and bill.

THE DUCK

OUR common domestic Duck is a descendant of the Mallard Duck. He is cultivated as a barnyard fowl, both for the eggs and for the flesh, which is excellent food. The habits of the Mallard, and other wild Ducks, are more interesting to study than are those of the tame Duck, as they have to find their own food and take care of themselves. The tame Duck, in his comfortable quarters in the farmyard, is usually supplied with food, so that he has little need to swim and dive or exercise his wits, except for amusement.

Wild Ducks in great variety are found in many parts of the world, and in North America alone there are many different species. They are divided into three classes; the Fish-eaters, the Pond or River Ducks and the Bay or Sea Ducks.

The Sea and River Ducks have bills provided with a series of gutters opening on either side. When the Duck plunges his bill into the mud to catch a mollusk, he closes it and then forces out the mud and water through these gutters or strainers, while the food is retained in his mouth.

It is interesting to note the characteristics of the different kinds of Ducks.

The Wood Duck, also called Summer Duck, Tree Duck and Acorn Duck, is the most beautiful of our native Ducks. His plumage is dark brown on the upper part, varied with black, and the head and crest are brilliant green and purple. The throat is white; the breast chestnut color, with spots of white; the under parts white; the flanks buff with wavy lines of black; the wings purple and green; and the bill red marked with black and white. The Wood Duck usually makes his nest in the hollow of a tree overhanging the water.

The Mallard Duck is next to the Wood Duck in the beauty of his plumage. He has glossy green feathers on the head and neck, and a collar of white; the back is brown; the wings gray; the neck and breast chestnut color; and the bill a greenish yellow. A Mallard's nest is little more than a bunch of leaves and grass, with a depression in the center. It is usually found on the ground, near the water.

The Canvas-back and Red-head are two of the best-known Sea Ducks. They are better swimmers than the fresh-water Ducks, but the latter walk or run more easily. The Red-head and Canvas-back are abundant in the Chesapeake Bay, where they feed on the water celery, which is said to give their flesh the flavor that is so much liked.

The Eider Duck is found only in cold climates. The soft, white down, which has made him so famous, grows on his breast.



WOOD DUCK.
½ Life size

C. S. SHULT 1900, BY A. W. HILFORD, CHICAGO.



From col. Chi. Acad. Sciences.

PRINTED BY A. J. MUMFORD, CHICAGO

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

THE SWAN

THE Wild Swan of Europe has a loud note, like that of a horn, but the tame swan is silent, except that, when excited or angry, it utters a hiss. In former times a belief existed that Swans always sang when they were dying, and many stories and fables about the "Swan-song" have been based on this superstition.

In North America there are two species of the Wild Swan. The Whistling Swan has white plumage, with a black bill, on which is a yellow spot between the eyes and the nostrils, and its legs are black. It winters on the seashores of the Southern states and is seldom found north of Chesapeake Bay.

The Trumpeter Swan lives in North America west of the Mississippi River, nesting only in the northern parts of its range. The nest of this bird is made on dry ground rather than near the water, and lined with feathers and down. The noise he makes is said to be similar to that of a horn, but far from being pleasing to the ear.

In Australia we find the Black Swan, which is a large, graceful bird, and as it is native in no other country, has been used as the symbol of the country on Australian postage stamps, just as a picture of the beaver has been used on those of Canada.

PIGEONS

THE Pigeon is a very popular bird, both as a pet and as a dish for the table. Of the three hundred species of Pigeons in the world, less than one hundred are found in the new world, and North America has only twelve of these.

The Passenger Pigeon, once found in vast flocks in the eastern part of the United States, as well as in the West, now appears only in the central region, and there in small numbers. Thirty years ago, large flocks were found in New England, but they were shot and netted so persistently that they have disappeared from that section.

The breeding of Carrier or "Homing" Pigeons has become a pastime of considerable importance in the United States. In European countries, government recognition is given to the pursuit, and special favors are extended to breeders. The raising of Homing Pigeons is a favorite sport. In Belgium and England they are used to carry messages from lightships to the shore. During the siege of Paris, in the Franco-Prussian War, the pigeon-post became famous. The birds were sent out from the besieged city in balloons. Mes-

sages intended for people in the city were set up in type and photographed on a film about an inch wide and two inches long. This film was then rolled up and fastened to the Pigeon. When the bird arrived in Paris, the messages were deciphered with the aid of a microscope.

Homing Pigeons fly swiftly and their sense of direction is something wonderful. When taken a hundred or a hundred and fifty miles from home and released, the bird mounts in the air, circles about to get his bearings and then flies direct for home. Well-trained Pigeons will not even stop to feed when on a homing flight, unless nearly starved.

There are many varieties of fancy Pigeons. Some of the best known are the Pouter, which expresses pleasure and vanity by puffing his breast, the Fantail, whose tail is permanently spread, and the Tumbler, whose name expresses his characteristic trick in flight.

BIRDS' EGGS

IN THE spring, when all nature is thrilling with new life, a thousand little dramas are beginning throughout the woodland spaces. Love and joy, sorrow and death, jealousy and disappointment are all vividly embodied in the bird-life enacted amid leafy branches or tall grasses. In the first flush of joy and hope, the little things can do nothing but trill out their happiness in each other and in all the world around them. But long before the spring has drifted into summertide, instinct reminds them that life is not one long courtship, and soon Sir Birdie and his little mate are busily engaged in making preparations for the summer. How exquisite some of the little nests are! In their construction, grace and beauty are often ingeniously combined with utility.

After the house has been furnished with soft linings, the eggs soon arrive, and at once become the joy and the care of the mother's heart. The bird's egg is both a mystery and a revelation. The shell, oftentimes dainty as the petals of a flower, incases the most wonderful organism—a germ of song and buoyant life. Yet many ignore the precious atom, so full of promise for the future, and ruin a bird's nest, as though it were a matter of indifference to the whole world as well as to themselves.

Scientists really promote the welfare of birds by arousing the interest of the public and inspiring a love for the tiny creature. So it is not they who are to blame for the decrease in bird-life. Specimens sacrificed to science do not make serious inroads upon the ranks



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EGGS.
Life-size.

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1. Great Crested Fly-catcher. 2. King Bird. 3. Night Hawk. 4. Crow. 5. Red-headed Woodpecker. 6. Yellow-billed Cuckoo. 7. Audubon's Caracara. 8. Black-billed Magpie. 9. Kingfisher. 10. Screech Owl. 11. Turkey Vulture. 12. Gamble's Partridge. 13. Bob White.



EGGS.
Life-size.

PLATE 1. BY A. W. MUMFORD, CHICAGO.

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1. Cat Bird. 2. Robin. 3. Chickadee. 4. Long-billed Marsh Wren. 5. Brown Thrasher. 6. Yellow Warbler. 7. Red-eyed Vireo. 8. Loggerhead Shrike. 9. Cedar Waxwing. 10. Cliff Swallow. 11. Martin. 12. Rose-breasted Grosbeak. 13. Scarlet Tanager. 14. Towhee. 15. Song Sparrow. 16. Chipping Sparrow. 17. Vesper Sparrow. 18. Great-tailed Grackle. 19. Bronzed Grackle. 20. Baltimore Oriole. 21. Orchard Oriole. 22. Meadow Lark. 23. Red-winged Blackbird. 24. Blue Jay. 25. Prairie Horned Lark. 26. Wood Pewee.

of our song-birds. The practice of slaughtering them for decorative purposes has been denounced from press and platform. But the fad for collecting birds' eggs has not been sufficiently discouraged. Setting after setting goes to make up the various collections of the people, who emulate the so-called "licensed collector," who is merely gratified at possessing many rare and valuable specimens.

Thousands of woodland homes are made desolate, and thousands of sweet voices silenced, by this wholesale robbery. Ruthless hands plunder the dainty nest for the sake of adding to the small boy's collection, which is really no aid to science, but a mere fad actuated by a spirit of rivalry. This vandalism is a menace to the crops, as the song-birds are largely responsible for the destruction of various harmful insects; thus the question becomes one of use to ourselves as well as one of sympathy for the birds. Our song-birds stand in imminent peril of becoming wholly extinct, and it is quite time for some reform along these lines, both as to killing the birds and destroying the eggs.

In the study of birds, it is necessary to be able to recognize the eggs of the various species. They seem to have their individual characteristics as do the birds themselves. Some are coarse and somber, while others are as dainty as flowers. But they are all interesting and afford great scope for pleasant study and reflection.

The Red-winged Blackbird usually builds his nest in reeds or bushes near the ground, though he often selects a tussock of grass and sometimes even the bare soil, and occasionally he builds in the high branches of a lofty tree. The materials are usually strips of rushes or sedges, lined with finer grass, or perhaps a few horsehairs. The Blackbird is not one of the finest artists in building, and his nest is rather bulky, and crudely formed. This bird lives in communities, and it is not uncommon to find several nests near each other in a bit of swamp. The eggs are light blue, marbled or clouded with light and dark purple, and with some lines of black. These markings are found chiefly about the larger end of the eggs, though they vary in this respect. There are usually four, occasionally five, in number, and average 1.00 x .75 inches. They are almost elliptical in shape, tapering very little more at the smaller than at the larger end. They are easily distinguished from the eggs of most other birds by their peculiar scrawled markings.

The Quail, which we familiarly call Bob White, makes his nest on the ground in the corner of a rail fence; at the foot of a stump surrounded by a growth of vegetation; or in the garden or cultivated field, where the bunches of tall grass or weeds afford a shelter. A depression in the ground, with a bunch of dry grass, straws, leaves

or weeds serves for a nest, and here Bob White rears sometimes two broods in one season. One setting comprises from fifteen to twenty-five eggs, although there are sometimes only twelve, the average being eighteen. They are 1.25 x .95 inches in size, and are pure white, unless discolored by the grass on which they lie. They are obtusely rounded at one end, while the other tapers until it is quite small and pointed. This pointed end is the most distinct feature of the egg.

That roguish mimic, the Catbird, is partial to thickets and orchards. His nest is usually found in some retired spot in bushes, low trees or clusters of vines. It is seldom more than ten feet above the ground, and is made of dry leaves, twigs and dry grass, with a lining of fibrous roots and grass. The whole structure is bulky and inartistic, and shows but little cunning workmanship. The eggs are usually four, frequently five and rarely six in number. They average .95 x .71 inches and are deep bluish green, without markings. The egg tapers somewhat more at one end than at the other and is easily distinguished by its peculiar uniform tinge of deep blue green.

The Chickadee builds his nest in the deserted hole of a Woodpecker, or in a natural cavity in some tree, perchance in a decayed stump or a hollow fence post. The place is filled with a mass of leaves, moss and dry grasses, while downy feathers, hair from cattle, and often the fur of quadrupeds, make a warm lining for the nest. The eggs are from five to eight in number and the average size is .57 x .47 inches. In color they are white, speckled over the whole surface with reddish brown, which is more thickly distributed at the larger end. The egg is oval in form, tapering slightly more at one end than at the other.

The nest of the Whooping Crane is found amid rank grasses near marshes or in low meadows. It is neatly cupped and built of reeds or grass, on a slight elevation of firm sod. The eggs, which are large and coarse looking, are usually two in number, while they vary from 3.75 x 2.52 inches to 4.06 x 2.38 inches. The shell is rough with numerous excrescences, like little warts. In color it is light, brownish drab, sparsely marked with large, irregular spots of a pale, dull chocolate brown, and obscure shell-markings.

Our barnyard Duck has its origin in the wild Mallard. The latter builds his nest in a field of tall grass near a lake or river. The eggs are six to ten in number, and average 2.25 x 1.60 inches. They are elliptical in form and pale yellowish drab or olive green, usually the latter.

When following her own devices, the common Hen or Domestic Fowl is prone to conceal her nest, which is made of straw or grass, and usually found on or near the ground. But in confinement the

Hen lays in boxes filled with straw, provided for her own special use. The eggs present a variety of different shapes,—some are oval, while others are long and more pointed. In color they vary from white to ivory, and from deep cream to a shade bordering on buff.

The Mourning Dove, also known as the Carolina or Turtle Dove, is one of our best known birds. He builds on the horizontal branches of a tree, on a stump, a rock, or the top rail of an old worm fence, or in bushes. In treeless regions the nest is placed on the ground. Its construction varies according to the location. When found in small branches of a tree, it is made of a few sticks, but if built on a large limb or a stump, it often consists of a mere rim of twigs sufficient to retain the eggs. When on the ground a few straws and twigs are all that indicate the nest. In the South the Carolina Dove rears two and sometimes three broods in a season. There are rarely more than two eggs in a setting. They average 1.12 x .82 inches, being elliptical in form and white in color.

The Bald Eagle is found throughout North America. He builds his nest in a lofty tree or on a rocky cliff high above the sea, the altitude ranging from twenty to ninety feet. The nest is a massive structure made of sticks, lined with roots of grass. The eggs are two, rarely three, in number, about 2.50 x 3.00 inches. They are white, or ivory white, without markings, and the granulated surface is usually discolored by the nest.

The nest of the Crow is found in the wood, and he is partial to high, thick forest and dense foliage. "The loftier the better, if sheltered" seems his motto in selecting a tree, and as a rule his home is practically inaccessible. The nest is large, with a strong frame-work. It is made of coarse sticks, strips of bark, clods of earth and dead leaves. Hog bristles, strips of grape-vine bark, the inner bark of chestnut or oak, as well as the hair of cows and horses, are some of the materials that enter into the lining. Often bits of cloth or lace are appropriated for that purpose, while pine needles or seaweed are sometimes used. From four to six eggs are usually laid, sometimes seven. These vary from a pale bluish to an olive green; and from almost unmarked specimens to those which appear a uniform olive green, so small and dense are the markings. The typical egg, however, is of a light sea green, thickly spotted and blotched with dark brown, bordering on black, which shades off into purplish reflections. The egg averages 1.60 x 1.20 inches. The general form of the egg is elliptical, while one end is rounded and the other quite pointed.

The American Goldfinch builds in all kinds of trees and bushes ranging in height from three to forty feet above the ground. Willows, maples and orchard trees are favorite nesting sites. The nest

is a beautiful piece of workmanship, compactly built of vegetable fibers, moss, grasses, leaves and fine strips of bark, lined with down of plants, usually supplied by the thistle, when the nest is built late enough in the season. The number of eggs varies from three to six, and the average size is .65 x .50 inches. In color they are plain, pale, bluish green, or greenish white.

The nest of the Ruffed Grouse is usually situated at the border of a large wood in the midst of dense undergrowth, often in a thicket; and frequently one finds it in a small wood adjoining a farmhouse. A few feathers or decayed leaves, scraped together on the ground in a brush heap or beside a log or stump, answer for a nest. From six to fifteen eggs are deposited, usually ten or twelve, averaging 1.66 x 1.20 inches in size. They are of a cream color, varying in tint from milky white to a shade bordering on brown. Occasionally, the surface is faintly blotched and speckled with shades of brown.

The Guinea Hen, like the Turkey, hides her nest in some out-of-the-way place. The nest is a mere hollow in the ground, and when concealed under a vine or a bush, usually escapes detection. The Hen lays from sixteen to twenty-four eggs during a season. They have thick shells of a yellowish-white color, dotted with brown.

The natural habit of the American Herring Gull is to nest on the open seashore, but man's persecution often drives him to seek refuge in tall trees. Sometimes the nest is a shallow depression in the ground with only a slight lining, while others are large and elaborate, built of moss and grass. Those in trees are said to be strongly interwoven, and very compact in texture. Usually, the eggs are three in number and range from 2.73 x 1.64 to 2.91 x 1.94 inches. They are elliptical in general form, with one end rounded, while the other is considerably pointed. They vary from bluish white to deep yellowish brown, irregularly spotted and blotched with brown of different shades. In a large collection the ground color and markings are very diverse.

The eggs of the Nighthawk are deposited among stones, or on the bare ground in a field; perchance on a stump. Scarcely a trace of a nest can be found. The eggs are two in number and range from 1.21 x .82 inches to 1.52 x .87 inches. They are elliptical in shape, with one end larger than the other, and vary from pale olive gray to buffy and grayish white. The surface is thickly mottled and dashed with varied tints of darker gray, slate olive, even blackish, while a marking and clouding of purplish gray is intermingled with the various markings.

The nest of the Prairie Hen or Pinnated Grouse is placed on the ground in the midst of the thick prairie grass, or at the foot of bushes on the barren soil. A hollow is scratched in the earth, while a scant

lining of feathers and grass blades are the only pretense of a nest. The eggs are usually eight to twelve in number and the average size is .1.75 x 1.25 inches. They are rather oval in form and their color is light drab or dull buff, sometimes an olive hue, the surface is occasionally sprinkled with brown.

The nest of the Humming-bird is usually placed on a horizontal branch of a forest or orchard tree. It is felted with a mass of soft silky or woolly substances, such as the down of plants, while the outside is covered with lichens. It is cup-shaped and exquisitely dainty in texture and workmanship. The eggs are invariably two in number, and the average size of those of the Ruby-throated Humming-birds is .50 x .35 inches. They are elliptical rather than oval, and of a pearly whiteness. The pretty nest and diminutive egg of the Humming-bird are easily distinguished from those of other birds.

The Blue Jay's nest is found in the lonely forest, as well as in orchard trees or by the roadside. It is large and rudely built of twigs, roots, leaves and vegetable fibers, strongly interwoven. The eggs are four or five in number and range from 1.02 x .84 inches to 1.18 x .86 inches. They are olive brown or olive drab, thickly spotted with dark, olive brown. In some specimens the ground color is light or dark green. The egg is elliptical, with one end more pointed than the other.

The nest of the Kingfisher is an excavation in the perpendicular bank of a stream or gravel pit. As a rule the entrance is about two or three feet below the surface. The tunnel is usually straight, but sometimes the bird digs an angle from three to six feet or eight feet in length. The eggs are deposited in the midst of bones, scales and other refuse of his food. They usually number six, sometimes seven or eight, and are about 1.25 x 1.05 inches in size. The egg is of a clear shining white, almost spherical in shape, with one end slightly more rounded than the other. Its glistening whiteness is the feature that distinguishes the egg of the Kingfisher from those of other birds.

The fields and meadows are the home of the Meadow Lark. The nest is built on the ground, in a thick tuft of grass. It is rather compactly made of dry wiry grass, lined with finer blades of the same. It is usually formed with a covered entrance in the withered grass surrounding the nest, through which a hidden and sometimes winding path is made, as a rule so well concealed that the nest is betrayed only when the birds are flushed. The eggs range from four to six in number, and average 1.10 x .80 inches, with great variety in that respect. They are almost elliptical, with one end smaller and less rounded than the other, while in color they are crystal white, more or less thickly spotted or dotted with reddish-brown and purplish.

The Mocking-bird builds in the hedges, in trees or on fence rails, sometimes not ten feet from a dwelling. The site depends upon the resources of the various localities; sometimes a brush-heap is the spot that commends itself to the bird as a favored nook for housekeeping purposes. Small twigs and weeds are the materials generally used in making the nest, while the lining is composed of roots, sometimes of horsehair and cotton. The eggs usually number from four to five, rarely six, and range from .87 x .68 inches to 1.05 x .80 inches, the average size being 1.00 x .75 inches. The ground color varies from pale, greenish blue to a dull, buffy shade, marked with spots and blotches of yellowish brown, russet or chestnut.

The Nightingale of Europe builds his nest in woods, hedgerows or copses. It is made of leaves, grass and roots, and placed on or near the ground. The eggs are four or five in number, and average $\frac{4}{5}$ x $\frac{1}{2}$ inch in size, while in color they are olive brown.

The Orchard Oriole suspends his nest from the boughs of a tree in the orchard or grove, rarely in a lonely forest. The dainty cradle is woven like a substantial basket of fresh blades of grass, and lined with feathers. The grasses soon dry, and the nest long retains its beautiful pea-green color. Double nests are sometimes found hanging from the trees. The eggs vary from .70 to .86 inches long, by .50 to .62 inches broad. They are of a bluish tint, with spots and specks, as well as a few large blotches, and irregular zigzag lines of various shades of brown. The general form is that of a narrow ellipse, smaller at one end than at the other. The half-hanging nest, as distinguished from the fully pensile nest of the Baltimore Oriole, is a sure indication of the species to which the egg belongs.

The Ostrich digs a broad, shallow hole in the sand for a nest and here several hens deposit their eggs. Sometimes there are as many as sixty in one nest, and, contrary to the usual custom, the male birds sit on the eggs. Several may occupy the large excavation at one time, in order to cover all the eggs. These are very large, averaging three pounds each in weight. As a rule, they are placed on one end in the nest for the purpose of economizing space.

The Screech Owl, often called the Little Horned or Red Owl, makes a nest in a hollow tree or stump, often in the topmost corner of an old barn or shed. A few sticks, leaves and feathers are the chief materials that enter into its composition. The eggs number from four to six, frequently eight, and average 1.40 x 1.20 inches in size. They are white, and almost spherical in shape. The form of the egg is the chief feature that distinguishes it from those of birds belonging to other families.

The Carolina Parrot is wont to nest in colonies. His favorite haunts are the cypress swamps. He is supposed to nest in a hollow tree. The eggs, about 1.40 x 1.05 inches, are oval in shape, and rather pointed. Some are pure white, while others are tinged with deep ivory or tintured faintly with green.

The nest of Gambel's Partridge is a mere depression in the soil, sometimes without a lining to soften the bare ground. The eggs are eight to sixteen in number, and average 1.25 x 1.00 inches. At one end the egg is obtusely rounded, while the other is comparatively quite pointed. The creamy-white ground is relieved by scattered spots and blotches of old gold, sometimes chestnut red and light drab. The effect of the old gold against the creamy-white background is rich and beautiful, and these markings are the feature that distinguishes them from the eggs of other birds.

The Peacock selects some retired spot for a nest, which is a mere depression in the ground with a lining of leaves. The eggs are about as large as those of a goose, and but one brood is reared each year.

The nest of the Ring-necked Pheasant is made on the ground in sparse weeds or in an open field, perhaps in a tussock of grass, or under a small bush. Dry leaves and grass are the chief materials in its composition. The eggs number from seven to fifteen, and the average size is 1.61 x 1.31 inches. Some are buff color with a bluish cast over the surface, while other specimens are a yellowish buff throughout.

The Wild or Passenger Pigeon used to congregate in vast communities for the purpose of breeding, but it has been so nearly destroyed by man that it no longer nests in large rookeries. Trees and bushes are his favorite sites, and the nest is frequently at a considerable height from the ground. It is a mere platform of sticks carelessly thrown together. The eggs are usually one, never more than two in number, and average 1.48 x 1.04 inches. They are broadly elliptical in shape, and pure white without markings.

The nest of the Piping Plover is a mere depression in the sandy beach. The eggs are four in number and the average size is 1.29 x .95 inches. They are pyriform in shape, quite pointed at the smaller end, the other being obtusely rounded. The egg is pale buff, finely speckled with black and purplish gray. In some specimens the markings are much more profuse than in others.

The Robin of America builds in the crotch of a tree or on a horizontal branch, and very often on a stump or the top rail of a fence. All sorts of curious places are likely to be selected as favorable sites,—even bird-boxes,—though orchards and shade trees along the streets are his common choice. The nest is rather large and is coarsely

constructed of twigs, grasses, dry leaves and hair. It is strengthened by a cup of clay neatly molded and surrounded by these materials. The eggs are usually four, rarely five in number, and average 1.16 x .80 inches in size. They are elliptical in general form, smaller at one end than at the other, greenish blue without markings.

The Skylark of Europe builds his nest in meadows or open grassy places, often under the protecting shelter of a clod of earth, a tuft of grass, or some other projection. The nest is composed of grasses, plant stems, and a few chance leaves, with a lining of the same class of materials, but finer in texture. The eggs number from three to five, and range from .95 x .64 inches to .84 x .58 inches. They vary considerably in form and coloration. Some are grayish white, tinged with purple or greenish white, with speckles of grayish brown or drab. Others are of a deeper and more somber hue, and in some the markings are chiefly about the larger end.

The nest of the Song Sparrow is usually found in low bushes or on the ground, although it is occasionally built in trees or climbing vines. It is composed of grasses, roots, stems and leaves, lined with fine grass-stems or hair. As a rule, the eggs are four or five in number, though they sometimes reach six, and rarely seven. They are so diverse in size and coloring that this species often represents the eggs of a number of ground birds in the small boy's collection. They range from .75 to .85 inches in length, by .55 to .60 inches in breadth, while in form they are oval at the smaller end. The egg varies from greenish or pinkish white to light bluish green, spotted with dark reddish brown.

The nest of the Cliff Swallow is attached to the perpendicular face of hard embankments. It is usually retort or flask shaped, but some have no necks or fail otherwise to carry out the idea of a bottle. The nest is made entirely of mud, and comfortably lined with straw, wool and feathers. During the breeding season the birds are always found in colonies. The eggs vary from four to five or six in number, and the average size is .82 x .56 inches. They are elliptical in form and one end is somewhat smaller than the other. The ground color is white, relieved by dots, blotches, and points of reddish brown. The peculiar form of the nest indicates the species to which the egg belongs.

The nest of the Wild Turkey is on the ground, and very securely hidden in tangled briars or tall, thick grasses. A mere depression in the soil, with a scant lining of stray feathers or blades of grass, is the only nest of which this bird can boast. The number of eggs varies from nine to eighteen, but nine to twelve usually constitute a brood. The average size is 2.55 x 1.80 inches, the small end tapering considerably more than that of the domestic fowl. They are rich, dark

cream color thickly sprinkled with rounded spots of rusty brown. The distinct features are the markings of the eggs and the location of the scantily furnished nest.

Dense underbrush and rocky ravines shaded by thick foliage are the favorite nesting sites of the Whip-poor-will. The eggs are found on the ground, on decayed wood or among fallen leaves. Two eggs constitute a set and average 1.25 x .90 inches in size. They are elliptical and have a smooth surface. The ground color is cream or white, and yellowish-brown spots of varying size are distributed rather freely over the entire surface. Occasionally, these handsome markings are varied with a few blotches. Deep shell marks of a lilac-gray or lavender tint are about as numerous as those dotting the surface.

The nest of the Woodcock is a mere depression in some dry spot in swampy land, usually sheltered by a clump of briars or other wild shrubbery, but often found in more open places. The eggs average 1.50 x 1.18 inches. They are pyriform, but more rotund than those of most of the small waders. In color they are creamy or buff, irregularly and thickly spotted with varying shades of pale, reddish brown.

The Red-headed Woodpecker builds his nest in orchards, groves, the deep forest, or perhaps in a solitary tree in a field or on the open prairie. The bird usually digs a cavity for the nest in a decayed tree, sometimes in a telegraph pole. The eggs are five or six in number and average 1.12 x .85 inches in size. They are elliptical in general shape, but one end is smaller than the other, while the somewhat irregular outlines destroy the effect of the oval. The yolk, showing through the translucent shell, imparts a delicate pinkish tinge to its clear glossy whiteness.

The Common House Wren builds his nest in every conceivable nook and crevice. Under the eaves of houses, corners of the barn, hollow trees and martin-boxes are common building sites. The nest is composed of a mass of various kinds of rubbish, sticks, grass, hay and other available materials. This industrious bird will fill a box or cavity that holds a peck in order to make it available for nesting purposes. The eggs are usually seven, sometimes nine in number, and average .64 x .52 inches with great variations in respect to size. In form, they range from spherical to oblong-oval, and are white, slightly tinged with purple, so thickly dotted with reddish brown that they often give the impression of being a uniform chocolate color.

THE PRAIRIE HEN

THE Prairie Hen belongs to the Grouse family and is an excellent game bird. Formerly this species of Grouse was found in some of the eastern states, but it seems now to be confined wholly to the middle northern country, with Indiana and Illinois for eastern bounds. This bird is plentiful where there is a range of dry, barren country, for he dislikes a wet soil.

The Prairie Hen is about eighteen inches long, so that he makes a generous dish for the table. The feathers are yellowish brown, tinged with gray and barred with black. The throat is buff, and white appears on the breast and underparts.

On the head is a small crest and on the sides of the neck are eight or ten long, stiff feathers, which ordinarily lie against the neck, but are erected when the bird is excited or angry. Just below these feathers, on either side of the neck, is a patch of bare skin, which the bird can expand at will into a ball. The legs are thickly covered with feathers all the way down to the feet.

The nest is made on the open prairie, under a bush or in the long grass. It is a mere hollow scratched in the earth and lined with grass and feathers. It is usually so well concealed that the traveler does not notice it unless it lies directly in his path. The female lays from eight to a dozen eggs, which are a greenish gray, sometimes marked with dark specks.

He sometimes utters a hoarse, hollow, croaking sound, which might be mistaken for that of a bullfrog. During this process, he blows out his neck pouches until his head is almost concealed. Perhaps the latter part of the performance is a challenge to rival birds. The challenge is promptly accepted and soon the battle is raging with a great show of valor on each side. Each attempts to frighten the other by his very fierce aspect. He ruffles up his feathers and scratches up the ground, all the while scolding in a sharp cackle.

The male bird is not a domestic character by any means. He refuses to do his share in bringing up the family. Nor does he trouble himself to provide for his mate during this trying period. When the chicks are hatched, the mother looks after them, scratching up worms for them to eat and sheltering them under her wings, like our domestic hen. If danger approaches, the chicks scamper into the grass or bushes and remain quiet, while the mother, by feigning lameness, endeavors to lead the intruder away from the place where the chicks are concealed. She performs her tricks much as the Ruffed Grouse or "Bob White" might do.

Acorns, wild strawberries, huckleberries and insects are the chief food of the Prairie Hen. He sometimes visits the grain fields and eats buckwheat, or nips the leaves of the clover. In winter, beechnuts and buds supply his food.

The Heath Hen was once found in some of the Atlantic states, but is now exterminated, except perhaps in Martha's Vineyard. He is very similar to the Prairie Hen, and makes a nest in sparse woods of scrub oak or pine growth.

The Prairie Chicken, or Sharp-tailed Grouse, is a little smaller than the Prairie Hen. His plumage is striped with black and brown, and the wings are spotted with white. He has no neck-feathers, like the Prairie Hen, but in his habits he resembles the latter bird. He is found in the northwestern part of the United States and across the Canadian border. His flesh is very toothsome, and often makes an excellent meal for the plainsman who chances to start up a bevy of these birds.

THE QUAIL, THE PARTRIDGE AND THE GROUSE

COLONEL WILSON, of Virginia, was visiting his friend, Mr. Parker, at the latter's home in Massachusetts. It was in autumn, and as the two gentlemen sat on the piazza of Mr. Parker's house, the latter's two sons came up the walk with guns over their shoulders and each with a string of birds in his hand.

One of the boys held up his birds and Colonel Wilson exclaimed: "What a fine bag of Partridge!"

"You mean Quail, I guess, don't you, Colonel?" said Mr. Parker.

"Quail? No, indeed; I ought to know Partridge when I see them—I've shot hundreds of them."

"Well, but here are your Partridges," said Mr. Parker, taking a string of birds from his other son.

"Partridge? Why, my dear sir, those are Pheasants!"

"We call them Partridges in New England," said the Massachusetts gentleman.

"Can't help that," said the Colonel, a little nettled; "the other boy has the real Partridges."

Each gentleman was prepared to insist that he had called the birds by their right names, when up the drive came a man with a fishing-rod over his shoulder and trousers tucked in his boots. "Ah," said Mr. Parker, "here's Professor Bridges. He's an expert on birds; we'll let him decide the question." So the dispute was referred to the naturalist.

He smiled as he heard the gentlemen defend their positions; then he said: "Well, the fact is, it all depends on the part of the country you come from. Now, these birds, which Mr. Parker calls Quail, are always called Partridge in the South; and the birds which Colonel Wilson calls Pheasants, and which go by the name of Partridge in New England, are really Grouse. The best way out of it is to follow the adage, 'When in Rome do as the Romans do,' and name your birds according to the locality in which you find them."

"Well," said Mr. Parker, "suppose we compromise on 'Bob White' as a name for my Quail and the Colonel's Partridge," and then there was a laugh and a general assent.

Because his note sounds something like those words, "Bob White" is the nickname given to the Quail of New England and the Partridge of the South. Some poet has written a poem about "The Whistle of the Quail"—of course he was a New England poet! At any rate it is the whistle of this bird that gives him his nickname. Sometimes his call is translated to mean "More wet, more wet!" and this is said to be a sure sign that rain will fall soon.

This bird is one of the most delicious tidbits for the table to be found among the game birds, and is so much in demand that he has disappeared entirely from some sections. In most states it is unlawful to shoot him, except during a few weeks in the fall.

"Bob White" has a coat of reddish brown, mottled with gray, black, buff and white. A stripe of white over his eye and a patch of white on his throat, with white and black marking on his white vest, complete his coloring. Including his tail, he is about ten inches long.

The matter of a nest is very easily settled by this bird. He makes it in a slight depression in the ground, with leaves and grass loosely arranged about it and here the eggs are laid, white in color and from ten to twenty in number. The nest is rarely found in thick woods, but usually in a thicket of bushes, or in the grass of a field.

When the bird is "flushed," or frightened from cover, he rises in the air with a "Whir-r-r!" caused by the rapid strokes of his short wings. He can run very swiftly and prefers the ground to the air when he is seeking to escape an enemy.

"Bob White" is not a bird of passage, and does not migrate from the colder to the warmer climate in winter. He does not seek to avoid the snow, which, however, sometimes overtakes and kills him. If not seriously disturbed by the hunter, he dwells in the same "cover" of bushes several years in succession. During the winter he is content to feed on berries and buds, and occasionally pays a visit to the farmyard, in search of chance grains of corn overlooked



FROM COL. F. M. WOODRUFF.

BOB-WHITE.
 $\frac{2}{3}$ Life-size.

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FROM COL. F. M. WOODRUFF.

RUFFED GROUSE.

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by the poultry. In the summer he eats corn, rye and buckwheat, the seeds of wild plants, and insects.

These birds are good-natured, and, for the most part, seem to be very fond of each other. They live in families, sometimes numbering only four or five birds, and at other times as many as twenty or thirty. They roost on the ground in a circle, with their tails pointing toward the center and their heads outward, so as to be ready to run in all directions at the least alarm. They are shy birds, but may be tamed, nevertheless, and the mother birds will even sit on hen's eggs and hatch out a brood of chickens.

A mother bird will often try to deceive the hunter by running along on the ground, limping and complaining, as if wounded. It is only a trick to draw the sportsman's attention from her little chicks, which can easily hide in the grass and leaves, the color of which they so much resemble, and keep perfectly quiet while their mother flutters about, always seeking to draw the enemy farther away from their hiding place.

The Ruffed Grouse is the real name of the bird called "Partridge" in the North and "Pheasant" in the South. He is a beautiful bird, although he has no brilliant colors. Nature always gives the ground birds, or those which seek shelter in the bushes and grass, dull coats of brown or gray, in order that they may be less easily seen. The birds which live among the foliage of trees and fly high in the air when disturbed, can safely wear brighter colors, since they do not try to escape by hiding.

The upper parts of the Ruffed Grouse are mottled brown and gray, marked with brown and dull white. The head has a crest and a ruff of black feathers on the sides of the neck. The under parts are buff, and the soft feathers of the breast are marked with brown. This bird is much larger than "Bob White," and, when he chooses, can spread his tail-feathers, which makes him look still larger. He is fond of the "partridge berry," strawberries, grapes, huckleberries and the buds of apple-trees.

The Grouse prefers to make his home in rough countries, where there are thick bushes and growths of scrubby trees. The nests are simply a hollow cushion of grass and leaves, like that of "Bob White."

In the spring, he makes a sharp drumming noise which is peculiar to his kind. It sounds like the roll of a kettle-drum and may be heard at some distance. The bird makes this noise with his wings, and it is a sign that he is full of good spirits, or perhaps it may be a challenge to other Grouse to join in a quarrel. During the summer, Grouse like to flutter in the dust, as we often see hens do, and for this purpose they sometimes go to the highway, where the soil is fine

from the constant crushing of wheels and feet. Usually, however, they are to be found only in their favorite thickets, where they spend most of their time near the ground. Like "Bob White," they run from danger, and the mother Grouse practises the same deception on the hunter, by pretending to be wounded and seeking to lead him away from her chicks.

Other species of Grouse are called by such names as Dusky Grouse, Pinnated Grouse or Prairie Chicken, Canada Grouse or Spruce Partridge, White Grouse or Willow Ptarmigan; and in Europe is found the Black Grouse or Black Cock, which utters a crow somewhat like that of a rooster.

Nearly all Grouse are alike in habits, differing slightly in various sections of the country. Everywhere they are esteemed as game birds and are shot and trapped in large numbers to supply the markets.

PHEASANTS

PHEASANTS are old world birds, and there is no reason why the name should be given to any native American bird, as it is in the South to the Ruffed Grouse. They have been common birds in Asia for many centuries and have been introduced in most of the countries of Europe. The Common Pheasant was carried into England, some say by the Romans, and others say at the time of the Norman Conquest, 1066 A.D., and since that time has been considered a "game" bird, although American sportsmen would think it a very tame sort of game. Noblemen who have large estates and "shooting preserves" breed these Pheasants in great numbers. The birds are turned loose in the woods, where they live in a half-tame, half-wild state, and when the owner of the estate wishes to entertain his friends, he invites them to a Pheasant shoot. Beaters enter the woods and frighten the birds from their haunts, and the gentlemen sportsmen follow with their guns, to shoot as many as they can. Hundreds may be killed in the course of a single day, as it is no difficult feat to shoot them. The flesh of the Pheasant is delicious for the table.

There are many species of the Pheasant. Nearly all have beautiful plumage, with very long tails. The "cock" or male of the Common Pheasant is about three feet in length and the "hen" a foot less. They make nests in a thicket or hedge. Usually it is a simple hollow scratched in the ground and lined with grass and feathers. The eggs, which number from eight to twelve, or even twenty, are nearly two inches long, of a brownish or greenish color.



FROM COL. CHI. ACAD. SCIENCES.

RING-NECKED PHEASANT
1 $\frac{1}{2}$ Life-size

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The Ring-necked Pheasant is one of the common varieties. This bird has plumage of yellowish brown, with spots of white above and darker brown spots; his breast is purplish chestnut, with regular spots of black. His long tail is barred with black. Around his neck is a ring or collar of white on a ground of beautiful dark green, shading to purple or black near the bill. Around the eye is a patch of bare, red skin. These birds are raised to some extent in the United States, and an effort to introduce them is being made in some of the middle and western states. Well-bred birds are liberated in suitable localities and protected by law. In Ohio, this experiment is being tried on a large scale, and it is believed that the Pheasant will render valuable service to the farmer by destroying injurious worms and insects. This Pheasant makes a nest in an open field, and seems to have many habits of the quail. He is a swift runner, and seeks hiding at the first warning of danger, crouching low on the ground or in the grass, where the color of his plumage makes it difficult to see him.

In China and Japan, Pheasants are abundant, and have very beautiful plumage. One of the Chinese birds is the Golden Pheasant. It is hard to describe his wonderful display of colors. His crest and the plumes on his back are golden yellow; his breast orange red; on his wings are black, purple and brown; below his neck, salmon pink, barred with black. His long tail-feathers are black with beautiful mottlings of yellow.

The Silver Pheasant, another bird from China, has silvery-white plumage with purplish black underneath, a black crest and a diamond-shaped patch of red about the eye.

The Copper Pheasant has plumage of a rich copper color. That of the Japan Pheasant resembles the green and purple plumage of the Peacock; and besides these there are many other species, all of which have exquisite coloring.

Not all the Pheasants are bred to be shot, for the quality of the flesh varies somewhat with different varieties. The more brilliantly colored birds, like the Golden Pheasants, are usually raised for the pleasure of seeing their beautiful plumage.

Pheasants are ground birds. They take only short flights, but they run swiftly and are very graceful in their motions. Their legs are armed with sharp spurs like those of the gamecock, and in a fight they use them savagely. Grubs and worms, beans, grass, acorns, berries, grain and leaves comprise the food of these birds.

THE WOODCOCK

THE American Woodcock is one of the most sought of the game birds, for the delicate flavor of his flesh makes him a choice morsel for the table. He is found in eastern North America and remains in New England as late as December, when he makes his way to the South to spend the remainder of the winter.

This bird is a peculiar looking fellow. He is about eleven inches long, has a very long, straight bill and short legs. His tail, too, is so short that at first glance you might think he had none. His head is still more remarkable, however, for it comes almost to a right angle at the nape, and the neck is so short that the head seems joined directly to the body. Then, too, the Woodcock's eyes are very large and set near the top of his head. Altogether, he is not likely to be mistaken for any other bird. His coat is a tawny color, mixed with black and gray, and underneath it is a reddish yellow, tinged with gray.

His long bill is given him for boring, not in trees, like the woodpecker, but deep in the earth, where he finds worms and other living food.

The Woodcock's nest is usually found in a wet meadow or swampy thicket, but he does not like too much water, and sometimes builds in the dry woods. The nest is a mere hollow in the grass, lined with leaves. In this nest the female lays four eggs, about an inch and a half long, which are pale buff in color and spotted with brown and lavender.

We have noticed that the Woodcock's eye is very large. This is undoubtedly due to the fact that he goes abroad mostly at night and his eyes are intended for seeing in dark places. During the day he stays quietly hidden in the thicket or the grass, but as evening comes on he starts out in search of food. He is often out late at night, and again in the early morning he is very active, but as soon as the sun is fairly in the sky, he returns to some shaded place.

With his long, slender bill the Woodcock can pierce to a depth of several inches. He turns over the leaves and bores in soft, boggy ground for the worms which he is pretty sure to find. Sometimes you find a number of holes near together, which look as if they might have been made by the tines of a pitchfork, and it is an indication that the Woodcock has been digging worms. It is supposed that he has a very keen sense of touch, which helps him to secure the insects and worms hidden underground.

The Woodcock utters a warbling call, and in flying, the rapid strokes of his short wings make a sharp whistling sound.

THE PLOVERS

THERE are nearly a hundred species of Plover, which are shore birds, or waders, in many respects similar to the snipe. Some species, however, visit the uplands and are not exclusively shore birds. The Plovers, moreover, except in three species, have no hind toe, and their legs are long and slender, while the snipe has a short fourth toe at the back of the foot. The Plover's head is so nearly round that it seems like a ball into which a skewer has been stuck, for the bill is slender and sharp. He does not use it to probe the ground, as the snipe does, but picks his food from the surface.

The Whistling Plover, known in this country as the Black-bellied Plover, is common in almost all parts of the world. His upper plumage is gray, spotted with black and pale yellow; the under feathers are black in summer and change to gray and white in winter.

This bird makes a singular nest—a mere depression in the beach, into which he puts a wisp of grass for lining. Although he nests near the sea, he is not web-footed, and feeds more on land insects than on those found only about the water. Grasshoppers and beetles are a favorite diet with the Plover, and he eats berries in their season.

The Killdeer, a well-known member of the Plover family, is found in nearly all parts of North America. His name is given him because of his cry "Kill-dee, kill-dee," which he repeats so monotonously that it becomes tiresome to the ear. The Killdeer is a restless bird. He runs swiftly on the ground and is strong in flight, and often soars to great heights. The Killdeer makes a nest after the fashion of other Plovers, by simply scooping a hole at the upper edge of the beach or on the border of a meadow. The eggs are buff or drab, spotted with dark brown. Plovers' eggs are more sharply pointed than the eggs of other birds. During the breeding season, the Killdeer is full of anxiety lest his nest be disturbed, and will fly about the head of an intruder or run along on the ground, pretending to be lame, all the time screaming "Kill-dee, kill-dee," to draw attention away from the nest. Worms, grasshoppers, crickets and other insects are the chief food of this bird. His flesh is not especially palatable, yet it is sometimes eaten.

The Upland Plover is a familiar game bird, and his name is well known among sportsmen. He is also called the Field Plover and the Bartramian Sandpiper. He really belongs to the Sandpiper family, for he has the fourth toe, which other Plovers lack, and his bill is long, like the Sandpiper's. His plumage is mottled brown, black and

buff, the breast streaked with dusky feathers and the under parts white. He is about twelve inches long, and his flesh is excellent for the table. This bird ranges from the far fur countries to the pampas of South America, and is particularly abundant on the plains of the West.

Their nesting habits are like those of other Plovers. They feed on insects and destroy uncounted multitudes of grasshoppers, to the great good of the farmer. They are shy birds and, when alarmed, run through the grass very swiftly. If they take flight, they utter a low soft whistle which has a complaining note, as if in protest against being disturbed.

THE RAILS

TO THE Rail family belong many species of birds which are scattered throughout the temperate regions of the globe and are variously known as Rails, Corn Crakes, Moor Hens, Mud Hens, Marsh Hens, Gallinales and Coots. The Water Rail of Europe is the type of the group. It has a slender, straight bill, a little longer than its head, long legs and long toes, short wings and short tail and compact body, which tapers rapidly toward the head.

There are more than sixty species of Rails. They are marsh birds, and live along the borders of rivers and swamps. They swim and dive well, and run very swiftly; but they fly heavily and only for short distances at a time. When they migrate, however, they seem to summon enough energy to take long flights. They feed on insects, the seeds of water plants, slugs, worms and small shellfish. With their sharp bills they pick many tiny creatures from the mud of the marshes. These birds are often called Marsh Hens, for they utter a cackle much like that of the domestic hen, and also move their heads back and forth as she does when walking.

The King Rail is also called Red-breasted Rail, and Fresh-water Marsh Hen. He is found in the middle and southern states, usually near fresh water. This bird is about eighteen inches long. His plumage is brown on the upper parts, striped with black; the throat is white; the breast and upper wing feathers reddish chestnut; flanks barred with white and dark brown or blackish.

The nest, made of grass and weeds, is placed on the ground and hidden in the rank grass of the marsh, or fastened to the reeds growing about it. The eggs range in number from six to twelve, and are white or buff, marked with brown and lilac.

The Virginia Rail is much like the King Rail in his habits, but he is little more than half as large, and there is more of the reddish

color in his plumage. He is a fresh-water bird and rarely visits the marshes near the sea, unless there is fresh water near by. He is found throughout the middle and southern states and as far north as Massachusetts. This bird is not often seen, for he spends nearly all his time among reeds and rank grasses of the marsh, and when alarmed runs swiftly through the rushes. He flies but little, and never perches on trees or bushes.

The Clapper Rail is also called the Salt-water Marsh Hen and Mud Hen. He is fourteen or fifteen inches long, and has a long, slender, slightly curved bill. His plumage is much like that of the King Rail, but paler, duller and grayer. The bird is found all along the Atlantic coast, as far north as Long Island, or even Massachusetts, and spends the winter on the shores of the Gulf of Mexico. The Clapper Rail is always found in salt-water marshes. When the female lays her first egg, she drops it into a trifling hollow, surrounded with a wisp of grass, but, as others are added, she adds to the nest, until it reaches a considerable size. The long grass about it is then arched over the top. The eggs are as large as those of a bantam hen, and are good to eat. The hawks, crows, foxes and minks like them as well as men do, and often rob the nests.

The Sora Rail has other names—Common Rail, Carolina Rail and Carolina Crake. He is a common bird in nearly all parts of the United States, but is most abundant in the middle and southern states. He is a fresh-water marsh bird, but is also found on tide-water creeks. He is even smaller than the Virginia Rail. His plumage is a mixture of brown, black and gray, and the under parts are barred with ashy white. His bill is yellow, and is much shorter and stouter than those of the other Rails. His flesh is excellent for the table, and in the fall he is persistently hunted.

All Rails are shy birds and you must go to the marshes to see them. Even then you may watch a long time without spying one, for their plumage is so much like the reeds and grasses in color, that they are not easily distinguished. They spend nearly all their time on their feet and are constantly seeking insects, seeds and small shellfish for food. They are very nimble and can outrun a man. Their bodies are very thin, so they slip easily through the narrow spaces between the reeds. You have heard people described as being "as thin as a Rail," and when you have seen one of these birds, the description is full of meaning. When they run, they stretch out their necks and erect their short tails, and are comical-looking creatures. They are harmless birds, for they never trouble grains or fruits, but other birds, animals and men hunt them to get their eggs and flesh.

SNIPES AND SANDPIPERS

THE Snipes and Sandpipers are shore birds. They have long legs for wading and long bills for seizing their food in the sand or water. There are many species of these birds and some of them are common in all parts of our country, as well as in Europe.

Wilson's Snipe, which is also called the English Snipe, Guttersnipe, Jacksnipe and Shad Bird, is one of the best known of the family. He is found throughout the United States, in every locality where marshes or wet meadows offer suitable feeding-ground. He spends the winter months chiefly in the West Indies and Central America. Wilson's Snipe wears a coat of brown, black and buff. The markings are irregular and give him a curiously mottled appearance. On his short tail appear bars of black and some reddish feathers. His underparts are white. He has a long, narrow, pointed bill. His legs are dusky brown and the middle toe is very long. The bird's full length is about twelve inches, of which his bill is two and a half inches.

Near the edge of the marsh, the Snipe makes his nest, in a tuft of grass or on a bed of moss,—a slight hollow which he lines with grass and leaves. Three or four eggs of a brownish-olive color, marked with brown, are laid.

The Snipe makes a peculiar humming or whirring sound while in flight. His food consists of worms and tender roots, for which he bores in the soil with his long bill.

The flesh of the Snipe is delicious and Snipe-shooting is a favorite pursuit with sportsmen. They are active birds and seem to know by instinct when the pursuer is looking for them. When startled, they rise in the air and dart upward and downward in confusing curves, so that the man with the gun must be an excellent shot to make sure of his game.

The Least Sandpiper is only half the size of Wilson's Snipe. Black, reddish and white plumage appear in his coat; his under feathers are white, with dusky spots. His bill is stout and sharp, but only one-third as long as that of the Snipe.

This little bird is common on all the shores and marshes of North America. He breeds in the arctic regions, but in the winter he ranges as far south as Mexico. He travels from place to place in great flocks, and for this reason makes an easy mark for the sportsman, who finds the flesh palatable, although it is not equal to that of the Snipe. When startled, these birds utter a sharp little cry of "peep, peep," and the name Peep is often applied to them.

Their feeding habits are somewhat like those of the Snipe, and the worms, crabs, small clams and insects which they find about the

shore are their only food. They bore in the sand or mud in search of food, as the Snipe does. You may often see them on the beach, running about on the sands at a lively gait and fluttering just out of reach of the coming waves. If you watch them closely, you will see that they are picking up the tiny creatures cast up by the sea.

The Curlew Sandpiper, the Red-backed Sandpiper, the Pectoral Sandpiper and the Semi-palmated Sandpiper are other birds of this family, all larger than the Peep. The last named has partially webbed feet.

The Spotted Sandpiper is one of the common species, most remarkable for his habit of wagging his tail, which gives him the familiar name of Tip-up or Teeter-tail.

THE EAGLE

WITHOUT a doubt the Eagle is the "King of Birds," but his reign is one of terror, and his scepter a symbol of despotism. He is the pirate of the air, who robs the weaker birds of their prey rather than catch his own. In cunning and intelligence he is inferior to many birds of smaller size, but physically he is well equipped for his throne. For strength, courage and swiftness of flight he surpasses most other birds, and in the defense of his young will even attack a man.

The ancient Greeks and Romans venerated the Eagle, and before their time, the monarchs of Persia made this mighty bird a symbol of their power. The Romans placed a representation of the Eagle on their imperial banners, and believed that its lofty flight enabled it to be the messenger between Olympus, where Jove ruled the heavens, and the earth below. You will see the doubled-headed Eagle on the imperial flags of Russia, and in the fourteenth century, the black Eagle became the emblem of Prussia. The symbol of our own country is the American Eagle. You will find him represented on our silver coins; our ten-dollar gold coin is officially known as an "Eagle" and the twenty-dollar gold coin as a "double Eagle." Long before white men usurped this country, the Indians admired the Eagle and wore his feathers in their head-dresses. They also used them to adorn their pipes of peace.

In this country the Eagle with which we are familiar is the Bald Eagle. He is distinctively known as the American Eagle, and has also been called the Washington Eagle. This bird has plumage of blackish brown, but the feathers of his head, neck and tail are pure white.

His length is about three feet. The Bald Eagle does not reach maturity until he is three years old, and the young birds seem to be larger than their parents, from the fact that their wing and tail feathers are longer than those of the older birds.

The Eagle shuns the haunts of man, preferring the solitude of nature to the society of human beings. Far upon a cliff or in the top of a lofty tree, he builds a nest called an eyrie. It is made of large sticks and branches, bound together with vines, and lined with hair and moss. Sometimes this nest is made to serve for several seasons, and the Eagle improves his property by adding to it every year, until in time the nest becomes a large structure. The mother Eagle lays two or three eggs, white or pale buff in color. Although the Eagle has such a bad reputation abroad, his domestic relations do him great credit. After the young eaglets escape from the shell, the father aids the mother in rearing them with the greatest care, providing them with food and hovering near to protect them from any threatened danger. If a nest robber appears, the old Eagles attack him fiercely, striking at him with their beaks, talons and wings. Taking young birds from an Eagle's nest is a very dangerous enterprise.

When the Eagle thinks it about time the children should learn to fly, he and his mate soar in the air above the nest and try to coax the little ones to spread their wings. If they are too timid to heed the calls, the parents push them from the nest. As the young birds fall, they flutter their wings from instinct, and this helps to keep them afloat. Meanwhile, the mother Eagle flies beneath, ready to catch the Eaglet on her back or in her talons, if he seems unable to fly successfully. The young birds soon learn the power of their wings, however, and are early taught to search for their own food. The Eagle is sometimes seen soaring over waterfalls, keeping a sharp lookout for the fish that are killed by passing over the fall.

As they often pause in the air, hundreds of feet above their prey, it may be imagined with what swiftness they descend to capture it. The Eagle sometimes sees a rabbit leave its burrow and swoops down upon the little creature before it can turn to run for shelter. He boldly seizes hens, chickens, ducks and cats, and will attack and carry off a young lamb or a kid. Many stories have been told of Eagles stealing babes and carrying them to their nests, and while it is possible that such cases have occurred, they are undoubtedly very rare.

A favorite method of the Bald Eagle in securing his food is to rob the Fishhawk. As the latter rises in the air, with the fish he has just caught, the Eagle darts upon him and strikes the Fishhawk a

severe blow with his wing or his beak, which causes the smaller bird to drop his fish. Before it can fall to the earth, however, the Eagle darts downward and seizes it in mid-air. While he flies away to enjoy his stolen meal, the Fishhawk must find another fish for himself.

The Eagle shows some cunning by approaching his prey from behind, so that the sun may not cast his shadow on the ground to frighten the duck or rabbit he intends to capture. He can also fly directly toward the sun, and the strong light does not blind him, for he has an inner eyelid, which he is able to draw over the eye. This lid softens the light, as a piece of ground glass does.

The most famous Eagle in the world was "Old Abe," a name given him in compliment to Abraham Lincoln. Chief Sky, a Chippewa Indian, took him from the nest when he was an eaglet and sold him for a bushel of corn to a man named Daniel McCann. When the Civil War broke out, Mr. McCann carried the bird to Eau Claire, Wisconsin, and presented him to Company C of the Eighth Wisconsin infantry. The soldiers made "Old Abe" their "mascot," and adorned him with red, white and blue ribbons. They carried him to the front and he was present in all of the fifty battles and skirmishes in which the regiment was engaged. He was carried on a perch at the top of a staff, in company with the regimental colors, and although the colors were always the most conspicuous mark for the enemy's bullets, "Old Abe" was never wounded and suffered no greater damage than the loss of a few tail feathers. Singularly enough, too, the color-bearer who carried the flag beside "Old Abe" was never shot down. In battle, the great Eagle seemed to be in his element. He flapped his wings, his eyes blazed and his deafening screams of rage and delight sounded above the roar of the cannon and the rattle of small arms.

"Old Abe" was tethered by means of a cord attached to a leather ring about one of his legs. Once or twice he made his escape, but was coaxed to return to camp. He had his own likes and dislikes among the soldiers. Some of them he would attack fiercely, if they approached him, while others, whom he singled out as his particular friends, were permitted to touch and feed him. He became well known to the soldiers of both armies, and the Wisconsin troops were very proud of him. General Sterling Price, of the Southern army, is said to have declared, "I would rather capture 'Old Abe' than a whole brigade of Yankees."

"Old Abe" served for three years, until his regiment was mustered out. He was then presented to the state of Wisconsin and for many years was kept at the state capitol, in the city of Madison, where he died.

Eagles live to be very old and some are known to have reached the age of one hundred years. They may be kept in captivity, though under these conditions they are much shorter lived than in the free state. The reason of this is probably the loss of opportunity to use their natural powers in lofty flight.

The Golden Eagle is found in all the cold and temperate countries north of the equator. His plumage is dark brown, and the head and neck have tawny feathers, which caused the name "Golden Eagle" to be applied to him. His habits are like those of the Bald Eagle, and he is equally swift in flight and as ferocious in hunting his prey.

THE VULTURES

THE Vultures are in their own way, very useful birds. As their diet consists almost entirely of decayed flesh, they are natural garbage-collectors,—not a pleasing occupation, certainly, though a very necessary and honorable one. They rarely destroy life themselves, but feed upon the refuse of any kind of flesh. Vultures are found in nearly all parts of the world, though more abundantly in warmer climates. They are among the largest and most powerful of the birds.

The Vulture best known in America is the Turkey Vulture, or Turkey Buzzard, as he is often called. This bird is about two and a half feet in length, and of a rusty-black color. His head and neck are bare of feathers and are covered with a skin of bright red. The bill, which is long and hooked at the end, is white. The feet are very large and have long toes armed with curved nails.

This bird is found in our southern and middle states and as far north as New Jersey, but rarely in New England. When the body of a dead animal is left in the woods or fields it is soon discovered by the Buzzards, which assemble and devour the carrion, picking the bones clean. They also search for refuse and garbage in cities and near the places where animals are killed for food, and remove great quantities of matter which, if left to decay in the open air, would be likely to cause disease and destroy human life. Disgusting as the tastes and habits of the Buzzard are, we cannot deny his usefulness. This is so thoroughly appreciated that in the southern states there are laws to severely punish any person who kills one of these birds. As the birds are never molested, they become very tame and walk about the streets of towns in search of food, or perch on the roofs and chimneys of houses. A person may approach within a few feet of the place where they are feeding before they will move away, and then they



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AMERICAN BALD EAGLE.
 $\frac{1}{4}$ Life size.

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TURKEY VIII. TURK

usually perch on the nearest tree and wait until the intruder is gone to descend and resume their feast. If a nest or a young bird seems to be in danger from a person or animal, the old Buzzard will discharge the contents of his stomach, which give off so disagreeable an odor that the intruder is almost sure to take to his heels in order to escape it.

The Buzzard makes a nest in a tree, or in the cavity of a stump, though he sometimes selects a bush or overhanging rock as a protection for his home. The female lays two eggs, which are larger than those of a turkey and are white, mottled with purple and brown. If the nest is left undisturbed, the bird will occupy it for two or three seasons in succession.

In appearance, the Turkey Buzzard is not a pleasing creature. His bare head and neck, and long, hooked bill give him a repulsive appearance. At a distance, however, he may be mistaken for a Wild Turkey and it is this resemblance that gives him his name.

An amusing story of a mistake of this kind is told by an army officer connected with the American campaign in Cuba, in 1898: "After the battle of El Caney" he said "and before the advance on Santiago, we were out in the bush waiting for orders to advance. We were nearly starved, for no provisions came up from the ship, although we were maddened by seeing load after load of ammunition go by. Suddenly one of the boys spied a 'wild turkey' in the woods. 'Hurrah' he cried 'we'll have a dinner now.' He slipped into the bushes and in a few moments we heard the report of his rifle. Presently he came back, holding his nose with the fingers of one hand, while in the other he carried a dead Turkey Buzzard. We could not help bursting into laughter, though we felt hungrier than ever, after being disappointed in our expectations of roast turkey. We were all from Massachusetts, and few of the men in the regiment had ever seen a Buzzard before. After that, however, we learned to know them well, for they gathered about our camp in thousands, eating all the refuse that was to be found."

The flight of the Turkey Buzzard is very graceful. He wheels through the air in circles, and floats with the greatest ease, seldom moving his wings until he sees some scrap of food on the ground, when he darts downward at a great speed to seize it. There has been much dispute, as to whether the Vulture detects his prey by scent or by sight. But the evidence offered seems to prove conclusively that both senses are used and both are highly developed in these birds. Buzzards travel in companies and one is rarely seen alone. When several hover in the air over a particular spot, it usually indicates the presence of some carrion on the ground below on which they are

feeding. They are gluttonous birds and sometimes devour so much food at one time that they are unable to rise from the ground until they have partially digested their meal.

The Turkey Buzzard is a harmless bird and may be left to serve us in his own way, at the same time gratifying his own peculiar appetite. It is a beneficent provision of nature that all creatures have not the same tastes, and no doubt we are all thankful to the Buzzard for his most unusual choice.

The Black Buzzard, or Carrion Crow, though not quite so large as the Turkey Buzzard, has similar habits and is an equally useful scavenger. He is found only in the South and rarely north of the Carolinas. While he has no fondness for the society of the Turkey Vulture, he often feeds on the same body and haunts the same neighborhood. His feathers are black, and his head, unlike that of the Turkey Vulture, is dark colored and partially covered with feathers. He does not fly and soar with the freedom of the Turkey Vulture, and when in the air is seen to flap his wings rapidly at short intervals, in order to keep his balance.

The California Vulture, or Condor, is one of the largest birds found in the United States. He appears only in southern California, where he dwells on the most rugged mountain ranges, making a nest on some cliff of rock, thousands of feet above the sea. In general appearance he is like the Turkey Vulture, except that he is larger and has a longer neck. He weighs as much as twenty-five pounds, and the wings measure ten feet from tip to tip. He is a fierce, powerful creature and is dangerous to meet at close quarters. One of these birds which was caught with a lasso was so strong that one man could scarcely hold him.

In South America we find the Condor, which is like the California Vulture. He soars to great heights, sometimes rising above the summits of the lofty Andes. He often reaches such a height that even with a powerful telescope he appears no larger than a robin.

THE HAWK

THE Hawks and Falcons are all of one family and are among the fiercest birds of prey. There are many species and they are all bold and cruel. They seize their victims with their sharp claws and tear them to pieces with their strong hooked beaks. Their breasts are muscular, their thighs long and brawny, and their feet are armed with long talons or claws, so that they are wonderfully adapted to their mode of life.

Doubtless by most people the Hawk is regarded simply as a robber of the poultry yard. But this is an injustice to some of the family, which number three or four hundred varieties, only two of which are prone to make raids on chicken yards. Many of them are exceedingly useful, as they kill birds or insects which are more harmful.

In the days of knighthood, the nobles took advantage of the blood-thirsty nature of certain species of these birds to use them for hunting purposes. You have doubtless seen pictures of gaily dressed knights and ladies riding spirited horses through the woods or over the fields, and have noticed a rather fierce-looking bird perched on the arm or wrist of one of these noble persons. This was a common scene, especially in England, "when barons held their sway" and when nobles thought work beneath them and even scorned learning. As they had to occupy their time in some way, they devoted much of it to hunting. They sometimes chased the stag or the fierce wild boar, but a more favorite sport was "hawking," or the hunting of wild birds with Falcons.

The Falcon was trained to his work, and every prince and baron had his Falconer, who looked after the breeding and the care of these birds. When ready for the chase, a hood of silk or velvet, often embroidered with gold and gems, covered the head of the Falcon, which perched quietly on his master's wrist. As soon as the hunter spied a bird flying in the air, the hood was removed and the Falcon was tossed upward. Instantly he took up the chase, and, as his rapid flight enabled him to overtake the unfortunate wild bird, he would seize it in his talons and bear it back to his master. The hood was drawn over the Falcon's head again, and when fresh prey was detected, he would be sent in pursuit of another victim.

One of the favorites for this sport was the Peregrine Falcon, which possesses great strength and flies very swiftly. Instead of merely dashing at his prey and grasping it in his claws, he strikes the victim with his breast such a blow as to stun it, before seizing it with his claws. So bold is this species that it was generally employed to take the formidable heron, and the contest was always a spirited one. As soon as the heron was aroused from some marsh, the Falcon was cast off, and in the contest which followed each bird strove to ascend above the other. The Falcon was usually victorious. When high enough, he would swoop down upon the heron and both birds would come to the ground together. The hunter then hurried to the place to aid the Falcon in killing his victim. Sometimes, however, the heron turned his sharp beak toward the Hawk and succeeded in piercing the bird's breast, so that the hunter lost both

Falcon and game. Now that such cruel sport is no longer generally sanctioned, the Falcon is left to hunt for himself rather than for knights and ladies, and to lead his own wild life.

Some varieties of the Hawk are very large, almost as large as the eagle, while others are smaller, yet all have the same bloodthirsty desire to kill. Taking the family as a whole, this love of killing makes these birds useful to men, for they destroy many small animals, like rats, gophers, moles and other creatures, which injure the farmer's crops. It cannot be denied, however, that they kill some birds, often our sweetest songsters.

The Red-tailed Hawk is found in nearly all parts of the United States. He is a large bird, twenty to twenty-five inches in length, with a coat of dull brown that is streaked with gray. His tail is chestnut, colored with a band of black near the end. His nest, which he builds in the top of a tree in the thick forest, is a large crude affair of sticks and is lined with moss and feathers. The female lays from two to five eggs, which are a bluish white, marked with varying shades of red and brown.

Cooper's Hawk and the Sharp-shinned Hawk are the worst chicken thieves of this family. Their plumage is dull blue on the back and white underneath; the breast is streaked with brown and the tail is tipped with white. They are among the fiercest of the Hawks, and although smaller than the Red-tail, they do not hesitate to attack and drive him away from the vicinity of their prey. They are too fond of chickens to please the farmer and are exasperatingly bold in robbing him, for they swoop down and pick out the plumpest chickens in the brood, even when the farmer is but a few steps away.

The Marsh Hawk makes his nest on the ground in the lowlands near the sea. It consists of a loose bundle of hay, with a lining of pine needles, feathers or moss. This Hawk preys on small birds, mice, fish, worms and lizards. He does not soar but moves slowly on the wing and circles above the water and reeds for hours at a time, watching for his prey. In the South he appoints himself a police officer to keep bobolinks away from the rice fields. He is of great service to the planters, for "Robert of Lincoln" likes rice as well as John Chinaman does.

The Night Hawk is often seen in our cities. He is not really a night bird, like the owl, but does most of his hunting in cloudy weather and in the early morning or in the late afternoon. He is sometimes seen abroad on a bright moonlight night. He feeds chiefly on insects, such as beetles, flies, grasshoppers and the moths which fly at night. The swarms of moths that flutter about the electric lights attract him to our city streets, but his natural hunting ground



AMERICAN SPARROW HAWK.
 $\frac{2}{3}$ Life-size.

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GREAT HORNED OWL.
37 Life-size.

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is above a river or field, where insects abound. He is graceful in the air and delights to soar to a considerable height and then dive rapidly downward. This bird does not build a nest but lays its eggs on a flat rock or on the bare ground.

The Sparrow Hawk is the smallest of his family. His coat is reddish brown, with some slate color on the head and wings. He is found throughout North America, though he prefers the South when the frost comes. Instead of building a nest on the ground or in the branches of a tree, he selects a hole in the trunk of a tree. The deserted nest of a Woodpecker satisfies him perfectly. Sometimes he occupies a box that has been prepared for doves, yet he does not molest either pigeons or chickens. He feeds on mice, lizards, grasshoppers and such small birds as the Sparrow.

The Fish Hawk is known in this country as the American Osprey. He leaves to others such prey as birds, mice and grasshoppers, and contents himself with a diet of fish. Every day is Friday on his calendar. He is an expert in catching his prey but often loses it, for the Eagle watches his work and frequently robs him of his freshly caught fish. The Osprey is about two feet in length. His back is brown; his head and breast white or buff. His claws are very large and strong and he has a long beak. He builds his nest in the top of a tree and usually near the water. When bent on catching fish, he circles gracefully through the air, sometimes at a distance of about two hundred feet above the surface of the lake or river. When his keen sight detects the prey rising to the surface, down he darts and splashes in the water like a stone. In a moment he rises with a fish, which may weigh seven or eight pounds, firmly grasped in his talons. He flies away to his nest or to a convenient rock on a hillside and eats his prey at his pleasure. He is found near fresh water in almost all parts of the world, from the arctic regions to the hot countries under the equator. As he depends solely on fish for food, he leaves the colder countries when the ice forms, and flies southward to be near open water.

THE OWLS

THE Owls are quaint-looking birds, with a very solemn, grave expression. Perhaps their solemn expression gives rise to their widespread reputation for wisdom. In the mythology of the ancient Greeks, Minerva, the goddess of Wisdom, is usually represented as having an Owl near at hand; and the Common Owl of Europe has been alluded to as "the wise Minerva's only fowl."

In Gray's beautiful "Elegy Written in a Country Churchyard," he speaks of the Owl in these lines:

"Save that from yonder ivy-mantled tower,
The moping Owl does to the moon complain
Of such as, wandering near her secret bower,
Molest her ancient, solitary reign."

The Owl figures in various household proverbs, as well as in song and story. "As stupid as an Owl" is a common saying that is really a calumny. The Owl is only dazed by the sunlight, and his manner cannot be charged to stupidity. The proverbial "boiled Owl" is eaten in some countries, and when young, appeals to the palate of many.

There are about two hundred different species of Owl, and they are found throughout the entire world, especially in temperate climates. We have several kinds of Owls in North America alone.

The Owls are birds of prey, closely related to the Hawks, and their sharp beaks and talons are given them for tearing the flesh of animals. Their eyes are so formed that they see best by night, and their feathers are soft and downy, so that they move noiselessly about in the dark and are famous mouse-catchers.

Besides mice and rats, Owls consume great numbers of beetles and other insects, and also eat other birds. Some Owls, unfortunately, are cannibals, and will eat their own kind, if no other food is obtainable. It is not true that they are all poultry thieves. One or two of the larger Owls sometimes catch chickens, but the common or Barn Owl has rarely been known to do so. He often makes his home in the pigeon loft, but does not offer to kill the pigeons. How can we be sure that this is so? In the first place, very careful investigations have been made to determine the character of the Owl's food, by examining the contents of the stomach. In almost every case, it has been found that the chief items are field mice and insects that are harmful to crops. Out of two hundred and twenty-five stomachs of Screech Owls that were examined for this purpose, it was found that only one contained poultry. There is also another means of determining the diet of these birds. Owls are not at all dainty in their eating. They tear their food to pieces, feathers, fur and bones going into the stomach with the flesh. Nature enables them to digest the flesh and then disgorge the fur, skin and bones in pellets. These pellets may be found about a tree in which Owls have a nest. A pair of Barn Owls once lived in a tower of the Smithsonian Institution, at Washington, and their habits were studied by men there, who had made a life study of birds. In the pellets thrown up by this pair of Owls, were found the tiny skulls of four

hundred and fifty small animals, but no chicken bones. Mice formed their staple article of food.

The first thing we notice about an Owl is that his eyes, which are very large and round, are in the front of his head and both of them look directly at us. Other birds cock their heads on one side and look at us with one eye. We see also that he sits very erect, instead of maintaining a more nearly horizontal position, as is natural with nearly all other birds.

The Owl's neck is so formed that he can twist his head around and look directly over his back, and this without moving either his feet or his body. Thus he is able to look for prey or for a suspected enemy, without making any noise by moving from his perch. In nearly all species of Owls, the feet and legs are covered with feathers.

Owls commonly make their nests in hollow trees, and they are quite willing to usurp the nest of a squirrel or a woodpecker. In most cases, their eggs are nearly round, instead of being oval, like those of other birds, and they are invariably white in color. In number they vary from three to six.

These birds usually live in pairs, and the male shares with his mate the household duties by sitting on the nest a part of the time. They take the best care of their young and hunt most assiduously to provide them with abundance of food.

The small birds appear to have sworn eternal enmity to the whole tribe of Owls, and if they discover one perched on a limb, during the day, they often gather in great numbers, taking advantage of the fact that he does not see well in the sunlight, and flutter about him, pecking and screaming at him and trying in every way to make his life miserable. It is their only opportunity for revenge, for at night he makes merciless raids upon them.

The Hawk Owl has a brown coat, spotted with white, and a white face. He is about a foot and a quarter in length and makes his nest of twigs and feathers, on the branch of a tree, rather than in a hollow trunk. He is found in the cold regions of the far North, and rarely, even in winter, farther south than New England. Unlike most of the Owls, he flies by day as well as by night, and makes savage attacks on other birds, and has been known to successfully "hawk" for hawks.

The Snowy Owl is one of the most beautiful birds of this family. He has a very thick coat of feathers, for he lives only in the cold regions of the North. His plumage is often pure white, but is usually dotted with brown or black. He is a large bird, sometimes two feet in length. His nest is made on the ground and consists of twigs

and grass, with a lining of feathers. He utters a peculiar note, somewhat like the growl of a small dog. He is large and strong enough to catch rabbits, birds and even fish, which he seizes with his claws as they come to the surface of the water for their food.

The Screech Owl is common throughout the eastern and middle portions of the United States. This little fellow is but eight or ten inches long, but, unlike the Hawk Owl and the Snowy Owl, has two tufts of feathers back of his ears, which make his head look larger than it really is. Some Screech Owls have gray coats and others have red, and often both colors are represented in one family. They make their nests in hollow trees and sometimes in barns. As a rule, they leave their nests only at night, and if found in the daytime may be easily captured. When they are wide awake, however, they snap their bills viciously at any one who interferes with them. They are interesting as pets and may be kept in the house, in a large cage, or allowed to go freely about the room.

The Barn Owl is another common species. He has a tawny or orange-colored coat, spotted with black and white. The feathers about his eyes are white and are formed like two great disks. In all of the Owls, these face disks are more or less pronounced; they are of stiff radiating feathers evidently to hold back the surrounding down or leave a clear opening for vision. Barn Owls make their homes in barns or church towers, but more often in hollow trees, like others of their kind. When they are forced to leave their retreats by day, they are more or less dazed by coming out of total darkness into broad light, and take refuge as soon as possible in the darkest place of safety they can find.

The Barred Owl, so called because his brown feathers are barred with dull gray or buff, is the famous "Hoot Owl" that makes the noise that resembles the human voice. It utters a cry something like "who-who-oo-ah!" or "who-who-who!" and sometimes make a noise like laughter. Nervous people, who believe in ghosts, have been badly frightened by the calling and "laughter" of Owls in the woods at night.

Besides these we have the Great Horned Owl, whose name is suggested by his very large ear-tufts—he has no real horns; the Saw-whet Owl, whose note sounds like the noise made by filing a saw; the Short-eared Owl; the Long-eared Owl; the Sparrow Owl; and the Burrowing Owl. Owls do not make burrows for themselves, nor do they live with rattlesnakes, as hunters on the western prairies used to declare, but they sometimes appropriate burrows made by other animals, like the rabbit and the prairie-dog, and at the end of it make a nest of grass and feathers, in which to hatch their brood.

Owls should not be molested, for they render good service to the farmer and do him little or no damage. If, however, you set out to capture a pair of them to keep as pets, remember that they defend themselves bravely with their sharp beaks and claws. If you can surprise them in the daytime, perhaps they will only blink and allow themselves to be taken without any resistance.

THE KINGFISHER

THERE are many birds of the Kingfisher family to be found in different parts of the world, but the only one with which we are familiar in the United States is the Belted Kingfisher. His plumage is a slaty blue, the tail and wing feathers flecked with white, and his breast is crossed by a band of blue, while the female and the young birds show also a light chestnut band on the breast. On the head is a ragged crest.

The Kingfisher does not fear the cold, but needs open water for his fishing operations, and when the ponds and rivers freeze in the north, he goes southward to remain until the ice is broken up in the spring. He usually selects a tree-limb projecting over the water as a perch from which to watch for fish. When he sees his prey in the water, he darts swiftly down upon it, seizes the fish and returns with it to his perch. Sometimes he jerks the fish into the air, and then swallows it before it can reach the water. He bolts his food greedily, bones and all, and later, when digestion has been completed, he expels the bones in pellets, just as the owl does. The Kingfisher's plumage is very compact and the feathers are covered with an oily secretion applied by the bird with his bill. This makes his covering waterproof, so that he suffers no discomfort from plunging into the water to catch fish.

The Kingfisher does not build his nest in a tree, but digs a hole in the bank of the river or pond where he is accustomed to fish. Sometimes this hole is made in a sandbank and at other times in more solid earth. The opening is only large enough to admit one bird at a time, but inside is a larger cavity, which affords room for both the parent birds and the young Kingfishers, when they are hatched. The female lays six or eight eggs, white and glossy and an inch and a quarter long. The nest has no lining and the eggs rest on the ground of the little cave which serves as a nest. Kingfishers are not inclined to keep their nests tidy, and the refuse of fish gives the place an unbearable odor.

The Kingfisher's brilliant plumage makes him a handsome bird, but his cry is harsh and grating. When his nest is approached, he screams angrily, and at the same time raises his crest and jerks his tail back and forth, and will fly about the intruder endeavoring to frighten him away.

The Ancients had many superstitious ideas regarding the Kingfisher of their country. His nest is usually well-concealed, and as they were not close students of the habits of birds, they believed that he built his nest upon the surface of the water, and that while the young birds were being hatched from the eggs, the sea remained calm, in order that they might not be disturbed. They called the bird the "Halcyon," and from the fact that during the nesting season the waters were usually calm, they referred to that period of the year as "Halcyon Days." We often speak now of happy and successful periods in our lives as "Halcyon Days," but few of us ever stop to ask just what "Halcyon" means or why the term is applied to our times of prosperity. So we see that the Kingfisher has taught us something and that he has been well known to man for many centuries.

THE AMERICAN BUTCHER-BIRD

THE Butcher-bird receives his name from the manner in which he handles his prey. Besides insects, he eats other birds, and is in the habit of hanging his victim on a thorn or twig, where he can cut it up and eat it at leisure, just as a butcher hangs upon hooks the slaughtered bodies of hogs and cattle.

The Butcher-bird's other name is Northern Shrike. He has a southern cousin called the Loggerhead Shrike, and these two species are the only birds in America known to hang up their prey in "butcher" fashion. In some parts of the world, however, there are many birds that follow this custom.

The Northern Shrike has a coat of bluish gray. His wings and tail are black, tipped with white. His breast is grayish white, penciled with darker gray, and he has a black bar on the side of his head. He is about ten inches in length. His bill is hooked like a hawk's and is very powerful, but his feet are small and weak, so that he does not use his talons for seizing prey, as the hawk does, but depends solely on his strong bill. His prey, however, is not so large and difficult to manage as the hawk's, for while he does occasionally kill robins and sparrows, his principal food is the larger insects, like grasshoppers, spiders and crickets. He is constantly

seeking new victims, and as he kills more than he can eat at one time, he hangs the grasshopper or the sparrow on a sharp thorn for future need. When his appetite returns, he goes to his storehouse and selects his food.

The Butcher-bird is bold and fierce and has been known to enter the cages of tame birds and kill them, even when he could not carry off his prey. He is something of a mimic and will imitate the calls of the songbirds, in order, it has been said, to draw them within his reach. His call is harsh and unmusical, but he plagiarizes the notes of various other birds, and, weaving them together, sometimes sings a passable song.

This bird is a hardy creature and breeds as far north as the arctic circle. In the winter, he moves as far south as Maryland and Ohio, but early in February or March, returns to the north.

The Loggerhead Shrike, the Butcher-bird of the Southern States, is a little smaller than the Northern Shrike and has a black forehead and white breast. The nests and eggs of these birds are alike. The nest is a rough structure of twigs and grass and is lined with feathers or leaves. The eggs vary from four to six in number and are gray, tinted with green and spotted with brown and purple.

Although both the Shrikes are cruel birds, they promote the interests of the farmer by destroying insects, as well as mice and small snakes. If they did not destroy other birds, we should have no serious charge to bring against them.

THE RAVEN, THE ROOK AND THE JACKDAW

IN OLDEN times, the Raven was supposed to possess the gift of prophecy. His portentous croak and coat of mystic black give him rather an oracular bearing, and he is surrounded with a network of superstitions. Edgar Allan Poe in his favorite poem entitled "The Raven," says:

" 'Prophet!' said I, 'thing of evil!—prophet still, if bird or devil!—

* * * * *

Is there—is there balm in Gilead? Tell me! tell-me, I implore!

Quoth the Raven, 'Nevermore.'"

Our oracle so closely resembles the Crow, to whom he is nearly related, that many who are not familiar with both, easily mistake one for the other. The Raven is the larger bird, however, for while the Crow measures from seventeen to twenty inches in length, the Raven

often reaches a length of twenty-seven inches. He is, in fact, a large and powerful bird, and has even been known to attack weak lambs, while squirrels, rabbits and other small animals are easily overcome by him.

One or other species of Raven is found in almost all parts of the northern hemisphere. He is common in England and in the Scandinavian Peninsula. In the United States, the American Raven is seen west of the Mississippi River oftener than in the East.

This bird does not always build his nest in a lofty tree, as the Crow does, but chooses a rocky cliff that is not easily reached by man. Sometimes he nests in the walls of a ruined building, where no one is likely to disturb him. The nest is compactly built of sticks and grass, and is lined with hair or wool. From three to seven eggs are laid. These are of a pale olive color, marked with brown, and are about two inches long.

In his family affairs, the Raven is a model. When the female is sitting on her eggs, the male keeps her abundantly supplied with food, and does not neglect her for a moment. The parent birds take the best of care of their young, and the little Ravens remain near for a fortnight before they are taught to provide for themselves. The mother bird prepares their food in her own crop and pumps it down their throats, until they are old enough to digest their own food. When they begin to fly, the young birds accompany their parents during the day and return home with them at night, like dutiful children. When hatched, the young Ravens have dark gray plumage, which changes to glossy black as they grow older.

Ravens live together in small communities, but never have extensive roosting-places in woods, like the Crows. They prefer rocky ledges and leave them for the lower ground only to obtain food. Grain, fruits and insects, as well as small animals, furnish the Raven his food, and he is a carrion-eater, like the large birds of prey. He bolts his food in large pieces and afterward disgorges the bones and skins of animals or the stones of fruit which he has eaten.

The Rook and the Jackdaw are members of the Crow family not found in America. The Rook is about the size of the common Crow and at a distance is easily mistaken for him. The habit of this bird in nesting in great numbers about any suitable place has given the name rookery to an old building that swarms with human occupants. The Jackdaw is another European bird. He is much smaller than the Crow or the Rook, being but thirteen inches long. He fancies old ruins and deserted chimneys as nesting places. Jim Crow's reputation for thieving is also shared by this bird.

THE COMMON CROW OF AMERICA

THE Crow bears a very unenviable reputation as a rogue, still his habits are interesting to study. His strident "caw caw," which he screams out while flying through the air, is not very alluring, yet he plays many variations on that note when conversing with his fellows in the rookery. With his glossy black plumage and bright black eyes, Jim Crow is really as "black as he's painted" in both the literal and the figurative sense. He is found in all parts of the eastern United States.

During the nesting season, Crows are found in pairs in little groups of six or eight. Jim Crow always builds on the topmost bough of a very high tree bare of lower branches, which does not offer an easy task to the climber who would rob the nest. The nest, which is huge and clumsy in appearance, is built of sticks and twigs, and well lined with grass and other soft material. He earns his reputation as a thief by his habit of helping himself to ribbons that may be left within reach, lace pocket handkerchiefs from the clothesline, or any other convenient stuff that will serve as a lining for his nest.

Crows never build their nests near those of other birds. In winter, they assemble in thousands in some favored locality where there are lofty trees, and these "rookeries" often cover several acres in extent. There is a resort of this kind on the bank of the Potomac River, near Arlington, but a short distance from the city of Washington, D. C. During the day, the birds go abroad in search of food, but at night they return to the rookery and chatter among themselves with the greatest excitement, as they apparently gossip over the news of the day. As they fly from one point to another, they form such compact ranks that they seem like a black cloud against the sky.

The Crow has a tremendous appetite and he cannot be called dainty. He eats insects, worms, fish, fruits, nuts, the decayed flesh of animals, and other birds, whose eggs he also steals. He is smart enough to catch clams and drop them from the air on a rock, in order to break the shell and enable him to get at the meat inside. Sometimes he attacks and kills young ducks and chickens, rabbits and squirrels. In short, almost anything that is eatable and can be taken by stealth or force, may find a place on his bill of fare.

The Crow has enemies in birds like the Eagle and the Owl, which rob him of his prey, yet he has most reason to fear the farmer to whom he gives much annoyance. As soon as the corn begins to sprout, the Crow descends on the field and deftly pulls up the kernel by the tender shoot that appears above the ground. Some of the

Crow's friends have tried to defend him by declaring that when doing this he is only looking for the grubs and worms which might destroy the corn, but unfortunately he is very fond of the swelling kernels of corn. It must be said to his credit, however, that he destroys an immense number of cutworms, beetles, grasshoppers and other injurious insects which do the farmer more harm than the Crow does. When Crows assemble in large numbers, they often become a serious menace to the farmer's crops and with the aid of gun and trap he kills as many as he can. Scarecrows have been much used to frighten these birds from the cornfields. Yet they are shrewd birds and are not easily deceived by such tricks. They have been known to perch derisively on the head of one of these images instead of being struck with terror at sight of it.

Stories have been told about tame Crows which learned to talk, but the bird's abilities in speech-making are very limited. The cruel practice which formerly prevailed of slitting his tongue, in the belief that it enabled him to speak like a human being, is unworthy of an enlightened age.

A young Crow may be tamed without difficulty, and will remain about his owner's house without showing any disposition to leave for the woods. When his food is provided for him, he devotes all his energies to mischief. He delights to tease the cat by tweaking her tail as she lies asleep, and to worry the dog by riding upon his back. "Jim Crow" is a born thief, and amuses himself by hiding little articles which belong about the house. If a pair of spectacles is laid on the table, the crow watches for a chance to steal them, and perhaps drops them behind the sofa. A lady who kept a tame crow had a servant who had been with her for many years, and whose character was above reproach. The lady missed several articles of jewelry and finally suspected the trusted servant of taking them. The thefts continued and the loss became so serious that the servant was charged with stealing. She wept and protested that she was innocent, but when her room was searched, a part of the missing jewelry was found there, concealed behind the dresser. The servant still declared her innocence and although she was told that if she returned the missing articles she would be forgiven, she said she never had taken them and did not know where they were; so she was discharged. The next morning, the lady of the house missed a valuable brooch which she had left on her bureau. There was no clue to the thief, but later in the afternoon her husband saw "Jim Crow" perched on a tree near the house with a gold ring in his beak. He watched the bird, and presently the crow flew to a toolhouse in the garden and dropped the ring in a flowerpot. Then he flew back to the house



CROW.

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CATBIRD.
 $\frac{3}{8}$ Life-size.

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and entered the open window of the servant's room, from which he soon came with another ring. This also he took to the toolhouse. The mystery was solved. So slyly had the crow carried on his thefts that no one had noticed that he was engaged in mischief. All the stolen articles were recovered, and the lady sent for her servant to come back, but the latter felt deeply wronged and refused to return, so that the lady lost, as she said, the best servant she ever had.

This is only one example of the clever tricks of the tame crow. He is an amusing bird, and if he were not a thief would be highly respected. As we cannot suppose the Crow steals articles because of their value, we may believe that his fancy is pleased by bright objects, and he hides them away so that they may not be taken from him.

THE CATBIRD

THE Catbird and the Mocking-bird are related. The Catbird is a mimic as well as the latter, and is so named because one of his favorite vagaries is to imitate the mewing of a cat. He can mimic the notes of other birds, too, and the harsh and spiteful call, like the noise made by a cat, is a strange contrast to his rich and varied song. He struts about pompously while singing, and his whole attitude is one of self-conscious vanity. He is not a peacemaker by any means, and quarrels with other birds upon the slightest pretext.

The Catbird has a slate-colored coat, with black cap and tail, and under his tail appears a spot of chestnut color. He is not afraid of man and often builds his nest in the garden trees or the shrubbery about the house. It is quite a large nest, made of grass and leaves, interlaced with twigs, and lined with fine roots or grass. The eggs are a deep, clear, greenish blue, five or six in number.

Worms, beetles, caterpillars and other insects are his chief food, but he helps himself plentifully to the cherries, strawberries and other fruits in the garden. He does not eat hard seeds.

Like our robin, our Catbird is fond of water, and seems to think that the sprinkler on the lawn is a sort of public bath. He is often seen fluttering under the falling spray or splashing in the little pools.

He is a courageous bird, and if other birds or persons approach his nest, he will cry at them harshly and angrily, making threatening motions. He even attacks snakes which approach to steal the eggs or to devour the young birds.

The Catbird winters in the South, and is seen in the North from April to October. He always announces his arrival so noisily that we know when he has taken up quarters near us for the summer.

THE BLUE JAY

THE Blue Jay belongs to the interesting family of crows, and his harsh, rasping note of "Jay! Jay!" is no more musical than his relative's "Caw! Caw!" But he has a great variety of notes, some of them quite musical, and utters them so persistently that one might think there were ten times as many Jays as there really are. Like all small birds, he has a deep dislike for the owl, and loses no chance to scold and torment him, whenever he can do so in safety to himself, that is, in sunlight, when the owl is at a disadvantage.

Indian corn, cherries, apples, chestnuts, acorns and grasshoppers furnish him a varied bill of fare, but he does not hesitate to prey also upon the small birds, eating their eggs and young. The ruthless fellow is sometimes interrupted in his cruel work by the brave king bird, who puts him to cowardly flight; and even the robin often drives the Jay from the field.

The Blue Jay is not retiring in his disposition. He steals the farmer's fruits and vegetables, and builds his rude nest near his dwelling. Though the structure of his nest is crude, it is strongly built of twigs and roots. The eggs are four or five in number, of olive green or buff, spotted with various shades of brown.

The Blue Jay is found in all parts of the eastern United States, from Florida to Canada. He remains in his chosen locality throughout the year, unless a severe winter impels him to make a temporary change of residence, in order to find food. He is not fitted for long flights, being slower and less graceful on the wing than his relative, the crow. In outward appearance he is very handsome, with his bright blue plumage barred with black on the wings and tail, which are tipped with white. His throat and breast are pale gray, sometimes almost white, and he wears a black collar across his neck. If kept in captivity, he is somewhat subdued, but shows some of his characteristics in imitating the calls of different animals. This he does so perfectly as often to deceive.

The Canada Jay is a cousin of the Blue Jay. He has a gray coat, with a black cap, and his under parts are gray. He has a rather ragged and frowzy appearance, and is far from being as handsome as his cousin in blue. In his habits he is much like the latter, however, for he quarrels and steals as much and as boldly as the Blue Jay. This bird is found only in the northern tier of the states and in Canada. The hunters call him "Whisky Jack" or the "Moose Bird." He is so bold that he does not hesitate to steal food from the hunter's tent and is sure to carry off any scraps that he may find about the camp. He annoys the trapper by stealing the bait from his traps,

and he also feeds upon the animals he finds dead in the traps. For the winter, he stores away nuts, berries, scraps of meat and other articles of food, and, thus supplied, he continues his house-keeping, even through the severest weather. His nest is well sheltered in the thick branches of a pine or fir tree, and the eggs are laid, and the young birds hatched, before the snow is off the ground.

The Rio Grande Jay is found along the lower Rio Grande. His coat is green, with blue and yellow tail-feathers, and a blue crown on his head. His throat is black. This bird's habits of feeding, his disposition to fight and his nest and eggs are much like those of the northern Jays.

Another species is Stellar's Jay, which is found on the Pacific coast northward from California. He has darker plumage than his eastern cousin; his breast is blue, instead of gray, and his head and crest are nearly black. The eggs are pale green, spotted with brown.

Noisy and quarrelsome as the Jays are, their lively movements and bright colors make them attractive, and if it were not for their persecution of smaller birds, we could forgive them their bad habits of pilfering. It is not to be forgotten that they eat grasshoppers and insects and so make some amends for the fruit they spoil.

THE MOCKING-BIRD

THE Mocking-bird is the "star" of nature's feathered opera troupe. He is a most versatile genius, and, besides charming us with his original melody, he is a great mimic. He imitates, when he wishes, the notes of other birds, whistles like a boy, clucks like a hen or whines like a puppy. He is a professional musician, and is in his natural element when singing. He so overflows with melody that he sings at night as well as during the day.

This famous songster is common in the southern part of the United States and is found as far South as Brazil and sometimes, but rarely, north of Virginia. He builds a nest of twigs, roots and grass in a thicket or cluster of stunted bushes, and the female lays from four to six eggs, which vary in color from greenish blue to pale buff, marked with spots of brown.

The Mocking-bird has not a gaudy coat, like the parrot, but he is a delicate, graceful bird, with a long tail and a full throat. The prevailing color of his plumage is gray, with white tinged with gray, underneath. His bill and feet are black.

In the winter the Mocking-bird lives on berries, and when spring comes he changes his diet to insects and their eggs, worms and grasshoppers.

The Mocking-bird has a friendly disposition, but when at home during the nesting season, he is always on the defensive. He is very valiant in protecting his young from any threatening peril. If a cat or dog, or even a man, approaches his nest, he flies at him, screaming defiantly. The greatest menace to his family is the black-snake, which watches for an opportunity to rob the nest of either eggs or fledglings, as the case may be. If the Mocking-bird spies the enemy coming, however, he attacks him, pecking at his head and eyes and evading the charm that snakes are supposed to exercise over birds. Very often his snakeship is compelled to retire, while the Mocking-bird mounts a bough and sings his song of victory. When he goes abroad and feels no responsibility for his young, the Mocking-bird is most affable. He shows no fear of man, coming into the dooryard to serenade his human friends in ringing notes. He regards the cat and dog as his natural enemies, and quarrels with them whenever they appear.

The Mocking-bird's vocal powers are marvelous. He has a song wholly his own, but in addition to that he borrows the notes of other birds, weaving them together in a harmonious medley. When he sings, his great joy impels him to hop about from place to place. He takes short flights in the air and spreads his wings and tail, as though himself intoxicated by the sweet melody pouring from his soul. He is a shrewd and intelligent bird and seems to delight in imitating the calls of other birds for the purpose of deceiving them. Thus he will sound the harsh note of the hawk, and send the chickens scurrying to cover under their mother's wings, or answer the plaintive call of the whip-poor-will or the call of the catbird until the deceived birds come to find him, thinking their own mates are calling them. In the midst of his song he frequently stops to whistle and his whistle is the envy of every boy, for it has a liquid sweetness rather than a shrill tone. He can imitate the whistle of a dog's master so that Rover will come running to see what is wanted of him, and then Sir Mischief apparently enjoys the joke that he has played on his four-footed enemy.

In the night, when there is a bright moon, he often perches on the topmost bough of a tree or on the chimney of a house and bursts into glorious song, which seems doubly sweet in the stillness of the night.

The Mocking-bird is often caged and he seems to have "a heart for any fate," for he sings joyously, even in captivity. But when he has grown to be six or seven years old, he is apt to become blind, and as soon as he is deprived of the sunlight, his courage fails, he becomes unhappy and soon dies.

Young Mocking-birds are often taken from the nest just when they are ready to leave it and put into a cage. They have not known



FROM COL. F. M. WOODRUFF.

AMERICAN MOCKING BIRD.
 $\frac{2}{3}$ Life-size.

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freedom and do not pine for it as the older ones do when they are captured. After the young birds are placed in the cage, they are sometimes left out where the mother finds them and feeds them. This, however, is not a very safe plan, for the mother sometimes seems to feel that a great calamity has befallen them and evidently thinks it better they should not live at all than to live in captivity, and so gives them some kind of poison food.

In the South, where he is most common, the people are very fond of the Mocking-bird and he is seldom harmed by them. He has no bright plumage to tempt fair ladies, so cruel fashion exacts no tribute of life and silenced melody from the most brilliant songster of the South.

THE WHIP-POOR-WILL

THOSE living in the eastern part of the United States are familiar with the plaintive call of the Whip-poor-will. Few, though, have ever seen him. He reverses the maxim of being seen and not heard. Lying closely in cover during the day, he flies about by night, usually in one locality, and catches the moths and other insects which form his food. At intervals he repeats his mournful request for the punishment of "Poor Will." One of our poets prettily describes the habits of this minstrel of the night in these lines:—

“ He shuns the crowded haunts of men
 And hies to forests far away —
 Or seeks some deep, secluded vale,
 To pour his solitary lay,—

“ Or, haply at some cottage door,
 At fall of night, when all is still,
 The rustic inmates pause to hear
 The gentle cry of ‘ Whip-poor-will.’ ”

During the day he secludes himself in the woods, and you might pass close to his low resting place without observing him, for his mottled coat blends effectually with the colors of the ground. Should you ever be so fortunate as to spy him, you will notice at once the collar of white feathers about his neck and the many long bristles about his mouth.

These bristles are characteristic of the family to which the Whip-poor-will belongs. The ancients called all members of this family Goatsuckers, because they often saw them alighting on their goats. In reality, the birds were attracted to these animals only because of

the insects in their hair or wool. The name thus given to them through a mistaken notion, still clings to the family.

The Whip-poor-will's call is heard in the North from early in May to the middle of September. He spends his winters in the South, where he has a near relative known as "Chuck-Will's-widow." This name is also derived from the fancied resemblance of his call to these words. In the South, therefore, during the winter season, you may frequently hear both these birds at once. While one is saying "Whip-poor-will," the other is repeating constantly "Chuck! Chuck! Chuck! Chuck-Will's-widow!"

The effect is striking and sometimes becomes unpleasant to nervous people who are trying to sleep, for the birds often remain for hours about a single clump of trees or bushes, and their clear notes can be heard for a long distance.

The Whip-poor-will, like other species of his family, is shiftless in his domestic habits. He never takes the trouble to build a nest. The female simply scrapes a few leaves together on the ground, and there she lays two eggs, white or pale buff, marked with brown and lilac. This apology for a nest is seldom disturbed, for it is always in the thick woods.

THE BOBOLINK

IT costs the rice-growers of the South vast sums of money each year to entertain the Bobolink. So fond of rice is he that the Southern people call him the Rice-bird. In the Middle States he is known as the Reed-bird, and in the North more familiarly as Bobolink. "Bob-o-link! Bob-o-link! Chink, chank, chink! Bob-o-link! Bob-o-link! Chee, chee, chee!" he says loudly and cheerfully. He is a merry bird and puts his heart into his song without restraint.

The Bobolink winters in South America and the West Indies. In Jamaica, where he grows very fat, they call him the Butter-bird. Sometimes during March he gets as far north as Florida, and from that time forward he gradually moves toward Canada, reaching the Northern States in May. The male birds usually arrive in advance of the females and when the latter appear, the mating season begins at once. The male birds have many lively quarrels over their mates, and it is during this time and later, when the female is sitting on the eggs, that the Bobolink pours out his sprightly song. Sometimes he perches on a bush or tree near the nest and sings to cheer his mate; again he soars in the air, singing as he flies, like the skylark. When the nesting season is over, he is less tuneful and his song becomes a series of noisy chirps, or ceases altogether.

The male Bobolink has a coat of black, with buff on the back of the head and neck, and white on the rump and above the wings. In winter his coat becomes yellowish brown, streaky, and less conspicuous, like that which the female bird wears all the year. The white eggs have a buff or green tint, and are spotted with brown and purple, and number from four to six. Mr. Bobolink is so busy practicing his songs in the mating season, that he leaves the building of the nest chiefly to his mate. It is a small plain nest of grass, placed on the ground in a meadow.

In the Spring, the Bobolink eats grubs and insects, such as grasshoppers and spiders, and when the grains are ripe, he finds oats, barley and rye to his liking. Among the seed crops, rice is his favorite food, however, and he eats not only the cultivated rice in the South, but the seeds of the wild rice that grows along the borders of streams and marshes farther north.

Although he is a small bird, his flesh is toothsome, and under the name of Reed-bird he often appears on the bill of fare in fashionable hotels and restaurants.

THE BLUEBIRD

YOU may always know that spring is at hand when you see flitting specks of blue amid the dull tints of the barren branches of the trees and of the brown earth. The Bluebird is one of the first harbingers of the awakening season, and in some localities appears even before the robin. At first he flits from place to place, absorbed in the duty of house-hunting. Every hole in a building or sheltered crevice in a tree is a possible dwelling-place for him. Yet he prefers a cosy nook about the barn, or a box, such as many people who are fond of birds, place in their yards and gardens. Once the Bluebird was as fond as the robin of city life. A snug box provided for his use was sufficient to induce him to make his nest in any dooryard close to a busy street. But the English sparrow, who is his worst enemy, has compelled him to retire to the country, where he can lead a more peaceful life.

Early in April, he and his mate settle down to housekeeping. They are not at all particular as to their surroundings. The nest is soon set in order with a lining of grass and feathers. Then the female lays her eggs. They usually number four or five, and may be either pale blue or white.

While the Bluebird is a peaceable little fellow, he sometimes shows great courage. If a rival comes to chatter with his mate, he becomes very jealous of the intruder and flies at him fiercely. At such times

he utters a shrill cry of protest. He is known to successfully defend his nest against much larger and stronger birds. Yet he is not always as good as he should be, for he sometimes drives the swallows from their nest and takes it for his own.

He does not hop about on the ground as much as the robin does, but darts from tree to tree. Occasionally he flies to the ground to pick up a fat worm or a sprawling beetle. He is also fond of grasshoppers and spiders in their season, but in the autumn and winter he makes his meals of berries and the seed of plants.

He sings both when in flight and at rest. He is not a brilliant songster, though he warbles his sweet simple notes with great spirit and seems to be always happy. When the female is sitting on her eggs, he sings less frequently and in lower tones. Naturally he is very busy at such times in procuring fat worms and other delicacies for his little mate. In the late fall, his notes seem quite plaintive, compared with those with which he welcomes the springtime. When we hear his warble on some pleasant November morning, the burden of his lay seems to be "Farewell."

The male has a bright blue coat, with a darker shade on the wings and tail. His breast is reddish brown, as if copied from the waistcoat of the robin. The shafts of his tail and wing feathers are black, and underneath is white.

Bluebirds are never seen in very large companies. They are very faithful to their mates, and, unless disturbed, the same pair will return to a favorite nest season after season. They rear two or three broods during a season, and are so fully occupied with their duties, that they linger in the North till snowflakes fill the air. They spend the midwinter in the Southern States and in Mexico. Some, it is said, fly even to the Bermudas and the Bahama Islands.

The Mountain Bluebird is found in the far western states, among the Rockies. Except in winter, he seldom visits the lower lands. With him, pale blue feathers take the place of the red on the breast of his eastern relative. He has much the same habits as the latter, though the Mountain Bluebird is shyer and less inclined to sing.

THE ROBIN

"THE first Robin!"

"Where? where?"

"There on the grape-vine trellis!"

"Then spring has come at last."

He is an early comer, this red-breasted friend of ours, and we watch eagerly for his appearance as a sign that winter is gone,



BLUE BIRD.
Life size

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ROBIN.
Life-size.

though spring is only at the threshold. The American Robin is not the Robin Redbreast so dear to the hearts of English children and so often written about, but he is none the less welcome among us. He is really a thrush, larger than his English cousin, and with a less brilliant waistcoat.

From Hudson Bay, in the cold north, to Mexico, he ranges, but he is a hardy bird and sometimes, if the winter is a mild one, remains in New York and New England throughout the year. In Virginia and farther south, he is found regularly during the winter. He returns to the Northern States early in March and by the middle of April begins to make his nest. This is a rather large affair, made of twigs and grass cemented with mud. Usually he builds it in a tree, not far above the ground, and without much concealment. At other times he builds on a fence-rail, or in a corner of the porch, for he is a fearless bird and does not shun the society of people. The mother Robin lays four or five eggs of greenish blue, and raises two, and sometimes three, broods during the season.

Robin's coat is olive gray above, with dark feathers on the head and neck—sometimes almost black. His tail is dark, with the outer tail feathers tipped white. His throat is white, with streaks of darker feathers, and his breast is brownish red. The color of the breast varies, however, from a pale chestnut to a warm brown that is almost red.

The Robin is the proverbial early bird that catches the worm. The first hint of daylight from the eastern sky finds him abroad, looking for worms and insects. How boldly he hops along, looking keenly in the grass for tiny bugs. A quick dart of his head and he has a fat worm squirming in his beak. Away he flies to the nest to share it with his mate, and soon returns to look for more. It is pleasant to see him so confident that he will not be molested. If we keep very quiet, and scatter a few crumbs on the floor of the piazza, he will even come close to our feet, a few hops at a time, and greedily devour the crumbs. He is not so easily alarmed, and even if he is followed, will hop along on the ground just out of reach, for some distance, before he takes wing.

In the early morning, the Robin sings his cheerful carol, usually before most of us have left our beds. Mounting on a swinging branch, he pours out his simple song, not in a brilliant medley like the oriole, but a hearty, earnest melody full of the joy of living. As the day wears on, he is so busy seeking food that he has no time to sing, and you will hear lazy people, who like to lie in bed late, declare that he never sings. They would not belittle his musical talent, if they would rise as early as he does and listen to his greeting to the rising sun.

The little Robins inherit from their parents a tremendous appetite. Have you ever seen them in the nest—quivering, naked little things, with their mouths stretched wide open, all clamoring for worms? Watch the Robins when they build near by in the spring and you may be able to see into the nest by simply pulling down gently the low branch on which it is placed. You will see the bluish eggs, and later the four or five clamorous little birds, with their shrill “Peep, peep”; then, as they grow larger, and their feathers come, they will crowd the nest so that there is danger of their falling out before they are able to fly. Watch the old birds as they call excitedly to the little ones, coaxing them to spread their wings; and finally you will see them fly away. When autumn comes, and the last brood has gone, you may take the nest, if you will, for a souvenir of your feathered friends. And while you are watching the busy, happy birds, remember that Puss is also watching them, for she thinks it great good fortune to catch a fat Robin for her dinner, so you may need to drive her away from the vicinity of the nest. A lady in Massachusetts was very much delighted when a pair of Robins built a nest under her window. The nest was on a low tree and as there were several cats in the family, she feared for the safety of her feathered neighbors. To make them secure, she placed around the trunk of the tree, as high as a cat would jump, a wide band of wire netting, opening downward and outward, like an inverted umbrella. The cats soon saw the Robins and watched them with hungry eyes, but they could not get beyond the wire netting. As the Robins were thus secure from harm, they remained throughout the season, raising two broods of little ones, and all through the summer the lady could look into the nest, which was only a few feet from the window. With her camera she obtained a series of pictures showing the eggs, the mother bird sitting on the nest, the father bird bringing worms to feed her, the hungry little ones with their gaping mouths and all the details of Robin life to the end of the season. The birds knew that she was near them, but they were so sure she meant them no harm, that they attended busily to their own affairs and lost no time in worrying. It is a pity that all the feathered creatures cannot feel the same confidence in us. If so many were not trapped and shot, perhaps all would be more neighborly.

Insects and worms are the Robin's food, and in summer he also helps himself to our cherries and strawberries. Sometimes we think he takes more than his share, yet we should recall his service in destroying insects. He gets credit for some thefts of which he is not guilty. The writer had a thriving strawberry patch, in his garden, and the Robins occasionally took a juicy berry. One day a large toad was noticed sitting near a strawberry plant. He was there to catch

insects, of course; but presently, when all was quiet, his big mouth opened, and lo! the largest strawberry in the patch had disappeared down his throat. He gave only one gulp and continued to look very solemn and innocent. But it may be that he had been the real thief in the strawberry patch, instead of the Robins. In winter, when the insects are not abroad and the worms have burrowed deep in the ground, the Robin feeds on buds and berries.

The quarrelsome English sparrows have killed and driven away many Robins, in our large cities, but the Redbreasts are still numerous, and we hope they will always feel as much at home with us as they do now.

THE THRUSHES

THE Thrushes, with their sober plumage and shy, gentle dispositions, are among the sweetest songsters in America. Their songs are not characterized by the enthusiasm of the Mockingbird, or the buoyancy of the Catbird. Yet their clear musical notes, so tender and melodious, have a greater power to charm than the more spirited outpour of other birds.

The Wood Thrush has a dark brown coat, with tints of olive, becoming reddish on the head, and his breast and throat are white, with brown spots. In summer he is found in the eastern United States, and remains north until late in October, when he flies southward to stay until the following April. This bird is shy, and yet haunts our gardens and the suburbs where shade trees abound. His nest is usually built on a low branch not far from the ground, and is made of leaves and grass, cemented with mud and lined with softer material. The pale blue eggs are three or four in number.

The Veery is also called Wilson's Thrush. He has a much lighter coat than the Wood Thrush, sometimes of a reddish cast. He builds his nest on the ground, in the grass or near the foot of a tree. Grass and weeds are used to make the nest, which blends so perfectly with its surroundings that it easily escapes notice.

The Veery dwells in shaded woods and thickets, and preferably on low ground near a stream. He is very shy, rarely coming out into the open, where he may be plainly seen. His call is a clear, quaint whistle which sounds something like "Vee-ree, vee-ree," and from this comes his name. He sometimes sings in the night, when his mystic notes thrill the silence of the woodland with a peculiar sound.

The Hermit Thrush was so named because he is seldom in the company of other birds, even of his own family. Like the other Thrushes, he lives in the deep woods and feeds on insects. Bushy swamps and damp woods are his favorite dwelling-places, and he makes a nest of moss, grass and leaves on the cool ground. His coat is brown, with reddish tail, and his white or buff-colored breast is marked with triangular brownish olive spots. His song is a succession of low, tender notes, almost solemn in tone.

The common Water Thrush, or Wagtail Warbler, is usually to be found in the neighborhood of a swamp or stream. He wades in the shallow water, on the lookout for insects which fly near the surface. His nest is made of roots, leaves and grass, and is placed on the ground, often in a bed of moss. His song, which is very sweet and melodious, is rather more sprightly than those of other Thrushes, being more like that of the Warblers, to which he really belongs.

The Brown Thrush or Brown Thrasher, is much larger than the Thrushes previously mentioned. He has a bright reddish-brown coat, and his breast is spotted with blackish brown. He has a bill almost as long as his head, and his tail also is conspicuous for its length. While he is a shy bird, he is very active and full of spirit. He sings loudly and sweetly from a perch high in the top of a tree. His nest is made of twigs and grass, lined with feathers or horse hair, and is placed on the ground or in a bush. Berries, snails, worms and grubs, beetles and other insects satisfy his appetite in summer, and in winter he eats the hard berries of shrubs and trees.

All the Thrushes are migratory birds, leaving the cold regions in the winter for warmer climates.

THE BALTIMORE ORIOLE

THE Baltimore Oriole is a true American, for he is found only in the New World. In the summer he goes as far north as Lower Canada and Manitoba, and in winter he flies southward, even as far as Brazil. He never welcomes the opening spring, however. Even in warm Florida he is seldom seen until March, and May is far advanced before he appears for his brief sojourn in New England. The male is usually the first to arrive, and he sits in a tree for hours and calls in plaintive notes, which indicate unmistakably that he feels his loneliness. In a few days, however, the female arrives. Then melancholy is a thing of the past and the birds hold a gay carnival. Their happiness is often marred by bitter rivalries, for the Oriole has a fiery temper.

Golden Robin and Fire Bird are names sometimes given to him because of his brilliant plumage of orange and black. He is also called the "Hang-nest," because he suspends his nest from the branch of a tree. The Baltimore Oriole was so named long ago, because his colors of black and orange were those of the arms belonging to Lord Baltimore, to whom Maryland belonged in early colonial times.

While naturally a shy bird, he is so confident of the security of his nest, that he often builds it on a tree in the dooryard or in a city street. It is never found near the trunk of a tree, but is always dangling from the end of a long slender limb, far from the reach of the sly cat or other enemy. The nest is made with great skill. It is shaped like a slender bag, is five or six inches deep and has its opening at the top. The Oriole first fastens stout thread of plant fiber or ordinary strings, if he can find them, around two or three twigs at the end of the limb. Weaving downward, he makes a strong fabric like coarse cloth of grass, ravelings of cloth, silk threads and similar materials, and the whole is carefully sewed together with hair from the manes and tails of horses. So skillfully is this work done that the bag is very strong, and will hold considerable weight.

The real nest, which is placed in the bottom of the bag, is made of wool, hair, lint and the soft, thin bark of grapevines. In this the eggs find a warm resting place. Both male and female work busily at the task of building the nest, but the female does most of the weaving and sewing, while her mate finds and brings the materials. She occasionally rejects fibers or hairs which he may bring, and sends him off for others better to her taste. Suspended in the air, the nest swings to and fro in the breezes and makes an ideal cradle for the little Orioles.

"Rock-a-bye Baby, in the tree-top;
When the wind blows, the cradle will rock."

Should you see a pair of Baltimore Orioles in your shade trees early in the season, hang some wool, hair or similar material about the branches. They will quickly use it for the construction of their nest and will probably build it in the immediate vicinity. It saves the male much labor in flying to and fro in search of proper materials. Your reward will be ample in the pleasure of watching these beautiful birds as they fashion their nest, fly about among the trees and sing in full, mellow tones.

This Oriole is a gay and lively fellow. Ever active and sprightly, he darts in and out among the branches, and when his black and orange coat is placed against a background of apple blossoms, he makes one

of nature's brightest pictures. From his throat is ever pouring a lively melody of song, and often it is such a hurried ditty that the notes can scarcely be distinguished. Sometimes it suggests the merry whistle of the mocking-bird and sometimes the babbling of the thrush.

Caterpillars are in high favor with the Oriole when he is hungry, and he selects them as the best food for the young birds in the nest. When in search of caterpillars, he swallows as many as he can and, on his return to the nest, he disgorges them to satisfy the appetite of the young birds. The Oriole's table manners are certainly bad, but he is brought up in this way, so he never learns a better one. He also eats beetles, plant lice and other insects which he catches on leaves or in the grass. Unlike the whip-poor-will or the cedar bird, he seldom seizes them while they are on the wing. Ripe fruits and berries sometimes vary his diet, but the injury he does to the farmer is very slight.

The Orchard Oriole is a trifle smaller than his Baltimore relative and is not so brilliantly colored. Chestnut takes the place of the showy orange that distinguishes the larger bird. His nest is woven similarly to that of the Baltimore Oriole, but is not so deep. This bird does not range as far north as the Baltimore Oriole, but otherwise there is little difference in their habits.

The eggs of the Baltimore Oriole are dull white, scribbled over with brown and black. Those of the Orchard Oriole are a trifle smaller, but marked in a somewhat similar manner.

THE WRENS

THE Wren family is quite large and, while the various branches differ in many respects, all are alike in their great activity and industry. You are doubtless most familiar with the House Wren, for he delights to make his home near the dwellings of men. During the nesting season, he is always cheerful and is a constant singer of trilling songs of much sweetness and considerable length. There is, however, another side to his character with which few are familiar. Toward the end of the summer season, when all the young have been sent forth, he lays aside that familiarity which endeared him to us, and withdraws to some lonely spot. There, songless and secluded, he lurks about the bushes till it is time for him to depart for the South.

He usually arrives in the middle states during April, but does not reach New England till the first of May. With his mate, he at once



FROM COL. F. M. WOODRUFF.

BALTIMORE ORIOLE
 $\frac{2}{3}$ Life-size.

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FROM COL. F. M. WOODRUFF.

HOUSE WREN.
Life-size.

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sets out house-hunting. First of all, they visit the quarters they occupied the year before, with the hope of moving in at once, for in that little nest was condensed a whole summer's happiness, with its sunshine, music, babies and housekeeping. It may have been their abode for several summers and they regard it as too precious to surrender to other birds without a struggle.

Although small, the Wrens are very courageous when defending their nest or their young, and do not hesitate to attack birds twice as large as themselves.

If another nest must be built, any convenient cranny is deemed a suitable place for it. The thatch of a roof, a corner under the eaves, even an old hat in the crotch of a tree, or an empty tomato can nailed to a post, will answer the purpose. What the Wrens especially seek is good shelter from wind and rain. With a satisfactory nook at their disposal, they fill it with twigs and grass, and outside they construct a sort of barricade of strong sticks. They leave a hole barely large enough for an entrance, and, as nearly all their enemies are larger birds, they feel quite safe behind their fortification. However rough the outside may appear, there is always a snug little place within, with a finely woven lining of grass, feathers and horse-hair. Here are laid six or eight tiny eggs, about half an inch long. They have a pinkish tinge, with light brown spots. The House Wren's coat is a reddish brown, with lighter lines on the wings and tail, and his breast is a dull white.

It is the Wren's nature to be always busy at something, and so he sometimes builds another nest, though he may have no use for it. All Wrens are fond of their young and provide an abundance of food for the hungry little mouths. When old enough, the little birds are given an occasional outing by their careful parents, who instruct them in the art of flying and in the business of catching insects. They doubtless give solemn warning also as to the cat, who regards a Wren as a delicious morsel.

The tiny Winter Wren is a hardy bird and has been known to remain in the middle states during the coldest months. Next to the humming-bird, he is the smallest bird we have. Like the House Wren, he often builds his nest near the house or barn, though it is more likely to be found in the thickets along the banks of streams, where a rotting log or a crevice in a stump serves him for a nesting place.

The Long-billed Wren is larger than the House Wren, though his coat is much the same in color, except for streaks of white on the head and back. The eggs are often so thickly dotted with brown that they seem to be almost entirely of that color. The Marsh Wren

shuns the dwellings of men, and makes his home in marshes and along the banks of rivers and ponds, where there is abundant growth of reeds and plants. He makes a nest of rushes, woven together so as to form an oval-shaped ball. This he fastens to the reeds where it will swing safely above high water. In the side is an entrance, and within it is made soft and comfortable by a lining of grass and feathers. Like other Wrens, this bird often builds more than one nest, apparently for no other reason than to have something to do. The insects that frequent marshes and ponds are his favorite food, and in searching for them he flits here and there among the reeds, or plunges his long bill into the water, to seize one he sees floating there. His song is a lively warble, though not so musical as that of the House Wren.

The Short-billed Marsh Wren is smaller than his long-billed relative, though he has the same coat of brown, streaked with white or buff. The eggs of this species are white and the nest in which they are laid, instead of being suspended from reeds or cat-tails, is placed on the ground in a tuft of grass. Grass is woven together to form a sort of ball, with an entrance at one side. Within it is lined with the soft down of plants. This bird has a lively, trilling song, which changes to a tone of alarm and anger if a stranger approaches the nest. He feeds upon the water-beetles and moths abounding in his neighborhood.

The Carolina Wren is a bird of the South and is seldom seen north of Jersey. He is as spirited, as courageous and as industrious as his northern brethren of the Wren family. His coat, also, is similar to theirs, but he is larger than any of them. His nest is usually placed in a hollow tree or a thicket. Grass and leaves are used to make the nest, which is lined with plant-down and feathers. He has a smaller family to look after than does the House Wren, for ordinarily there are but four or five eggs in the brood. These are white, tinted with buff or pink, and spotted with brown at the larger end. In his song he imitates the notes of the oriole, the bluebird, the cardinal bird and many others. For this reason he is sometimes called the Mocking Wren.

All the members of the Wren family are model birds. They are always industrious and thrifty, and, as their diet consists of insects, they levy no tax on the farmer's crops. With all their good traits and cheerful music, they cannot fail to win our friendship and admiration.

THE VIREOS

THE Vireos are an American family of small singing-birds, as tuneful as the warblers and as active as the wrens. There are forty or fifty species, but only a few of them are common in our own country.

The Red-eyed Vireo is found throughout the eastern United States, but only in summer, for as the sun declines to the south, he seeks refuge in Mexico and Central America. His coat is olive green, so much like the foliage of the trees in which he spends much of his time, that he is not readily noticed except when he moves, or when we catch a glimpse of his brilliant, ruby eye. He is a tireless singer, and even at noonday, in the hot summer, when most of the birds are quiet, the Vireo continues to sing as gayly as ever. His song is a constant warble, with varying expressions that seem to be delivered with the earnestness of an orator asking questions. It was because of this peculiarity that Wilson Flagg, the famous bird-lover, called this bird "The Preacher." He is an active bird, continually hopping about in pursuit of flies and caterpillars, and does not interrupt his song even when in search of food. The Vireo is an expert fly-catcher. In the fall he eats berries as well as insects, but does not trouble the grain. The Vireo builds his nest in shade trees on the lawn, in the orchard, or near the edge of a wood. It is suspended from forked twigs and made of strips of thin bark, grass and fibers. The paper-like substance of the wasp's nest or the web of spiders and caterpillars is sometimes added, and the inside is neatly lined with some soft material. The four or five white eggs are spotted with brown at the larger end.

The Warbling Vireo has a coat like that of the Red-eyed, but his eye is a dull brown, instead of ruby. His song lacks the questioning note of the Red-eyed Vireo, and he is a more continuous warbler. He chooses a lofty tree like the elm, in which to build his nest.

The White-eyed Vireo, unlike his cousin, builds his nest in a low bush, often in a swampy thicket. He lingers near the water, where he finds an abundance of the insects on which he feeds. He has an olive-green coat, but on the sides is a touch of yellow, and a yellow line appears around his white eye.

The Yellow-throated Vireo has a bright olive coat, with rich yellow on his throat and breast. The dusky wings and tail are edged with white. He builds a nest in the woods, and covers it with moss and lichens, so that it resembles the color of the branches.

The songs of the Vireo differ more or less in the different species, but all have a pleasing, warbling note. Their nests are of the same general pattern, and they are all insect and berry eaters. The name "Vireo" comes from a word which means "green." The Red-eyed Vireo is one of the birds most often imposed upon by the cowbird, who leaves her eggs for the Vireo to hatch, and the young cowbird receives unselfish care from the gentle bird in whose nest he has no right.

THE CANARY

THE dainty Canary is one of the most popular of household pets. He is perfectly content in his cage, and never pines for the freedom of his ancestral forests. Even if he escapes from his captivity, he usually returns to the sheltering roof, as if convinced that there is no place like home.

The Canary was first found in the Canary Islands, though he is also a native of the Azores and the Madeira Islands, in Atlantic waters. He received his name from the mountainous islands in which he was first discovered, and which are embraced by the torrid zone. The haunts of the Wild Canary are in some of the highest altitudes, and this possibly accounts for his ability to live in the colder countries of the temperate zone.

In its wild state the Canary builds a dainty nest of soft materials, in the top of a lofty tree, and carefully lines it with feathers or hair. In this are laid five small blue eggs, and, in the course of a year, several broods are hatched. Insects and the seeds of various plants are the Canary's natural food, but in captivity he adapts himself to the methods of civilization, and learns to like, besides his staple diet of seeds, the crumbs of bread and crackers, potato and egg, and an occasional taste of apple or sugar.

Canaries were first brought to Europe in the sixteenth century, and were bred in Italy. From there they were sent to England, Germany and other countries, and became very popular. They are occasionally bred with other birds, like the linnet and the finch, and thus are produced a variety of colors in their plumage. At home, in the Canary Islands, this little bird has a brown coat, but like other birds and animals, their coats grow lighter in color as they accustom themselves to live farther north. In England the Canary is larger than our little yellow songster, sometimes called our Wild Canary, and has reddish-yellow plumage, which becomes in some cases a deep red, so that the name, "Red Canary," is given



CANARIES.
Life size

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FROM COL. CHI. ACAD. SCIENCES.

ENGLISH SPARROW.
Life-size.

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to him. Canaries from Germany have a mottled coat of greenish brown, while others from the same place are yellow.

These birds are often spoken of as "Hartz Mountain Canaries." This is because the German peasants dwelling in the Hartz Mountains, in Germany, raise Canaries in great numbers. Many of these poor people make their living solely in this way and their houses are filled with bird cages. These birds are usually fine singers and are popular pets.

While many Canaries are annually imported into this country, a large supply comes from Milwaukee, where they are raised for the market in great numbers. No pains are spared in producing good singers and the young birds are trained to sing by means of a bird-organ, which imitates exactly the Canary's notes.

The song of the Canary is a high treble, sometimes very sweet, and again so shrill as to be almost piercing to the ear. Among his notes he occasionally introduces a warble or yodel, but it is said that only the Canaries bred in the Hartz Mountains have this gift perfectly developed, and that they lose it after living a year or two in this country.

If well cared for, Canaries live to be several years old. Like other pets, they need clean surroundings. With these and with an abundant supply of suitable food, they rarely sicken, and they will sing in their cages as bravely and sweetly as if they were free to roam the air.

To bird lovers, pet Canaries are a never-ending source of pleasure, and many an otherwise lonely house is made joyous by the presence of these cheerful little creatures. Their dainty habits are very interesting to watch. The bright little things at their morning bath are an especially pretty sight. They dip their delicate forms into the water, spraying it into the air with their wings, and appear to enjoy the proceeding to the utmost.

THE SPARROWS

THE Sparrows, Finches, Grosbeaks, Redbirds and Buntings all belong to one family, which is the largest in the Bird Kingdom.

Sparrows abound all over the world, except in Australia, and were common as far back as the days when the old Hebrew prophets wrote. In the New Testament, too, you will remember that Christ mentions this bird, for he says:—

"Are not two sparrows sold for a farthing? And one of them shall not fall to the ground without your Father. Fear not, therefore; ye are of more value than many sparrows."

Christ probably used the Sparrow to illustrate his sermon, because it was one of the commonest birds in Palestine, as it is to-day. Sparrows nest in great numbers on the ground and in the bushes along the banks of the River Jordan, and in the city of Jerusalem they are considered a great nuisance, as is the English Sparrow in America.

The English Sparrow is the most arrogant little bird that ever waged war against his fellows. He acts as if he owned every cubic inch of air, and every tree in the world. He has invaded our cities in such numbers that other and more popular birds have been compelled to seek other homes.

The English Sparrow was brought to our country not many years ago, for the purpose of killing off the canker-worms. While most species of Sparrows feed on seeds, the English Sparrow was known as a good insect-killer. In 1851 the shade trees in Brooklyn, New York, were visited with a plague of canker-worms which threatened their destruction, and Hon. Nicholas Pike, who believed he was doing a good thing for the trees, brought over from England a number of these Sparrows. The first lot did not thrive in their adopted country and in the three years following more were brought over. Some were set free in New York, some in Quebec, some in Portland, Maine, and some in Boston. In 1869 Philadelphia received a large number from England. Thirty years ago the English Sparrow was known only in a few large cities on the Atlantic Coast, but now he has overrun the whole country. He may have helped to exterminate the canker-worms, but he at once began to wage war upon our beautiful song-birds, and expelled them from the cities. Immigrants are supposed to have some little respect for usages in the land of their adoption, but in this case the immigrant proceeded to carry things with a high hand.

A price has been set on his head, and this has led to the killing of thousands upon thousands. Yet they thrive and multiply, despite every measure taken for their suppression. This bodes ill for the robins, the bluebirds, the grosbeaks, and other native favorites, which are gradually disappearing before the invader.

It is not only in his relation to other birds that the English Sparrow proves himself obnoxious; he is also a domestic tyrant and can hardly live with himself. When no other bird is near to furnish him a pretext for a disturbance, he quarrels with his own family. The female is more peaceably disposed than the male, and he tyrannizes over her in a shameful manner. He is fickle as well as captious, and sometimes expels her from his house, and, without awaiting any formalities, gets a new mate who happens to strike his fancy.

He has developed a taste for vegetables, grains, grass seed, buds of trees and plants and other things, which we would prefer to have left alone. In fact he understands the art of making himself unpleasantly familiar, wherever he may be.

He has become so thoroughly acclimated to all parts of the country that he does not find it necessary to leave the North for the winter. From Boston to New Orleans, he is at home at all seasons of the year. His favorite motto seems to be "Fight whenever you can find anything to fight over, and when you can't, invent some pretext to fight." Such a motto, of course, could not fail to make a disagreeable bird.

He builds his nest in any nook or crevice that offers a space of three or four inches and, when practicable, seems to select a place where his nest will give the most trouble. He delights to establish himself in the gutter-spout or under the eaves. When snow comes, and the water backs up and freezes, and the pipes burst, and the roofs leak, people looking for the cause of the trouble may find that an English Sparrow has blocked up the outlet with his nest. He likes to nest in the carved stone crevices of our public buildings and even on statues in the public parks. No place is sacred to him, and he has disfigured some of our finest buildings.

His nest is made of grass, fibers, threads, strings, rags or anything that is easily woven into a fabric, and the inside is lined with feathers or hair. He works hard to put it in order, that he may devote his time to making trouble for others, which is his favorite diversion. Providing a home and food for his family are merely incidental. The female lays from four to seven small eggs, which are grayish white, striped with brown and lilac. The English Sparrow makes no pretension to vocal culture, but perhaps his constant scolding makes his throat hoarse.

His defenders contend that his destruction of insects entitles him to our respect. But before his advent in this country, the song-birds ate them. He has driven away the songsters, and remains to brag and scold in the places that once rang with sweet music.

We have our own American Sparrows, which are very bright and happy little birds. Our Song Sparrow passes the winter in warm climates, but early in the spring he ranges north and builds his nest in a field or pasture, sometimes in the grass or under a low bush, and sometimes in the cavity of a tree. When he is startled from the nest, he flies away with a quick, jerky motion of his tail, uttering a sharp "Chink! Chink!" His back is streaked with black, dark chestnut and ash; his wings are brown, edged with dull red; underneath he is white, and his breast and throat are spotted with brown. His cheerful song blends with the symphony of the early spring.

The Swamp Sparrow's habits are suggested by his name. He is usually found in swamps and marshy meadows, where he darts from hummock to hummock, in his search for insects. He runs swiftly over the ground, and his black and brown coat so nearly resembles the color of the earth, that when he disappears under a tuft of grass, it is hard to tell where he has gone. When he is seeking food, he keeps very quiet. It is in the early morning that he warbles out his song. From so much running through the bushes and over rough ground, his coat often becomes frayed and ragged, and his tail is sometimes worn to a stump.

The Field Sparrow prefers the uplands, a pasture or, perhaps, a hillside, or open woodland. He is a shy bird, but when he thinks himself unnoticed, he sings a trilling song like that of the canary. His coat is reddish, with buff and black stripes, and his crown is chestnut. His breast is white, and there are two bars of white across his wings.

The Fox Sparrow is one of the largest and handsomest birds of the family. His coat is foxy red, with ash-colored streaks, and his white breast is spotted with dark red. His song is loud and joyous.

The Chipping Sparrow is one of our friendliest little birds. He has a chestnut cap and a black forehead. His pretty little nest, neatly woven of grass and roots and lined with horsehair, is often found in the bushes under a window or in an orchard tree, and he comes bravely to get the crumbs we leave for him on the door-step or window-sill. The English Sparrow often drives him away and takes the crumbs for himself, for the "Chippy" is a timid little fellow, and is not large nor strong enough to hold his own with other birds. His song is a simple trill or chipping.

All the Sparrows eat seeds and insects, and none of them, except the English bird, is troublesome. On the contrary, they are delightful little neighbors, and their piping notes and cheerful songs are always pleasant to the ear. They are so small that we cannot help feeling a desire to protect them, and when they linger at the approach of winter, they are, no doubt, grateful for a chance dinner of bread-crumbs, which may induce them to visit us again when the warm weather returns. The bold English Sparrow seems able to take care of himself at all times, but when all the other birds are gone, and we see him shivering in the snow, he also is apt to win our sympathy to the extent of a scattering of seeds and crumbs. Alas! such generosity usually leads to a quarrel among all the English Sparrows in the neighborhood.

THE SKYLARK

THE Skylark does not command admiration by brilliant plumage, but he has endeared himself to the human race by his glorious song. He has been the theme and inspiration of many beautiful poems. At the first hint of dawn, you may hear his clarion notes, as he soars higher and higher, until he appears like a speck against the blue sky and his song is almost lost in the distance. Yet, sweet and faint cadences continue to reach us, and when he begins to descend, the rich waves of melody increase in volume as he nears the earth.

In Europe Larks abound in the fields and meadows, where they build their nests and search for the seeds and grain on which they feed. It is while the mother bird is sitting on her nest that her mate soars into the air and pours forth his rich melody. Several attempts have been made to introduce the Skylark into America, but our climate is not suited to his needs and temperament.

In America the Horned Lark is the best-known species of the family. There are many varieties of this species, and they differ in plumage and habits, according to their location. Such names as Snow Lark, Prairie Lark, Shore Lark and American Skylark are given these varieties. The color of the Horned Lark is a grayish brown, in which appear streaks of darker brown; he has a black patch across the forehead and along the side of the head, and another of black under the eyes; over the eyes is a line of yellow. The throat is of the same color, with a patch of black. Behind the ears are little tufts of black feathers which give his head the "horned" appearance from which he receives his name.

The Horned Lark is a hardy bird, and from October to April is found in the northern states and in the south as far as Georgia. He is often seen when there is snow on the ground and from this fact is sometimes erroneously called "Snow-bird." In summer he flies northward as far as the Arctic Circle.

The nest of this bird, which is always found on the ground, rests on a bed of moss or grass, and is lined with feathers or other soft material. The mother bird lays four or five eggs, of dull white, tinted with purple or buff, and spotted with brown or lavender. The Lark searches for seeds and grubs, and in the fields and meadows does not hop about like the robin, but walks or runs swiftly. He soars high above the earth, like the English Skylark, but his song is much simpler and less musical. When he descends, he never alights on a tree, but usually on a fence-rail, a building or the ground,

from which he can plainly observe his surroundings. Horned Larks are often seen in companies on the shores of bays and streams, where they search for food, and, while running about on the ground, they send out sentinels to notify them of any approaching danger.

The Meadow Lark, or Field Lark, is also common in the United States. He is larger than the Horned Lark, but less hardy, for in the winter he does not remain in the North later than November. He prefers the sunny South until the warm days of April return. His coat is a grayish brown, streaked with black. His breast, generally, and the spot over each eye are bright yellow. On his breast is a crescent of black, but he lacks the little tufts of feathers which give the Horned Lark his name. The five white eggs, spotted with brown and lavender, are laid in a nest of dry grass, sometimes placed in a hollow in the ground and at other times sheltered by a tuft of grass. The nest is sometimes covered at the top, so that the bird enters at the side. It is usually found in a level meadow.

The Meadow Lark eats grasshoppers, worms, spiders, caterpillars and the seeds of grasses, but does not trouble the grain, and is therefore one of the farmer's best friends. His note is a mellow whistle, which usually lacks the elements of melody, but, nevertheless, falls pleasantly on the ear. He flies slowly and heavily, and, unlike the Skylark, does not soar high or long in the air.

THE NIGHTINGALE

THE Nightingale, so often mentioned in prose and poetry, is a bird of the Old World and is not found in the United States. His name comes from an Anglo-Saxon word which means "Singer of the Night." The bird does sing at night, and during the day as well, and his song is very sweet. The British people think there is no bird in all the world to compare with it, but, as a matter of fact, our mocking bird is a better singer; and, indeed, where is the bird across the sea that can equal him for sweetness of tone, power and long-continued song?

But the Nightingale stands at the head of the singing birds of the Old World. He is found in many parts of Europe, Asia and Africa, and is supposed to have been the bulbul described by the Eastern poets of long ago. He is a migratory bird and spends the winter season in the warm countries under the equator. In size he is a trifle longer than a sparrow and wears a modest coat of brown, with a tinge of red on the back and tail and a suggestion of white on the throat and lower parts.

The Nightingale makes his nest in a hedge or thicket, where he can be sure of seclusion. The nest is made of leaves, grass and roots, and rests on or very near the ground. Four or five olive-brown eggs are laid, and the parent birds take turns in sitting on the nest.

This bird belongs to the family of Warblers. His song is sometimes heard during the day, but is usually at its best in quiet, moonlight evenings. There is a plaintive theme in his song, and the poets have fancied that he is appealing to a lover or sweetheart; in Eastern poetry he is often represented as being the lover of the rose, and it is to her that he is supposed to sing his passionate song. Pleasing as the song is, it is really no more stirring than that of the skylark.

The Nightingale begins to sing at the opening of the mating season, late in April, and continues his singing until the young birds appear and demand all his attention. He is always very shy, and while you may hear him singing near by, you may not find his nest or even catch sight of him for many days, for at the least alarm he darts into hiding and his coat is so like the vines and bushes in color that he is not readily discovered.

If full-grown Nightingales are placed in captivity, they soon pine and die, but if the young birds are taken, just as they are about to leave the nest, they may be raised successfully in a cage, and in England this is often done.

THE RED-WINGED BLACKBIRD AND THE GRACKLE

THE Red-wing is a merry fellow, though too saucy in his bearing and too fond of good ripe fruit to please the farmer and the gardener. His life is active and his instincts are social, especially in the latter part of the summer season, when he moves in large flocks.

The Red-winged Blackbird is the common species throughout North America, and has a conspicuous black coat, and red feathers tipped with buff on the upper part of his wings. The vivid dash of red against the black forms a striking contrast as he flies through the air. He spends the winter in the South, but from March to October he sojourns in the northern states. While mating, he leads a quiet and domestic life, and keeps to the marshes and meadows, where he builds his nest in a tuft of grass or under a bush. The nest is woven of flags or long grass and lined with finer grass. The eggs, which vary in number from three to five, are white or of pale bluish-green tint, and are marked with lines of black and purple.

In July or August, after the young birds have gone out to make their own way in the world, old and young enter upon a social career. They assemble in flocks, descend on fields of grain and often do serious damage. They make some amends by destroying insects and grubs, which are injurious to the farmer, but as he sees less of the good than of the evil they do, he is inclined to regard them with disfavor. The rice fields are a rendezvous for the blackbirds in their southern haunts. There they are frequently seen chasing each other on the wing as if in play, and all chatter at once. Their cheerful, liquid note sounds like "Con-quer-re! Con-quer-re! Bob-a-ly-bob-a-lee!" and when a flock of Red-wings gives a general concert, it may be heard for a considerable distance.

The Crow Blackbird, whose real name is Purple Grackle, has a coat of bronze black, and is common in all parts of the United States east of the Rockies. His nest is built on the bough of a tree or in a cavity like that made by the woodpecker. Sometimes nests of both kinds are found in the same tree. The Grackles begin their attack on the cornfield as soon as the seeds sprout, and sometimes the ground is black with them as they pull up the tender blades. Later, when the corn is forming ears, they feast on the milk. The farmer, who sees his corn destroyed, but does not think of the grubs and worms the Blackbirds have eaten, makes war on the birds without mercy. In the winter they eat beechnuts and acorns. The Grackle is a good fisherman, and catches minnows and young fry in the brooks. Like the crow, he sometimes kills and eats the young of other birds. He likes to impose on other birds but resents any interference with himself, and thus he spends no little time quarreling with the robins, catbirds and jays.

THE WOODPECKERS

THE Woodpeckers are birds of steady habits, and most of them are very industrious in carpentry. Their only cutting tools are their sharp bills, yet they readily bore the most symmetrical of holes in the hardest trees. It is from this tree-boring habit that they derive this name. The greater part of their life is spent in clinging to the trunks of trees, while they dig out the insects with their bills or make cavities for nesting.

The Woodpeckers belong to a numerous family of about two hundred and fifty species, and they are found in all wooded parts of the world, except Australia and the Island of Madagascar. In North America are found about thirty species, which differ from each other in size and in the color of their plumage, but are very much alike in



RED-WINGED BLACK BIRD

ILLUSTRATION BY A. W. M. MEYER



FLICKER.

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their habits. The Little Downy Woodpecker will answer well to illustrate this family.

This Woodpecker makes his nest in the trunk of a dead or dying tree. To do this he bores a hole, an inch and a half in diameter, for an entrance. When he reaches the soft center of the trunk, he turns downward, and enlarges the cavity, which he drills to a depth of nearly a foot. In this cavity, safe from wind and rain, he takes up his residence and the female lays from three to five eggs, which, as in all of the family, are glossy white. Sometimes the Woodpecker uses the same nest for two years or more in succession. Other birds and squirrels often take it for their own use, to save the labor of making one for themselves. The black snake is also an unwelcome intruder. When he finds out the Woodpecker's hole, he enters and eats the eggs or the young birds, and then for a brief time takes the nest for his own, to the great distress of the bird which worked so hard to make a home. You may imagine the feelings of a boy who has unwisely decided to take the eggs or the young birds from a Woodpecker's nest and who forces his way into the deep hole, only to grasp the coils of a snake!

Nature has especially adapted the Woodpecker for climbing and boring. He has four toes, two of which extend forward and two backward, and they are armed with sharp claws. This enables him to get a firm hold on the bark of a tree. To help support him, he has, also, long, stiff, pointed tail feathers, which rest against the tree and prop him from beneath. In this attitude, with his breast close to the tree, he moves his head back and forth very rapidly, and at each motion his sharp bill drills into the bark and wood. He makes a hole of considerable size in a short time. The noise he makes is like the rapid tapping of a hammer, or, if it is a hollow tree, like the roll of a drum. The bird seems to enjoy this noise, for he sometimes hammers on a tin gutter or some hollow pipe.

The Woodpecker's habits are useful to man, for he pecks out the insects and grubs that destroy trees. If it were not for his work, some of our forests would be destroyed by the insects which penetrate the bark and sap the life of the trees. Besides the tree-bugs which he gets in this way, the Woodpecker eats caterpillars, beetles and ants. Other birds could not get at the insects after they have penetrated the bark, but the Woodpecker readily destroys them. Not only is his bill long and sharp, but his tongue is horny at the end and provided with little barbs, like those on fishhooks. He drives his tongue into the body of an ant or other insect and the barbs hold it fast. His tongue is also coated with a substance like glue, so sticky that any insect that touches it is held fast.

The Downy Woodpecker is the smallest of the family in America, being little over six inches long.

The Golden-winged Woodpecker—which is sometimes called the “Yellow Hammer,” and, by naturalists, the “Flicker”—is one of the most beautiful of our birds. His back is brown, barred with black; his head and the sides of his neck are blue or gray and on his nape is a dash of red. Running back from his bill, on either side, is a stripe of black. The breast has a crescent of black and the feathers underneath are pale brown, with yellow shadings, and on each breast feather is a round dot of black. The under surface of the wings and the tail is golden yellow.

This bird is found as far north as Alaska, but migrates to the South in winter. He is less fond of hard work at the carpenter's trade than other Woodpeckers are, and selects for his operations a much-decayed stump or log, which is more easily bored than a living tree would be. Here, too, he usually finds many ants, of which he is very fond. They constitute a large portion of his food, and to get them he often raids their “hills,” or watches for them at the entrance to their holes in the ground. Sometimes the Flicker bores through the boarding of a barn or a dwelling and makes his nest between the cross beams, or he will bore into a telegraph pole, if his fancy turn that way.

The Red-headed Woodpecker is one of our common birds and is found in many parts of the United States. When winter approaches, those in the North join their relatives in the South, to avoid the cold. They are said to migrate only in the night, stopping during the day to rest and feed. This bird's back and tail are a purple black; the head and neck are crimson and the breast and the tips of the wings are white. Where you find a forest with many girdled and dead trees, you will find many nests of the Red-headed Woodpecker. He not only digs insects from the trees, for food, but has a pronounced taste for fruit and visits the orchards where cherries, apples and pears are to be found. He thrusts his sharp bill beneath the skin and sucks the juices of the fruit, or carries off on his bill an apple or pear. He also helps himself to the milk of young sweet-corn, of which he is very fond.

The California Woodpecker is much like his Red-headed relative, though he has less white and less red in his coat. He is seen only west of the Rockies, where his home is usually to be found in the pine forests on the mountains. He is a sociable fellow, and sometimes half a dozen Woodpeckers make their nests in a single tree. He likes insects and fruits, and acorns are one of his principal items of food. He lays up a store of acorns in holes which he has drilled in

the trunk of a pine or oak tree, or in a fence post. Each hole is so nicely drilled that the acorn, which is driven in point first, fits in its place snugly and is not easily removed. Sometimes two or three hundred acorns will be found stored in a single log or tree trunk.

When the Woodpecker wishes to eat one of his acorns, he takes it from the hole and drives it into a crevice in some tree. This splits it open and enables him to discard the shell and get at the meat. This practice is not confined to the California Woodpecker, but is shared by other members of the family. It was thought at one time that the Woodpecker saved the acorns for the sake of the worms which developed in them, but we know now that he eats the sound nuts as well as the wormy ones. If he happens to find a fat, juicy worm in one of his acorns, it adds to the relish of his dinner. Other birds and squirrels sometimes try to steal his acorns, and if he discovers them in the act, there is a quarrel immediately. The squirrel he soon puts to flight, but if the robber is a blue jay, there is likely to be a sharp battle. The California Woodpecker usually builds his nest in an oak or sycamore tree, from twenty to twenty-five feet above the ground.

The Hairy Woodpecker is much like the Downy already described, but larger. His feathers are black and white, and he has a red band at the back of his head; in the female this band is wanting.

The Arctic Three-toed Woodpecker differs from most other species in having three toes instead of four, but he seems to be as good a climber as his four-toed cousin. His feathers are black and white, and he has a spot of yellow on his head. He is found only in the cold regions of the North, and comes no farther south than the northern tier of states. Closely related to him is the American Three-toed Woodpecker, also a bird of the far North.

The Ivory-billed Woodpecker, on the other hand, is found only in the southern Gulf states. He is the largest of the North American Woodpeckers, measuring twenty inches or more in length. His feathers are mostly black, though he has a stripe of white on the side of the neck and some white on the wings. The male bird has a crest of scarlet and black. This bird has a long bill of the color of ivory. He is shy and is rarely seen in settled regions. The dense cypress swamp is his favorite haunt. He digs his nest at least forty feet from the ground, in the loftiest tree he can find. This bird eats little besides insects, and does not trouble the farmer's corn or fruit trees, although he likes berries and grapes.

The Woodpeckers do not sing, but each has his peculiar call, consisting of a few notes repeated swiftly. They are most easily recognized by the drumming noise they make when tapping wood.

THE CUCKOO

TO MANY of us, the name "Cuckoo" first suggests a clock—one of those little clocks high up on the wall, with weights swinging on long chains underneath, and a little wooden bird that pops from a tiny door and announces the time by calling "Cuck-oo, cuck-oo," the number of times of the hour. If we have known no more than this of the Cuckoo, we have at least had an accurate reproduction of the live bird's call.

The Cuckoo has been represented as being very undomestic. It is true that in Europe the female does leave her egg in the nest of some bird, which she knows will submit to the imposition. The young Cuckoo is hatched by his foster-mother, who feeds him as faithfully as she does her own; while his own mother never seems to crave the tender cares and joys of bringing up a family, but prefers to wander in careless freedom, like a gipsy of the air.

The American Cuckoos, however, have more of the home instinct, and build nests of their own, though they, too, have their faults, for they rob smaller birds of their eggs. It is the European bird, however, that makes the name a synonym of shiftlessness in the home.

There are six species of the American Cuckoo, only two of which may be called common birds—the Yellow-billed and the Black-billed Cuckoos.

The Yellow-billed Cuckoo spends the winter in the South and comes northward in the spring. He is about twelve inches long, though his tail feathers reach nearly half of this distance. His plumage is olive gray, the wings tipped with dull red; the middle tail feathers are of the same color as his back, and the outer ones are black with white tips. Underneath he is white. The upper half of the bill is black, and the lower half yellow.

Among the Cuckoos, the mating season is rife with tiny feuds, the male birds often clashing with their companions in the choice of mates. The nest is built in a bush or on a limb of a low tree, in quiet woods, or in an apple-tree in the orchard. It is not a very handsome structure and is, in fact, little more than a rough platform of twigs and weeds loosely put together. The four eggs are of a pale greenish color. The Yellow-billed Cuckoo has one habit in which it differs from most birds. The female lays her eggs at long intervals, so that the young are hatched one at a time. Other birds usually lay one egg each day until a brood is completed, and all the young birds come from the shell at about the same time.

The Cuckoo has no sustained melody, but his soft notes are very appealing, and his voice has both power and volume. Though he

repeats the same cry over and over, he is a sure harbinger of spring, and his voice is so welcome that we do not think of calling it monotonous.

The Cuckoo eats insects and berries, as well as the eggs of other birds. He does no little good in eating the hairy or "tent caterpillar," which other birds will not touch. As this is the caterpillar that makes the nests called "worms' nests" in the trees, the Cuckoo is of great value in destroying it.

The Black-billed Cuckoo resembles the Yellow-billed species, but has little or no rufous on his wings and his bill is wholly black instead of half yellow. He is more retiring than the Yellow-bill, and usually nests in a low bush in the woods. Otherwise his habits are similar to those of the Black-billed variety.

THE COWBIRD

THOSE birds which show shiftlessness and indifference in the construction of their nests are not the bright and cheery songsters.

Such failings are deplorable, even in birds, and none have them to such a degree as the Cowbird.

It would be unjust to attach all the blame to the female, for it never occurs to her mate to provide a house and home for himself and his family. Yet the mother cannot be entirely freed from the charge of neglecting her babies. She has not a spark of maternal instinct. When ready to lay her eggs, she leaves the flock, and flies about the bushes until she finds the nest of some other bird. After depositing her egg in this, she returns to the flock, entirely indifferent to the fate of the little egg or her young. In a day or two she lays another egg in some other nest, and proceeds in this manner until she has laid perhaps four or five. She knows very well that if she left the eggs in the nests of birds larger than herself, they would be promptly thrown out. The angry catbird has been known to do this. The Cowbird watches for an opportunity to enter the nest of some small bird, when the owner is away, and, having laid her egg, flies away before the owner returns.

The Maryland yellow throat, which is one of the warblers, the yellow warbler, the red-eyed vireo and the chipping sparrow are usually the ones to find the strange eggs in their nests. If the Cowbird lays her egg before the foster-parent has deposited her own, the latter sometimes deserts the nest and builds a new one. The yellow warbler has a way of making another nest above the one that has been occupied. In some instances this is done twice, and

thus a nest of three stories is formed. Only the bluebird, who is greatly attached to her nesting-place, will accept the strange egg before she, herself, has laid, and go on with the work of rearing a family.

The Cowbird's egg hatches before the others, and the young intruder is so much larger than the little vireos or sparrows when they are hatched, that he often stifles them in the nest. Thus, this mother loses her own little ones as a result of caring for the orphan that was forced upon her. Nevertheless, she patiently feeds the greedy young Cowbird and tries to bring him up properly, as she would her own. As soon as he is old enough to look out for himself, he promptly deserts his foster-parents and flies off to join the nearest troop of Cowbirds.

These birds have so little regard for family ties that they do not even mate in pairs, but live together in flocks. They winter in the South, but by the first of April make their appearance at the North. They are often seen in the company of red-wings and crow black-birds, to whom they are closely related.

The neck and head of the male Cowbird are covered with dark-brown plumage, and the rest of his coat is glossy black. The female has a grayish-brown coat. The Cowbird derives his name from the fact that he is so often seen near cattle, and in his search for parasites he frequently perches on the back of a cow. The Cowbird also scratches up the earth for worms and insects. He occasionally varies his diet with rice or corn, but, as a rule, he is content with insect food, and does not disturb crops as the blackbird does.

His shameless way of ignoring family relations makes it impossible for us to like or respect the Cowbird, and although he eats harmful insects, we cannot forgive him for his selfishness and unnatural conduct toward his young. The habits of the Cowbird are much like those of the European cuckoo, whose name is used in household proverbs as a synonym for shiftlessness. These birds are painfully like some people, who are too lazy to work and prefer to have other friends take care of them, rather than make any effort for themselves.

FINCHES

THE American Goldfinch is also called the Yellow Bird and Wild Canary. He is a common bird in nearly all parts of the American Continent, and ranges from Mexico to Canada. He is a little fellow, only four or five inches long, but his bright plumage, seen as he darts swiftly from tree to tree, makes him seem like a



FROM COL. F. M. WOODRUFF.

AMERICAN GOLDFINCH.
 $\frac{7}{8}$ Life-size.

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ray of sunshine. These birds are hardy and breed in the cooler climates. In the North they do not nest until May or June, and as they raise two broods each season, it is often late in September before they are through with their family cares. Even then they are in no hurry to seek warmer climates, and as long as their food supply is ample, they do not move to the South. Occasionally, one is seen after snow has fallen, seeking for seeds of grasses and weeds which have not been buried under the snow.

The male Goldfinch wears his dashing coat only in the summer. It is a bright yellow, except the crown, wings and tail, which are black. In the winter, his dress is less brilliant, like that of the female, who wears olive brown the year round, and has no black on her forehead.

The Goldfinches are sociable birds and live in companies. Other birds which dwell in flocks usually retire from the company when they select their mates, and build their nests in privacy, but the Goldfinches are found nesting near each other. A pasture or an orchard is a favorite place with them, and on the branch of a low tree, not more than ten or twelve feet above the ground, the Goldfinch builds a pretty, cup-shaped nest, so neatly made of bark, moss and fine grass that the outside is round and smooth. Plant-down and hair are used to make a soft lining. The five little eggs, each measuring a little over half an inch in length, are white, with a faint tint of blue, and marked with light brown dots.

Nearly all the smaller birds are insect-eaters, but the Goldfinch eats little except the seeds of plants. He does great good in consuming the seeds of troublesome weeds, like the thistle and the nettle. He seems to have a particular fondness for the seeds of the sunflower and if you have a few of these tall flowers growing in the garden, you are sure to see the Goldfinch visiting them when their seeds have ripened. He likes dandelion seeds just as well, and as he is not aware that he pleases us by eating some seeds and displeases us by taking others, he often helps himself to lettuce and flower seeds in the garden. His sharp little bill is like that of a canary, and he husks his seeds in the same way. It is interesting to watch him when he is busily engaged in shelling the seeds for his dinner.

Before the nesting season begins, the male Goldfinches assemble and sing as if in concert. Each seems to be trying to outdo his neighbors in the sweetness and strength of his song. The song is very sweet and beautiful, and has a certain musical perfection—a finish and delicacy, so to speak—that is lacking in ordinary bird songs. When the female is sitting on the nest, her mate remains near home, circling about in the air not far from the nest.

The European Goldfinch, which has been known for many years as one of the most famous of singing birds, is very common in Great Britain, and in recent years a few have been found in our country. He wears a coat altogether different from that of our Yellow Bird, the back being brown, the wings black, tipped with white and striped with yellow, the cheeks and lower throat crimson. In his habits, he is like the American Goldfinch.

The Purple Finch, or Linnet, is another member of the Finch family. Sometimes we call him the Strawberry Bird, for he eats strawberries, blackberries and the like, as well as buds and insects. His coat is not really purple, but a rosy crimson, which varies in depth on different parts of his plumage. It is a pale rose color on his breast, darker on his back and brightest on his head. The wings and tail are dark brown. Touches of gray appear over his coat. The female has no rose color, but brown and gray only. The Purple Finch is much like the Goldfinch in his habits and is often seen feeding with them. His song is like that of the Canary, but softer and sweeter.

The Pine Finch, or Pine Siskin, is less common than the other Finches. He builds his nest in a deep forest, usually on an evergreen tree. It is not as neatly made as that of the Yellow Bird. He is fond of the seeds of the hemlock tree and passes the greater part of his time in the pine woods.

The Lark Finch, or Lark Sparrow, is found only west of the Mississippi River. He is larger than other Finches and lacks their brilliant colors. His coat is olive and brown, with touches of black and white; a crown of chestnut, and a patch of black on his white breast. Like the Grass Finch, or Vesper Sparrow, he often builds his nest in a tuft of grass on the ground; at other times it is found in a tree or bush, as in the case of other Finches. The Lark Finch gets his name from the fact that he sings while on the wing. The Grass Finch is also a good singer. His habits are like those of the sparrows and with them he should really be classed.

The Shore Finch is also called Sharp-tailed Sparrow. He is usually found in a marsh near the sea or in a wet meadow, where he may be seen walking about on the floating weeds in search of insects.

WARBLERS

THE Warblers are one of the largest families of our common birds. There are between thirty and forty species found in the United States, yet only a few of them are commonly recognized, except by those who have made a careful study of all the birds. Most of the Warblers are small birds—smaller than a canary. Some of them

spend nearly all their time in the trees and are rarely seen near the ground; others build their nests on or near the ground, and these become more familiar to us. The Warblers are migratory birds and visit the North only during the warm season. Some arrive in April, others in May, and they return to the South in September or October. Only one or two species remain through the winter as far north as New York.

The Black and White Warbler, also called the Black and White Creeper, is an odd little fellow, about five inches long. We seldom see him perching on the branches of trees, but he creeps or climbs around the trunk of a tree, pecking at the insects in the bark, for these constitute his food. His nest is built on the ground, at the base of a rock or a stump. It is made of grass, moss and the soft down of plants like the mullein. The mother bird lays four or five white eggs, flecked with reddish brown. During the nesting season, the male bird utters a succession of thin, piping notes, and later, as the summer advances, his song becomes mellower. It is never very loud or strong, yet it is pleasing to the ear. He has a plain coat of black, striped with white.

The Yellow Warbler, or Yellow Bird, has more dashing colors. His coat is golden yellow, tinged with olive on the upper parts, with orange-brown streaks on the sides and breast. The Yellow Warbler does not creep up and down the trees, but flies about in lively fashion, and catches insects on the wing. Most of the Warblers make their homes in the woods, but the Yellow Bird nests in parks and orchards and does not seem to fear man. He makes a pretty little nest of fine grass and pine leaves, and lines it with the softest plant-down and horsehair. Usually, the nest is placed in a shade tree or in the shrubbery about the lawn. The white eggs have a faint green or blue tinge and are marked with brown and purple spots. Besides insects, the Yellow Warbler eats a few berries. When strangers come near the nest, the mother bird tries to deceive them as to its location, by pretending to be lame and fluttering along on the ground just out of reach. When she is satisfied that they do not know where the nest is, or will not trouble it, she quickly flies back to her eggs or the young birds.

The Maryland Yellow-throat is a very different bird and ranges from Florida to Canada. He builds his nest on the ground or perhaps in a thicket of low bushes. Twigs and grass are woven loosely together to form the outer portion of the nest, and then a lining of soft materials is added. Swamp ground and damp woods are the most likely places in which to look for the nest of this bird. He is a lively bird and is constantly on the search for insects and bugs. He

does not often fly high in the air, but spends his time in the tree-tops or among the bushes.

The Oven bird has been called the Golden-crowned Thrush, but he is really one of the Warbler family. His coat is olive and he has a crown of orange color, set off by black stripes. His white breast is dotted with dark spots. The nest is built on the ground. It is made of coarse grasses, weeds and stalks and is covered at the top, the entrance being at the side. This peculiar form gives it the appearance of an old-fashioned Dutch oven, and from this fact comes the bird's name. The Oven bird has a louder note than some of the other Warblers, and John Burroughs, the student and lover of nature, likens its call to "*Teacher! Teacher!*" several times repeated and each time louder than before.

The Prothonotary Warbler is sometimes called the Golden Swamp Warbler. His head, neck and under parts are bright golden yellow; the wings and tail are slate colored. His nest is usually found on the shore of a stream or a pond or in a swamp, and is built in a tree cavity—a woodpecker's hole is often selected—or in some crevice. This Warbler is best known in the Gulf and central states, and rarely visits the North. He is a quiet bird and only occasionally sings his piping little song.

There are many other Warblers. The Yellow-breasted Chat is the largest of the family and sings more than most of his relatives. He is a good mimic and imitates the calls of the other birds, the mewling of a cat, the whining of a puppy and other sounds of animals. Then there is the Myrtle Warbler, so called because he feeds largely in the winter on myrtle-wax berries.

The Yellow Palm Warbler, the Magnolia Warbler—called by the Indians the Rain Bird, because his shrill song is prolonged when wet weather is approaching—the Cape May Warbler, the Canadian Warbler, the Black-throated Green Warbler, the Blackburnian Warbler, the Chestnut-sided Warbler, the Bay-breasted Warbler, the Black-poll Warbler, with a black cap on his head, the Pine Warbler—who builds his nest in evergreen woods, high up in the branches of a pine tree—the Prairie Warbler, the Parula Warbler, the Black-throated Blue Warbler, the Kentucky Warbler, the Cerulean Warbler—which has a beautiful blue coat, with a white breast—the Mourning Warbler, the Connecticut or Gray-headed Warbler, the Worm-eating Warbler, the Blue-winged Warbler, the Golden-winged Warbler, the Tennessee Warbler, the Nashville Warbler, the Orange-crowned Warbler, and others named for the bird-lovers who have pointed them out as a species distinct from the Warblers we have mentioned, are all members of this family.

You can see that it is a very large family. These pretty birds are found in different parts of the United States and Central America. Some are common and others are but rarely seen. All the Warblers lay white eggs, dotted with brown, or with brown and lavender. In some species, the eggs have a very faint blue or green tinge. In nearly all cases, their song is a cheerful whistle, not very loud and seldom long continued. Insects and berries make up their food, and they are as harmless as they are attractive.

THE CARDINAL

AT FIRST glance it might be thought that the Cardinal, or Red-bird, is a near relative of the scarlet tanager, but he really belongs to another family, in which are found also the sparrows, the finches and the grosbeaks. He is a common bird in the South, and in summer is seen in the northern and middle states as well.

He is eight or nine inches long—larger than the tanager—and has a short beak, which resembles that of the grosbeak. His plumage is bright red, with a gray shading on the back, and his forehead and throat are black. This gay coloring, together with his large crest, gives him a very striking appearance. His mate has a coat of olive brown.

The Cardinal makes his home in the woods, and he prefers groves of evergreen trees near running water. His nest, which he usually places in a low tree or in a bush, is loosely made of twigs, vines and grass, lined with fine roots and hair. The eggs are blue or buff tinted, and marked with brown and purple. Corn is a favorite food of the Cardinal, and he likes cherries, apples and other fruit. He is also an insect-eater.

The song of the Cardinal is generally original, but at times he weaves into it the notes of other birds. It changes from a clear, mellow whistle to a soft, pathetic melody, and again to a loud, war-like strain, repeated over and over again. From his musical ability, he is sometimes called the Virginia Nightingale, and he is often captured and caged. He retains his cheerfulness in captivity, though his brilliant scarlet plumage usually fades to a lighter tint, and his songs are not so varied. Yet he does not droop and mourn for the woods, as the mocking-bird does, and if well cared for, often lives to be twenty or more years of age.

THE GROSBEAKS

THE Grosbeaks derive their name from their large, strong bill, "gros" being a French word meaning great.

The Rose-breasted Grosbeak is a bird of the eastern United States, but goes as far north as Canada and the Northwest. The male bird is black above and white below, with some white spots on wings and tail, and has a beautiful rose-pink breast and wing linings. The female has a blackish brown coat, unrelieved by the rose color of the male's breast.

Ordinarily, the Rose Grosbeak builds only in the woods, but a pair of Grosbeaks will occasionally visit the city and nest in a fruit or shade tree. The nest is lightly put together and is composed of roots and twigs, lined with fine grass or pine needles. The eggs, four or five in number, are of a dark green color, spotted with brown and light shades of purple.

The Grosbeak is an attractive singer, and, like the mocking-bird, he gives vent to his pleasure while singing by fluttering his wings and tail. He, also, overflows with music to such an extent that he sings at night as well as during the day. His love of music is so much a part of himself that it is not repressed even by captivity.

He is very considerate, and to relieve his mate he often sits on the nest to give her an outing, yet while doing this he cannot refrain from singing. In this way he often betrays the whereabouts of the nest to the egg collector. His food consists of flies, mosquitoes, grasshoppers, crickets, seeds and the buds of trees. His stout bill enables him to crush large seeds and grains, and he is said to be the only native bird that will kill and eat potato beetles.

The Blue Grosbeak is a shy and solitary bird. He is found in the southern part of the United States, and in Mexico. His plumage is a rich dark blue, with more or less reddish brown or chestnut color on the wings. The female has a yellowish color on the wings, and her coat is yellowish brown, with dark buff underneath. The nest is built on a low bough or in a bush, at the edge of a wood or in a swampy thicket. It is built mainly of leaves and grass and lined with grass or hair. The eggs are pale blue.

The Evening Grosbeak is usually found only in Canada and the northwestern states. In the wilderness of western Canada, where man has not yet inspired him with terror, this bird is very tame, and sometimes hops about near a camp as though no harm could possibly come to him from that source. Brownish yellow is the prevailing tone in the bird's coat, with white on the upper wing



FROM COL. F. KAEMPFER.

WESTERN BLUE GROSBEAK.
5 6 Life-size.

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FROM COL. F. M. WOODRUFF.

SCARLET TANAGER.

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feathers and black on the outer wing feathers and the tail. The large bill is yellowish green in color. The Evening Grosbeak's song is a sweet warble, pitched in a low key, and bears some resemblance to that of the robin.

THE TANAGERS

THE Tanagers are bright-hued birds of the tropics, where the abundant heat and moisture produce the brightest flowers, and lend the most glowing colors to the birds of that clime. The parrot, the cockatoo, the nonpareil and the flamingo are examples of the brilliant plumage found in the torrid zone.

In all there are three hundred species of the Tanager. In the tropics they are very abundant, but only two or three species visit the United States.

The Scarlet Tanager ranges farther north than any of the others, being common as far as Canada. His brilliant plumage renders him one of the most striking of American birds. He is a vivid flame of scarlet, as his coat flashes in and out among the green foliage. His gay costume is relieved somewhat by his wing and tail feathers, which are black. The female and the young birds have a coat of olive green.

The Scarlet Tanager is a shy bird and dwells in the depth of the woods, where he builds his nest on the horizontal limb of a tree, usually near the end of the branch. The nest is made of bark, twigs and roots, and is lined with fine roots and thin strips of bark, or pine needles. The four or five eggs are dull white, tinged with blue, and spotted with brown and lavender.

Beetles, bees and other insects are the favorite food of the Scarlet Tanager, to which he sometimes adds seeds and berries. His song is a pleasing warble, something like that of the robin; the note with which he calls his mate is a lively "Chip, chip-churr!" He is very fond of his little ones and cares for them faithfully.

The Summer Tanager has a coat of vermilion, without the black wings and tail which distinguish the Scarlet Tanager. The female wears a coat of olive green, with dull buff underneath. This bird does not range as far north as his scarlet cousin. He spends the winter in Central and South America.

He is not so shy as the Scarlet Tanager and often builds his nest in the garden or orchard. Sometimes it is found on the branch of a low tree near the roadside. The nest is a very thin, loosely built structure of grass and weeds, lined with fine grass or moss. The eggs are a faint green, spotted with brown and purple. The male

bird has a lively whistle, said to resemble that of the Baltimore oriole; the female utters a chattering call, which sounds like "Chicky, tucky, tuck!" rapidly repeated. Berries and insects are the food of the Summer Tanager, and his fondness for the stinging insects, like bees, wasps and hornets is so marked, that he is sometimes called the Red Bee-bird, as well as the Summer Red-bird. He is, however, of a family quite different from the real red-bird, or cardinal.

THE NONPAREIL

THE Nonpareil is one of the names given to the brilliant-colored songster called by scientific bird-lovers the Painted Bunting. The name "Nonpareil" is derived from two French words which mean "no equal," because of the unequaled brilliancy of his coat. But the French-speaking people of his native Louisiana, also call him "la Pape," which means "The Pope," because he wears a blue or purple hood. His back is green, his throat and breast are scarlet, his tail brown, shaded with purple, and his head and neck blue. The female is olive green above and dull yellow underneath.

The Nonpareil is common in the states along the Gulf of Mexico and farther south in Mexico and Central America. He does not visit the northern states, except as a captive.

His nest is usually placed in a thicket or a hedge, never far above the ground. It is neatly made of twigs, roots and strips of thin bark. A lining of hair or fine grass is added, and then the nest is ready for the pretty eggs, which are white or pale blue, spotted at the larger end with purple brown.

The young birds are like their mother in their sober plumage, olive green above and pale yellow below, and the male Nonpareil does not get his final coat of brilliant colors until he is three years old.

The Nonpareil is coveted both for his cheerful warbling song and for his brilliant plumage. He is trapped and sent to the bird stores in the North and to countries across the sea. In his own home, he feeds on insects and various kinds of seeds, rice and ripe figs. He is not at all timid and often builds his nest near houses, and is always willing to join in a quarrel with other birds.

The Indigo Bunting, a cousin of the Nonpareil, breeds in the South, but ranges to the North, is common in Ontario, and is sometimes seen in New England. The male bird has a coat of rich indigo blue, with brown wings and tail edged with blue. Although he does not wear so many brilliant colors as the Nonpareil, he is a very beautiful bird. The female wears a suit of brown.

The nest and eggs are somewhat like those of the Nonpareil, and the nest is often built in the garden or orchard, as well as in the bushes along a road or at the edge of a meadow.

The Indigo Bunting is, however, a shy bird, and when he believes that he is watched, he flies off to the top of some tall tree, where he can feel safe. Here he perches on a twig and trills his pleasant song. The Buntings are likely to forsake their nest if the eggs are disturbed, and build a new one in a safer place, but after the little birds appear, they remain, even though molested, to defend and care for them. They bring to the young birds worms, seeds and grasshoppers in abundance, and if the little birds are taken from the nest and shut up in a cage, the parent birds will, if the cage be placed within their reach, remain in the neighborhood and continue to feed the little birds through their prison bars.

THE SWALLOWS

THERE are nearly a hundred species of the Swallow in different parts of the world; in America we have only seven. All the birds of this family have remarkable wing powers. They fly very swiftly and dart through the air so fast that it is hard for the eye to follow their flight. They live almost wholly on insects and do not molest the grain. They have small bills, and small feet which serve them only for perching, as they neither swim in the water nor run on the ground. The Swallows are sociable in their nature. They travel together in large flocks and nest in the same vicinity. Two or three hundred nests are often found very near each other.

The Barn Swallow is one of our common birds. He has a coat of steel blue, with a bright chestnut color on his breast, throat and forehead. His long, forked tail serves him well as a rudder in his swift flight. The Barn Swallow builds his nest against a beam in the barn or some other outbuilding. It is made of pellets of mud, held together by grass, just as plaster has hair mixed into it for the same purpose. It has a soft lining of hay and feathers. Sometimes several families of Swallows build a row of nests along the same beam or rafter.

The Cliff Swallows build their nests in rows under the edge of a cliff, or, in a settled country, under the eaves of buildings, so that they are sometimes called Eave Swallows. The nest is made of mud, like that of the Barn Swallow, but is often shaped like a chemist's retort, or a gourd. The Cliff Swallow has a white forehead and there is a black spot on his chestnut-colored breast; underneath the feathers

are gray and on the upper parts steel blue; the tail is short and scarcely forked.

The Bank Swallow is sometimes called the Sand Martin. He is grayish brown, with a white throat and under parts, and is smaller than the Barn Swallow. To make his nest, he tunnels in a bank of sand or loose gravel, near a stream, and after carrying the burrow in for two or three feet, makes a wider chamber which he lines with grass and feathers. Bank Swallows dwell in colonies, and a sand bank is sometimes seen punctured with a score or more of holes which lead to their nests. During the breeding season, they never go far from home. When the young birds begin to appear from the nests, other birds, like the crow, watch for them and carry them off to eat, unless driven away by the older birds. Bank Swallows do not like to nest near the homes of men, as do the Barn and Cliff Swallows, and select, when they can, a sand bank on the steep shore of a river, where they are not likely to be discovered or attacked.

The Tree Swallow has a beautiful coat of steel blue, with a tinge of green on the wings and tail, and a white breast. Nature taught him to build a nest in some hollow tree,—perhaps the deserted hole of a woodpecker,—but he does not fear man and will occupy a box which seems to have been set up for the use of birds. Grass and straw are the materials of which the nest is built, and it is made soft with a lining of feathers. The Tree Swallow has been driven away from some of the eastern cities by the hostile English sparrow, which takes possession of the Swallow's nest and fights to retain it.

The Purple Martin belongs to the Swallow family. His coat is a beautiful purple black, with a brown tint on the wings and tail. His social habits differ from those of most of the species of the Swallow, in that he selects his home away from others of his kind. He is best pleased to find a nesting place provided for him in the dooryard, on a post or against the side of the house. He does not accept it so readily if it is fastened to a tree, for he likes to dart swiftly in and out, without the obstruction of the branches. He knows, too, that he must keep a sharp lookout for the robber sparrow, who watches for a chance to turn him out of house and home. In order to prevent this, the Martins sometimes take turns in guarding the nest, one remaining at home to fight the sparrows while the other goes for food. He attacks the hawk or the crow when he suspects him of coming to interfere with his nest.

After the young birds have been taught to use their wings, and it is time to think of going South for the winter, the Martins assemble in flocks and are as social as other Swallows. They become very much attached to their homes, however, and often return two or



BARN SWALLOW.
7/8 Life-size.

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From col. Eugene Bliss.
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CHIMNEY SWIFT.
2/3 Life-size.

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three days after they are supposed to have flown South, as if to say a last good-by to the place where they have raised their broods. They return year after year to the same nests, and if they find some earlier comers — bluebirds or pigeons, perhaps — in possession, they will drive them out if they can.

The eggs of the Purple Martin, the Tree Swallow and the Bank Swallow are white, without markings; those of the Barn and Cliff Swallows are speckled with brown and purple. The ordinary note of the Swallows is a cheerful sort of twittering, with which they always pay a greeting to the coming day; and while they do not sing a sustained song, like other birds, they are merry neighbors. They never molest our fruits and confine themselves almost without exception to insect food. The Purple Martin, which is the largest of the family, — from seven to eight inches in length, — eats large beetles, wasps and bumblebees, which he swallows whole; the other birds of the family are content with smaller insects.

THE CHIMNEY SWIFT

THE Chimney Swift is often called a "Chimney Swallow," but he is not like other swallows in his anatomy and should not be classed with them.

This bird spends the winter in the South and from April to October visits the northern states. He is a small bird, a trifle more than five inches in length, but spends more time on the wing than other land birds, except, perhaps, the eagle. His coat is a blackish brown, lighter on the breast and throat and tinted with green in the upper feathers. His wings are very long for so small a bird, and measure twelve to thirteen inches from tip to tip. His feet are small and weak, and he does not perch on a branch as the other birds do, but clings to a vertical surface, with the help of his tail, which is tipped with feather-like spines and serves him as a prop, like the tail of the woodpecker.

The natural roosting-place of the Swifts is in a hollow tree or a cave, where they cling to the sides in great numbers, for they commonly live in colonies. When a flock of these birds is ready to alight in a favorite hollow tree, they circle about in the air, over the tree, in a funnel-shaped swarm, the lower end of the funnel descending little by little until the top of the tree is reached, when the whole flock gradually disappears within the trunk, the noise of their wings making a hollow rumbling sound like distant thunder. They enter the tree at twilight and leave it again the next morning,

rising in the same funnel-shaped cloud until all the birds of the flock have come out, and then they disperse to seek food.

In the same way, these strange birds make their roosting-places in chimneys, where they also build their nests. The nest is made of slender twigs woven together like the strands of a basket. The nest is fastened to the side of the chimney with a substance like glue, which comes from the bird's stomach. The nest has no lining, and is more like a shelf or bracket of basketwork than like the ordinary bird's nest.

On this rough shelf, four or five white eggs are laid, and when the young Swifts peep from the shell, the parent birds begin at once to feed them and give them constant attention. Sometimes a nest is loosened by the rain and falls to the bottom of the chimney, when the young birds crawl out from under the ruin and often cling to the side of the chimney for a week or ten days before they are old enough to fly. In the meantime, the parent birds bring them food just as if they were in the nest.

Swifts feed on small flies and other insects. Their food is caught on the wing, for they never descend willingly to the ground and are never seen to alight on the branches of trees.

These birds are among the most interesting of our feathered friends, because of their remarkable habits. They do not sing, but make a little twittering sound as they fly.

THE HONEY-GUIDE

A BIRD that has a sweet tooth and can induce man to gratify his appetite for honey, without much trouble to himself, is the Honey-guide, or Indicator. This bird is found in Africa and in India, and instead of flying away from man in fright, he depends on man to get for him the honey which is out of his own reach. There are several species of Honey-guides, but the true or common Honey-guide is a small bird, about the size of a sparrow, with a grayish-brown coat, white ear-tufts and a brown and white tail. Some species, it is believed, do not build a nest, and the female lays her white eggs in the nests of other birds, like the disreputable cuckoo. Other species, however, nest in holes of trees, and both the parent birds sit on the eggs. These birds live only in pairs and are never seen in flocks. Usually, in fact, they are seen singly, except in the mating season.

Honey is the food for which this bird is constantly searching. Wild bees usually live in a hollow tree and the Honey-guide follows

the bees through the forest, to learn where they have their hive. When he has located the tree, he flies to the nearest camp or village and sets up a lively chattering, at the same time flying about in a state of great excitement, in order to attract the attention of people near by. The natives never neglect his pleadings and immediately start to follow the bird. He leads the way through the forest, flying ahead for a short distance and then looking back to make sure he is followed. The natives whistle in response to his calls and let him lead them where he will. At length the bird alights on a tree and declines to go farther. Then those who have followed him know that the bees' hive is near — perhaps in the tree on which the bird has alighted.

The bees leave only a small hole in the trunk of the tree, through which to pass in and out, but when a bee returning to the hive with honey comes along, the hunters, by watching him, locate the nest. Then they climb the tree, knock out the mud with which the bees plastered up the hole in the tree trunk, and light a fire of dry grass. The angry bees come swarming out only to have their wings scorched in the flame and fall helpless on the ground.

The combs full of honey are soon taken from the nest and then the Honey-guide gets his reward. A generous piece of comb is left on a bush or on the ground, and the bird, knowing this is meant for him, immediately begins his feast upon it. The natives never take the honey from a bees' nest without leaving a portion for the Honey-guide, for they believe that if they cheat him of his reward, he will come some other time and lead them to the den of a lion or deadly snake.

Travelers say that the Honey-guide in this way does sometimes deceive those who follow him, and instead of a bees' hive the hunter finds a crouching leopard, but it may be that the bird, which, of course, does not fear the wild animals, is intent only on honey, and sees no reason to turn aside from fierce beasts which may be in the path.

At any rate, the Honey-guide shows remarkable intelligence in first attracting the attention of men for a definite purpose and then leading them to rob the bees' hive, which he cannot get at without assistance. It has been stated that sometimes the bird does succeed in breaking into a bees' hive, and he has been found, stung to death and covered over — embalmed, so to speak — with wax, which the bees placed around him in order that their home might not be made uninhabitable by the decaying body.

THE WAXWING

THE Cedar Waxwing, also called Cedar Bird and Cherry Bird, is common throughout North America. It is a bird of wandering habits and cannot be depended upon to appear in the same locality two years in succession. He seems to be a sort of gipsy of the air, who does not become attached to particular places. His plumage is cinnamon brown on the back, yellow or slaty underneath, and through each eye is a line of deep black. The wings and tail are of slate color, the tail tipped with bright yellow, while at the tips of the "secondary" or shorter wing feathers appear little hard substances which look like drops of bright red sealing-wax. From this fact comes the name "Waxwing." At the top of the head is a crest of brown feathers that are as soft as silk.

The Waxwing is a gentle bird and fond of society. He makes little noise, moving about very quietly and attracting no attention. These birds live together in large numbers and fly from place to place in a compact mass. When they alight, they remain close together, and as many as can do so, perch on a single branch.

The nest is built in a cedar or hemlock tree, or sometimes in a fruit tree, ten or twelve feet above the ground. It is much larger than the nests built by other birds of like size, and is composed of branches, twigs and grass, loosely put together and lined with hair or feathers. The four or five eggs are dull white or bluish gray, dotted and streaked with violet and brown, and are very pretty.

The Waxwing is fond of fruits and berries, especially those that are juicy, and his liking for cherries has caused him to be sometimes called the Cherry Bird. In autumn, he feeds on juniper berries, persimmons and grapes. Insects are also his prey, and he fully atones for his invasions of the fruit crop by destroying large numbers of the cankerworm, which is the scourge of the orchard. If an unusually large pest of insects appears in a locality, the Waxwing is often the salvation of the fruit crop, for he discovers them, and proves a most effectual agent in destroying them.

The Bohemian Waxwing is a European as well as American bird. He is much like our own Cherry Bird, but larger and differing slightly in color. He has the same silky plumage, however, and in Europe is often called the Silk-tail. He is a real Bohemian, wandering from place to place and being found one year in one country and the following year in some other country, hundreds of miles distant. He is usually to be found in birch and pine forests. As far north as Manitoba he often remains throughout the entire winter. He shows





From col. George F. Breninger.
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VERMILION FLYCATCHER.
 $\frac{3}{4}$ Life-size.

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no fear of man, and during the winter season appears in the streets in search of food.

His habits in nesting and in selecting his food show that he is a near cousin of the Cedar Waxwing.

With their quiet habits, it is not to be expected that Waxwings would be songsters, and their only note is a lisping call, something like a hissing or twittering sound.

The Cedar Waxwing has the most amiable disposition, and his friendly relations with his little neighbors are a model for society. Some other birds quarrel with all except their individual mates, and some indeed are given to domestic embroilments. The Sparrow, particularly, might learn a lesson from the gentle Waxwing.

FLYCATCHERS

TO THE family of Flycatchers belong several birds called by other names, like the Kingbird, the Phœbe and the Pewee. The Flycatchers have broad, flat bills and open their mouths very wide when seizing the insects which are their prey.

The Kingbird is the best known of the Flycatchers. He is found throughout the eastern and middle United States and in Canada, but is rare west of the Rocky Mountains. He is eight inches long and has a dark gray coat, almost black on the head; white underneath, with tinges of gray on the breast; a black tail with a broad, white tip. If you can take him in your hand and lift up the dark feathers on his crown, you will find orange or yellow feathers concealed there.

The Kingbird spends the winter in the warm regions of Central and South America, and returns to the United States in the spring. In May or June, he builds a nest in the orchard or in the woods, on a horizontal tree branch. The nest is made of moss, roots and coarse grass stalks, closely woven, and filled in with plant-down or wool. The lining is of horsehair or fine grass and feathers. The eggs, four or five in number, are buff white, with large spots of light and dark brown.

The Kingbird is not a songster. He rarely utters more than a sharp, shrill call, although this is sometimes repeated and continued into a sort of song. His food during the summer is mostly confined to insects, but when autumn brings the berries and fruits, he will vary his diet with them.

Among the insects, the Kingbird is a dangerous bird of prey. From his perch on the top branch of a tree, he darts after an insect as it

passes, snapping it up and returning to wait for another victim, or he circles over the fields, like a hawk on the lookout for larger game.

From his name, it might be supposed that he was a large and powerful bird; it was given him really because of the great courage he shows in a fight. He is very fond of his mate and young birds, and defends them bravely against their enemies. He does not always wait to be attacked, but offers battle to any suspicious character in the bird world who seems to be spying out his nest or thinking of a descent upon it. The crow and the jay he attacks bravely, darting at them now from above and now from beneath, and rarely fails to overcome them. His courageous assault often puts larger birds, even the eagle and the hawk, to flight. He has been called a tyrant, because of his fighting qualities and the belief that he attacks other birds without provocation, but those who have watched him carefully say that he quarrels only with his natural enemies who are also watching for a chance to rob his nest; and usually they are larger birds than himself.

The Kingbird has been called the Bee Martin, and honey-growers have accused him of eating the bees about their hives; but an examination of the stomachs of two hundred and eighteen Kingbirds proved that only fourteen of them had eaten bees, and the bees were mostly drones—not the workers who make honey. The truth is, he is a harmless bird, and is useful in destroying insects and driving away crows and hawks from the fields and farmyards, so we have reason to think well of the Kingbird.

Nearly all the Flycatchers are accustomed to make long migrations, in order to have a constant supply of insect food; but the Phœbe, who belongs to this family of birds, remains in the southern states throughout the winter.

The Phœbe gets his name from his characteristic call of "Phee-bee! Phee-bee!" sometimes rapidly uttered and at other times given in a sad, plaintive tone, "Phee, bee-e, phee-bee!" This call is varied at times to "Pe-wit!" so that this bird is also called Pewit or Pewee.

His plumage is olive brown on the upper parts and white or faint yellow underneath. Around his eyes is a white ring and his bill and feet are black. A very slight crest appears on his head.

The Phœbe usually nests near streams and ponds, and the nest is built under a bridge, in a cave or in a barn. He has been known to build in a well. The nest is made of roots and moss, cemented with mud and lined with grass and feathers. It is attached to the side of the stonework or beam. When the Phœbe has once found a favorable nesting-place, he dislikes to leave it, and even if the nest be torn

down, he will rebuild in the same place or near it. The nest is quite large, to accommodate the four or five young birds which come from the white, brown-speckled eggs.

The Wood Pewee builds his nest on the branch of a tree. It is neatly made of grass and roots, which are held together with caterpillars' silk and cobwebs. Fine moss is used to line it, and the outside is covered with lichens, so that it resembles the bark of the tree in color and texture. The eggs are white, with a wreath of brown and purple spots at the larger end. The Pewee is one of the most expert of the Flycatchers and in the early dawn and at dusk, when insects are less active than in the middle of the day, he may be seen darting about in pursuit of his prey, with keen activity. In appearance, the Wood Pewee somewhat resembles the Phœbe.

The Least Flycatcher, or Chebec, is smaller than the other Flycatchers, but resembles some of them in appearance and habits. He may build his nest in the garden or orchard, for he does not seem to fear man; but oftener he is found in deep woods.

The Vermilion Flycatcher is a little fellow, found only in the extreme southern states and in the warmer countries beyond. He differs from the other birds of the family in having a brilliant red crest, which is as large as that of the Kingbird, and a breast of the same color.

The Scissors-tailed Flycatcher, or Texan Bird of Paradise, is another Southern bird. His head and breast are grayish white, with a touch of crimson under the slight crest. His wings are dusky and his under parts reddish. His remarkable tail is twice as long as his body, and forks near the base, giving the tail the form of a wide-open pair of scissors.

While the food of the Flycatchers is chiefly insects, they also eat berries to some extent. They are not singing birds, but their calls are characteristic and interesting.

WEAVERS

THERE are several species of birds in the family of Weavers. They are found chiefly in Africa, to some extent in Asia and Australia, but never in Europe or America.

The Weavers resemble our oriole in their nest-building habits, although the former build nests which are much more wonderful than any made by the oriole.

The Philippine Weaver-bird weaves a stout rope which he fastens to the end of a tree branch. Starting with this, he builds a round

chamber, and below it a long tube through which he enters the nest. It is something like a stocking hung upside down, with the nest in the toe and the entrance through the leg. It usually hangs at the tip of a branch projecting over the water, so that snakes, monkeys and other enemies cannot get at it. Sometimes the nest is attached to the old one of the year before, and so on for several years, until there is a long string of nests dangling from the tree. The Weaver-birds derive their name from the skill displayed in weaving grasses, roots, hair and other things into a strong fiber.

The most remarkable of the family, however, is the Republican Weaver-bird, or Sociable Grosbeak, found in South Africa. These birds join in colonies of from two to three hundred. They select an acacia tree, whose smooth stem renders climbing difficult. At a safe distance above the ground, they build a straw roof, shaped like the top of an umbrella. It is carefully woven and will shed water as well as the thatch of a native hut, which it closely resembles, when viewed from a distance. The sloping sides of the roof are so slippery that any animal attempting to get at the eggs or young birds in the nests underneath would be unable to keep his foothold.

The nests are fastened to the under side of the roof, where they cluster as thickly as possible, with the openings at the bottom. Several hundred nests have been found attached to one of these roofs, and a roof is sometimes pulled to the ground with the combined weight of the little tenements. The nests are arranged in regular order like the cells of a honeycomb and each year new ones are attached to those of the previous season.

The Weaver-birds are about the size of sparrows. The females are dressed in plain brown and the males have a similar coat in autumn and winter. When spring comes, however, the males of some are dressed in crimson or golden-yellow plumage, with markings of black, but the plumage of the Sociable Grosbeak or Weaver-bird is exceptionally dull.

THE RUBY-THROATED HUMMING-BIRD

“Is it a gem, half bird?
Or is it a bird, half gem?”

IT is rather the incarnation of a rainbow—all color and animation. The Humming-bird leads the most aërial life. He is almost always on the wing, sipping nectar from the fairy cups of the blossoms. His radiant vivacity and intense enjoyment of existence make him seem like a little being escaped from Paradise. The male

seems to be a little bundle of activity. His audacity is in absurd proportion to his size. He does not hesitate to attack a bird twenty times as large as himself. Fastening upon the object of his anger, he allows himself to be carried along in the flight, while he pecks savagely until his impotent wrath is appeased. If he approaches a blossom and finds it wilted, the vindictive little creature tears the petals to shreds.

The Humming-birds are exclusively American, and are found in both Americas, from Canada to Patagonia. There are nearly five hundred species of birds belonging to the family of "Hummers," about fifteen of which, however, are properly birds of the United States. They range in size from the proportions of a large bumblebee to those of a sparrow. They are found in greatest variety in the tropics.

The Ruby-throated Humming-bird is the one with which we are familiar in this country. What a dainty, exquisite creature he is. His upper plumage is lustrous green; his wings and tail of bronze violet; his chin black; his throat of the richest ruby; his breast white. The female has a gray throat, her tail feathers barred with black and the outer ones white at the tips.

With his long, slender bill, he probes the heart of every flower to extract its honey. This honey and the tiny insects found on plants are his chief subsistence, although he occasionally varies his bill of fare with flies and spiders.

The Ruby-throat builds his nest on a horizontal branch or in the crotch of a tree. The most exquisite workmanship is displayed in the construction of this nest. The fairy fabrics that enter into it are selected with great care. The down of plants like the thistle and the mullein are bound together with spiders' webs covered outside with gray lichens, which are glued to the nest so artfully that it seems to be an excrescence of the branch to which it is attached.

The nest completed, two pearly white eggs which are about half an inch in length, appear. In ten days the little Humming-birds peep from the shell. They are not much larger than sprawling beetles. The parent birds feed them by thrusting their long bills down the throats of the little ones and pumping honey from their crops into those of the little new arrivals.

Have you ever seen a Humming-bird at rest? Probably not, for their nests are so small and so seldom seen, and they are quiet so little of the time when away from the nest, that usually, when we notice them, they are darting about from flower to flower, poising in the air before one, sipping its honey, and then moving on to the next, without pausing for a rest. It is hard to count the wing strokes of a slow-flying bird, but think of the wonderful rapidity of the Humming-bird's wing strokes, which we cannot even see. All

that we do see is a confused something, like a mist of blue, on either side of the tiny creature, where we know the wings are beating up and down with lightning-like speed. It is the noise made by these rapidly-moving wings that gives the bird his name, for it is like the hum or drone of a bee.

Humming-birds soon die in captivity. They are so restless, and constant activity is so natural to them, that the restraint of a cage causes them to droop and mope until they pine away. But they are not timid creatures, and if a saucer of honey or sweetened water be placed on a window-sill, they will come regularly to it to feed. Apparently without thought of being captured, they will fly in at the open window of a dwelling or a greenhouse where they see flowers in bloom.

In the tropics, many species of the Humming-bird are found, nearly all of which have brilliant plumage. Some have bills slightly curved upward, and the Sickle-bill Humming-bird has a bill curved downward so as to form nearly half a circle, which enables him to reach the honey of flowers that have a similarly curved corolla.

THE PEACOCK

THERE are two distinct species of the Peafowl, both of which are natives of Asia, of which the Common or Crested Peafowl is best known. They were first found in the islands of the East Indies, and their beautiful plumage attracted so much admiration, that they were introduced into all parts of the world. In the Bible we read that they were taken to Palestine by the fleets of King Solomon. They were common among the Greeks and Romans, and to-day are well known throughout America.

Next to the turkey, the Peafowl is the largest of the birds that are classed as poultry. The gorgeous plumage is confined to the male bird or Peacock, while the female, or Peahen, is more plainly dressed.

The Peacock is the most ornamental of all the domestic birds. With his sweeping train and graceful, mincing steps, he reminds one of a stately dame treading the minuet. The tail, outspread like a gorgeous fan, or trailing over the lawn as if to erase the imprints of his dainty steps, is his principal ornament. Iridescent reflections gleam over his plumage like the hues flashing over the angles of a prism.

The Peacock's head and neck are covered with bright green feathers, while on his breast is a beautiful shade known as pea-





PEACOCK.
1/2 Life-size.

FROM COL. F. NUSSBAUMER & SON.

CHICAGO COLORTYPE CO.

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cock blue. The head is surmounted by a crest of twenty-four stiff, upright feathers, with slender shafts and broad tips. The real tail is very short and is made up of eightecn stiff, brown feathers. Over the tail extends the magnificent train of feathers, sometimes five feet in length. Ordinarily, these long feathers extend horizontally behind the bird, but when he is pleased or wishes to display his beauty, he raises them to a vertical position, and uses his short tail feathers to support them.

Beautiful shades of brown, golden purple and green mingle and glimmer in the Peacock's feathers. When raised, the train forms a disk which displays the colors of the plumage to great advantage. The feathers of the train overlap each other, those nearest the head being shortest, and when the train is raised, the "eye" near the end of each feather is plainly shown. The longest feathers lack these spots, but their tips are barbed or forked to form a border around the disk.

In the mythology of ancient Greece, Hera, the wife of Zeus, becoming jealous of a maiden named Io, changed her into a heifer, about which buzzed a tormenting gadfly. The many-eyed Argus, who was set to watch the heifer, was slain by Hermes, whereupon Hera fixed his eyes in the tail of the Peacock.

The Peacock is conscious of his charms, and tries to excite admiration by displaying his gorgeous train. He struts about with stately mien, apparently well pleased with the imposing effect of this parade.

According to the usual plan in bird life, the Peahen is smaller than her mate, and wears no train, while her plumage is grayish brown, except for the green feathers on the neck.

This bird is common in India, and in the jungle is often found in the neighborhood of a tiger. The hunter who encounters a wild peacock should be on the lookout for the dangerous beast of prey.

The Peacock makes a nest on the ground, which is but a hollow lined with leaves, like that of the turkey. The female lays from twelve to twenty eggs, about as large as those of the goose, and raises only one brood in the year.

Peacocks are easily domesticated and become very tame, but they do not like confinement, and need a wide range. Rejecting the shelter of a house, they perch on trees during the night. The Peahen is not a careful mother, and often neglects her eggs, so that it may be necessary to coax a hen turkey to sit on them till the Peachicks are hatched.

Grain, seeds and insects are the favorite food of the Peafowl. He does not object to the society of the turkey, but is less kindly

disposed toward his other companions of the poultry yard and sometimes kills young chickens.

The Peacock has stout legs, which enable him to run swiftly. He can fly, too, but when out in the rain his great train of feathers becomes so heavy with water, that he cannot easily rise from the ground, and must wait for the feathers to dry before he can take wing.

Beautiful though he is, the Peacock has a harsh, loud cry, which grates unpleasantly on the ear, and when a number of Peafowls are screaming in chorus, the discordant sound is deafening.

The flesh of the Peafowl is sometimes eaten, though not very appetizing, for it is likely to be dry and tough. The ancient Romans, however, seldom gave a grand feast without having several dishes made of Peacocks' tongues and brains, which were considered a great dainty. Sometimes a bird was cooked whole and the skin, which had been carefully removed, was placed about it when it appeared on the table, making a gorgeous ornament before it was carved.

The Peacock is easily raised, and, where he has ample ground over which to roam, thrives well and is an attractive ornament to the lawn or garden.

THE LYRE BIRD

THE Lyre Bird of Australia is chiefly remarkable for his beautiful tail. His delicate sprays of branching feathers would suggest a possible relation with the bird of paradise, though he lacks the beautiful colors of that bird; neither does he resemble the crow family, for he is a song-bird, and by some naturalists is classed among the wrens.

The Lyre Bird is about as large as a pheasant; that is to say, his body is fifteen to eighteen inches long, while his ornamental tail is often twenty-five inches in length. His coat is a dusky brown, with a reddish tinge on the throat, chin and some of the tail feathers. A slight crest surmounts the head, which is bare of feathers about the eyes. His remarkable tail gives him his name. The two outer feathers have a narrow web on the outside, and a broad one on the inside. They curve first out, then in, then out again, like the sides of the ancient musical instrument called a lyre. The two middle feathers are very slender and curving. The other twelve feathers have long, loose barbs, but no web, so that they make a sort of background for the other feathers, like the web of a spider. This elaborate tail does not reach its full growth until the bird is three or four years old.

The Lyre Bird spends most of his time on the ground where, like the hen and the turkey, he scratches the earth, to turn up slugs and



FROM COL. F. KAEMPFER.

LYRE BIRD.
1-5 Life-size.

PLATE I. BY J. M. H. G. 1841.



RED BIRD OF PARADISE.
+ v Life-size.

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insects. These constitute the greater part of his food. He runs swiftly in the brush, but is rarely seen on the wing, for, as a rule, he flies only to escape some swift pursuer.

His nest, which is placed on the ground near the foot of a tree or against the side of a rock, resembles a little dome-shaped hut. It is made of twigs, leaves and moss, and is covered at the top, the entrance being at the side. The female lays only one egg, which is as large as a small hen's egg. In color it is dusky purple, spotted with still darker purplish brown.

The Lyre Bird has a peculiar trait of building small round hillocks, which he mounts at intervals during the day. There he spreads his tail and droops his wings, while he stretches and pecks at the ground, uttering various calls. He sings mostly in the morning and again in the evening, and remains quiet in the middle of the day. His song is pleasing, and it is said that the Lyre Bird can imitate the notes of other birds with the degree of perfection that marks our mocking-bird. He is the largest song-bird in existence.

There are only two or three species of the Lyre Bird, and none of them has ever been found outside of Australia. Even there they are rarely seen, for their natural shyness usually leads them to keep well hidden in the brush. They do not live together in flocks, but in pairs, and for that reason it is seldom that more than two are near at one time. They shun settled country, and are gradually disappearing before the march of civilization.

BIRDS OF PARADISE

THE wonderful Birds of Paradise are among the most beautiful of the brilliant-hued birds. In beauty of coloring, grace of form and delicacy of texture, their plumage has no equal in the bird kingdom. These birds are native only in the Malay Archipelago, and most of the best-known species come from the island of New Guinea. They are peculiarly adapted to the torrid zone, and do not long survive a change of climate.

When we look at their beautiful family, it is hard to realize that the birds are nearly related to the crow family; yet such is the truth, for in the shape of their bills and feet, in their habits, and even in their voices, they strongly resemble the crow. Their "caw," however, is more musical than that of the black-coated bird.

These birds are active and intelligent. They pass their time in the trees, descending to the ground only when it is necessary to secure food. Their diet consists of grains, figs, fruits, grasshoppers and

other insects, and they are hearty eaters. They preen their beautiful plumage with the utmost care, and guard their long delicate sprays of feathers, to keep them from stain or soil, and perch high to avoid breaking them by contact with the branches.

Their bearing is in harmony with their lovely plumage. Their manner combines the elegance and airy grace of the true Parisian. They are lively and evidently fond of society, as they live in flocks. They often parade on the high boughs of a tree, spreading out their plumage, while their Quaker-like wives gaze in admiration at the gorgeous plumage of their lords and masters, for the Birds of Paradise are no exception to the decree of fashion among birds that the male shall wear the gay attire. The females are ordinary-looking birds, usually of a dusky-brown color, and have no plumes.

One would think that his plumage had suggested the name given to this bird, though in truth it is derived from a superstition. At one time people were always ready to ascribe anything unusual to a supernatural cause. When the first European traders went to the Malay Islands, the natives sold them the beautiful skins of these birds, after removing the wings and feet, which they buried, in order to appease some offended deity. As the birds seemed to have no means of flying or perching, the Europeans at once drew their own conclusions, spreading marvelous tales, which were readily accepted by the credulous folk of that time.

It was believed that these birds passed their lives floating in the air, and never descended to the earth, until death robbed the beautiful bodies of their floating essence. Their abode was thought to be in the sun and in the highest heavens, and it was reported that their food was dew from heaven and the nectar of flowers. The natives told the traders that the birds hung from trees at night by means of their delicate tail feathers. People believed all these fabulous reports, and as the birds seemed to be connected with heaven, they were called "Birds of Paradise."

The natives kill these beautiful birds by shooting them with blunt-headed arrows, so that no blood may be spilled on their delicate feathers, and afterward dry the skins with the smoke of sulphur. This dulls the brilliant colors of the feathers, so that those who have never seen the living Bird of Paradise can hardly realize how beautiful his plumage is.

The Great Bird of Paradise is the largest of this family. His length is usually about eighteen inches. The coat is chiefly a rich brown, deepening to purplish brown on the breast. The top of the head and the neck are covered with short, thickly set feathers of a pale yellow color. So soft are they and so closely set, that the head seems to

be covered with straw-colored velvet. The eyes are bright yellow, and underneath them and over the throat the feathers are a rich green. From under the wings grow a large number of feathers, two feet or more in length, which are loosely webbed and vary in color from orange to white. The two middle tail feathers are almost entirely unwebbed and extend in graceful curves over the other plumes. The bird can raise these long plumes so as to cover his body when he desires.

The Red Bird of Paradise is much like the bird just described, but the long plumes, which in the Great Bird of Paradise are orange yellow, in this bird are rich crimson.

The King Bird of Paradise is one of the smallest of the family, but, nevertheless, one of the most beautiful. He is about six inches in length. His coat is a beautiful crimson, with a bar of green on the breast and white underneath. From each side of his body, near the wing, grows a tuft of feathers of slate color, tipped with rich green, and he can spread these feathers out like a fan. The two middle tail feathers extend beyond the rest of the tail like two slender, gracefully curved wires, and at the end of each, on the inside, is a web of green feathers, which curves on itself so as to form a ring.

The Superb Bird of Paradise has a head and neck of greenish gold, with a black crest, and general color above, velvety black.

The feathers of the head, neck and breast overlap each other like fish scales, and give the plumage a striking appearance. The tail and wings are black, the throat purple and the under parts green. Over the back rise beautiful black plumes, thickly set, which spread out like a second pair of wings. This Bird of Paradise is notable for not having tail plumes of great length, like most of the other species.

The Gold-breasted or Six-shafted Bird of Paradise has a black, green, golden and violet plumage, and from either side of his head three long feathers, without web, except at the end, extend over his back.

The Twelve-wired Bird of Paradise has a dark coat and pale yellow plumes, against which appear twelve long curving feathers that have no webs. These long, curving, wire-like feathers extend beyond the plumes and intermingle with each other.

It is impossible to describe the beautiful plumage of all these birds, and no one who has not seen them can realize how wonderfully nature has adorned these beauties of the feathered tribe.

PARROTS

PEOPLE who are fond of Parrots usually think they are the finest birds in the world; and people who are not fond of them think they are the greatest nuisance. A Parrot often serves to make amusement by repeating words and phrases that have been taught him, but is noisy and usually ill-tempered, and screams so loudly and harshly that he is not adapted to be a welcome pet in a household where there are nervous people.

But Parrots have interested men for many centuries. In the days of the ancient Roman Empire, these birds were kept by the nobility in costly cages made of ivory, with silver and gold wires. They were also served as a delicacy at the table.

The Parrot family includes about four hundred and thirty different species, nearly all of which are found in the tropical regions. A few species, however, exist in Australia and New Zealand, and we have in our own country the Carolina Parrot, which is found in the southern states. The little Love-birds, which belong to this family, are no larger than sparrows, and Parrots vary from that size up to the great Macaw, which reaches a length of three feet and is strong enough to bite one's finger off almost as easily as if it were a straw.

All Parrots have certain family characteristics. The beak is short and stout, and the upper half curves down over the lower, ending in a hook. The two parts of the bill swing on hinges, and make it possible for the bird to bite very hard with them, so that he can easily crack a thick-shelled nut. His tongue is thick and long, and black in color. The Parrot has four toes, two of which point forward and two backward. This gives him a firm hold on his perch. He sometimes uses one foot to carry his food to his mouth, and uses his beak, as well as his feet, in climbing. His feet are covered with scales and his wings are short. His voice is usually very harsh and grating.

It is his voice, however, that makes the Parrot an amusing pet. All the birds of this family have the faculty of imitating the human voice to a greater or less degree, and if taught to "talk" when young, will pick up many phrases, which they repeat whenever the fancy seizes them. A great many stories are told about funny happenings due to the Parrot's ability to talk. Some of these stories are true, of course, but a great many of them, which represent that the Parrot's speech could not be distinguished from that of a person, are not true. However distinctly a Parrot may repeat words and phrases, his voice could scarcely be mistaken for that of a person, except, perhaps, by a dog or a cat.

Parrots spend most of their time in trees, screaming and making a great confusion. They make their nests in hollows in trees or stumps, and their eggs are usually white.

Most of the Parrots have very brilliant plumage, in which blue, green, red and yellow are mingled. The best talker of the Parrot-world, however, is very plainly dressed. This is the African Gray Parrot. He has gray plumage, his only other color being the red of his short tail. He is an intelligent bird and can whistle a tune very cleverly. In their home in the forests of Africa, these birds live in great flocks, feeding on fruits and grains; and they often do great damage to the crops of the farmers.

In New Zealand and Australia, we find the "Owl Parrots," so called because they have disks about their eyes, fly abroad at night, and in other ways resemble the owls. The New Zealand Owl Parrot or Kakapo is an intelligent and good-tempered bird. He makes his nest in a hole in the ground or under a fallen tree. He cannot fly well. Roots, leaves and tender twigs are his usual diet. His coat is green, marked with yellow and black.

The Cockatoos are interesting members of the Parrot family. They are easily recognized by their crests, and from the fact that white, black or brown is the general color of their plumage, while other Parrots are more gaudily dressed. There are thirty-two species of birds included in the family of Cockatoos. Of the fifteen species which are true Cockatoos, all but two have white plumage. The Black Cockatoo is the largest of all the Parrots, if we do not consider the length of the tail. If that is taken into account, the Macaw is larger.

The Bat Parrots are odd members of this family of birds. They do not talk and are not strong on the wing, but jump about in the branches of the trees. When they sleep, and sometimes when they eat, they hang head downward, with their toes firmly clasping the perch. These little birds are easily tamed and are affectionate in disposition. They are found in China and the Malay Archipelago.

The Lories are birds of very brilliant colors and delight in uttering deafening screams. The birds which belong to this group are especially fond of the honey of flowers, but they also eat insects and soft fruits. One of the most beautiful of these birds is the Red Lory, which has plumage of brilliant scarlet and blue. This bird is found in the Moluccas. In Australia we find the Blue Lory, whose plumage is green, red, yellow and blue. He is a noisy and quarrelsome bird.

The Macaws are the largest of the Parrot family. The Hyacinth Macaw, whose home is in Brazil, is three feet in length. His general color is blue, with yellow about the eyes and chin. The great

Scarlet Macaw has red plumage, with blue and yellow on his wings and tail. These birds are noisy and ill-tempered. They do not talk well and are not agreeable pets. They nest in hollow trees and the female lays two white eggs. She hatches two broods each season.

The Double Yellow-headed Parrot, which comes from Mexico, is easily tamed and is a good singer. His plumage is dark green, with red and blue edges on the wing and tail feathers. The yellow spot on his head extends as he grows older; and when he is four or five years old, his head and neck are entirely covered with a yellow hood.

Paroquet or Parrakeet is the name given to birds which are really small Parrots with long tails. They are similar to Parrots in their plumage and habits, although but few species talk. Mexican Paroquets are often seen in the cages of the bird-sellers. They are fluffy, pretty little creatures, but do not talk. Paroquets should be kept in pairs, for they are very fond of each other's society, and if one of a pair dies, the other will not long survive.

The Carolina Parrot is the only bird of the family that is found wild in the United States. Years ago this bird was common throughout the southern states, but is now found only in a few localities in Texas, Florida and portions of adjoining states. His head and neck are yellow, with a patch of orange on the side of the head. The rest of his plumage is green, with yellow and orange tips to the wing-feathers. In a general way, he resembles the Mexican Double Yellow-headed Parrot, but has a longer tail.

These birds are affectionate in disposition and if one is sick or wounded, the other Parrots in the flock defend and care for him. They live in flocks and keep up a great chattering; though they are not "talkers" and cannot imitate human speech. Fruits, nuts and seeds are their chief items of food. It seems a pity that the only species of Parrot we have in this country should become extinct, but the craze for bright feathers in women's hats has made these birds valuable to the feather hunters and they have been killed off until but few remain. In their native state, some Parrots are believed to live to a great age, sometimes seventy or eighty years.

THE TOUCANS

THE Toucans are among the most remarkable birds of the New World. They are found only in the tropical regions of the Western Hemisphere, chiefly in Brazil.

Their most remarkable feature is the great bill, which in some species is as wide as the head at the base and is half as long as



From col. Chi. Acad. Sciences.

DOUBLE YELLOW-HEADED PARROT.
1/3 Life-size.

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YELLOW THROATED TOUCAN.
1/2 Life size

the body. This great bill looks so unwieldy that you wonder how the bird can sustain such a weight; but as a matter of fact, the bill is not heavy at all. On the contrary it is very light, for it is filled with little cells, or air holes, like a piece of honeycomb. It is strong, however, and with it the Toucan can kill a small bird with one squeeze. The bill is curved toward the tip and has saw-tooth edges. While the bird lives, the bill usually has brilliant coloring, yellow, green, purple or red, but after he is killed, the bill loses these colors and changes to dark hues. The Toucan's tongue is no less remarkable. It is very long and narrow, and on each side has a series of barbs which seem to be for the purpose of increasing the bird's power of tasting.

The Toucans eat almost everything. Fruits, fish, eggs, insects and reptiles vanish quickly down the wide throat, and small birds aid in satisfying their remarkable appetite. In eating, they take their food in their bills, taste it with their tongues, then throw back their heads with a jerk and dispose of the morsel at one swallow. Like the owls and parrots, the Toucans build their nests in holes in hollow trees, and the female lays two round white eggs. Usually Toucans are found living together in small flocks. They spend most of their time in trees, and, when perching, have a habit of throwing the tail upward and forward over the back, so that the tip points toward the bird's head.

There are over fifty species of Toucans and the colors of the plumage differ in different species, although they are brilliant in all. These birds also vary somewhat in size, the smallest being no larger than a robin, while others are two feet in length. The Yellow-throated Toucan has a yellow throat, with some red on the breast and the under parts, and the remainder of the plumage black and yellow underneath, with a band of rich crimson across the breast.

Toucans may easily be tamed and seem entirely satisfied to live in captivity, if they are given enough to eat. They have a trick of snapping their bills together in such a way as to produce a clattering noise and at times utter a harsh cry, something like that of a parrot, but, on the whole, they are more interesting than parrots, except that they do not "talk."

Their brilliant feathers are sought by hunters, and the flesh is edible, although rather tough. Near cultivated plantations, they often do considerable damage to fruit and are shot as a nuisance. When they go abroad in search of food, they usually post one of their number as a sentinel, to keep a lookout for enemies, and it is from the sentinel's warning cry of "Tu-can-o" that the bird gets his name.

THE TROGONS

THE Trogons are among the most beautiful birds of the tropics. They are found to some extent in Africa and the East Indies, but chiefly in South and Central America, where there are at least forty different species.

This bird has two toes turned backward and two forward, like the parrot, but he is unlike other birds in having the inner instead of the outer pair of toes turned backward. His bill is short and strong, and in most species the edges are toothed like a saw; a few species have bills with smooth edges.

The American Trogons live in thick forests and make nests in hollow trees. The female lays from two to four eggs and raises several broods in the course of a year. Fruit enters largely into the food of the American Trogon, but the African birds of this family are insect-eaters, and catch their food while on the wing.

Think of a bird only ten or twelve inches long, with a tail nearly four feet in length! That is the case with the Resplendent or Peacock Trogon, which is found in Mexico and Central America. His plumage is a beautiful bronze green above and on his throat, and his breast is scarlet. The feathers on his head form a bristling crest from the beak to the back of the neck, and altogether he is a beautiful and remarkable bird. The females are plainer birds and do not have the long, floating train. In Central America, this bird is called the Quezal, or Quetzal, from an old Aztec word which means "feathers." Guatemala has taken the Quetzal as its national emblem, and you will find pictures of this bird on the postage stamps of that country.

When the Quetzal flies rapidly through the air, with his long train streaming behind him, it is hard to realize that he is a bird. He whistles softly "Whee-oo! Whee-oo!" at times, and gradually raises his note until it is a loud cry. At other times, his cries are harsh and unmusical, like the parrot's. Like other Trogons, the Quetzal makes a nest in a hollow tree. The eggs are bluish green in color.

COCK-OF-THE-ROCK

ONLY in the northeastern part of South America do we find the singular bird known as Cock-of-the-Rock. He does not live near the coast, but only in dense woods in the interior. Here, in some rocky gorge, he makes a nest in a secluded corner or crevice. The bottom of the nest is made of mud and clay; then some twigs are added and a lining of moss.



RESPLENDENT TROGON.
7/8 Life-size.



COCK-OF-THE-ROCK.
6/7 Life-size.

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The female Cock-of-the-Rock is plainly dressed in dull olive-brown plumage; but the male bird has a magnificent coat of orange red. The feathers on his head are very fine and long and stand erect, enveloping his entire head in a sort of feathery helmet, in which his beak can hardly be seen.

The Cock-of-the-Rock is very shy, and is usually solitary in his habits. During the day he hides in dark places in the woods and comes out to look for food only before sunrise or after sunset.

THE AUKS

SOME of the most remarkable species of the bird family are never seen by most of us—unless it be that we find their stuffed skins in the show case of a museum. To find them in their natural state, we should have to go to desolate regions along the shores of the sea, where they dwell among the rocks and are visited only at long intervals by hunters and sailors.

One of these birds is the Razor-billed Auk. His home is in the bleak regions of the arctic circle, and even in winter he is rarely seen south of the middle states.

He is about eighteen inches in length, with black plumage above and white below. The throat feathers are of a rich brown color. The Auk's bill is flattened vertically and has a slight horny hook at the end. These birds nest on a high cliff near the ocean and return to the same spot year after year. They dwell in communities, and at one of their favorite nesting grounds many thousands may be seen at a time.

The female lays only one egg as a rule, but if the first is taken, lays a second. The Auk's egg is about 3 x 2 inches, dull white, buff, or reddish brown in color, and spotted with gray and brown. This egg, which is quite pointed and does not roll easily, is laid on the bare rock, or perhaps on a little heap of pebbles, and as the Auks nest near each other, thousands of eggs may be found on the rocks in the nesting season, so close together that the surface of the cliff is whitened with them.

The fishermen who live on the coast of Labrador collect the eggs, which are considered a delicacy, and at the same time destroy the birds in order to get the fine white down from their breasts. It is dangerous work, this egg-gathering, for the hunter must clamber about on narrow ledges of cliffs, where a single misstep on the slippery rock may throw him into the sea or upon jagged rocks hundreds of feet below. Sometimes he is lowered to the face of the

cliff by companions above, who support him by a rope passed around his body under the arms. When the egg-hunters appear among them, the Auks take flight in such numbers as to darken the sky. If one is wounded and caught, however, he will defend himself with the terrible blows of his razor-like bill.

The Auk feeds upon fish, and, to get them, swims and dives with the greatest ease. His large feet are webbed and he swims with a powerful stroké. He can also fly rapidly for some distance. When running or walking, he looks very awkward.

The Great Auk was one of the largest of the sea-birds. We say "was," because the species is now extinct, and it is fifty years since one of these great birds has been seen. He was twice as large as the Razor-billed Auk. His plumage was much the same as the latter bird's, but his wings were very short, so that in time he was unable to fly at all, and could not reach a safe place on the cliffs during the nesting season. The eggs that escaped their numerous enemies became fewer and fewer, until there were no more Auks hatched and the old birds died or were killed by hunters.

The Great Auk loved the bleak shores in the southern parts of the north polar seas, and lived on large fish. He could swim and dive well, but could walk only with difficulty and utterly failed in flying. Probably there was a time, thousands of years ago, when the Great Auk's wings were well developed and he could fly as well as the Razor-bill. The Eskimos once hunted this bird, not only for the down and eggs, but for the skin, which was strong and served them in making clothing. Few men now living can say that they have ever seen the Great Auk in his native haunts of the North.

THE WANDERING ALBATROSS

THE Wandering Albatross is the rover of the seas. His strong pinions carry him great distances over the water, and he often perches to rest on a ship far out in mid-ocean. He is an object of reverence to the sailors, who believe that disaster will overtake anyone who wilfully injures one of these birds. In that weird poem, "The Ancient Mariner," the uncanny personage "of the long, gray beard, and glittering eye" believed that his shipwreck and suffering were a visitation of Divine wrath, incurred for shooting an Albatross.

The Albatross is as large as a goose, and is about eleven feet across the outstretched wings. His plumage is generally a yellowish white, with upper wing feathers of dusky brown, which change to white as the bird grows older.

He makes a nest in an open spot on the shore of an island in the sea. Rough weeds and grass are cemented with mud to form the nest, and a lining of feathers makes it comfortable for the young bird. The nest is built in the form of a cone, with a cup at the top, in which the egg is laid. Year after year the Albatross occupies the same dwelling, adding new material to it each season, so that in time it becomes a lofty structure six or eight feet in height. The female lays a single egg, which is white and has a coarse, rough surface.

The Albatross feeds almost wholly on fish. He is a glutton, and sometimes swallows a fish of four or five pounds weight—so large that when the greater part of the fish has disappeared down the captor's throat, the tail may be seen sticking from the greedy bird's mouth.

The Albatross may be caught on a hook baited with fish, but the natives of the remote islands where they breed knock them over with clubs, after the birds have been feeding and are so dormant that they make no effort to escape. The natives use the bones of the Albatross for making pipes and other small articles. The flesh is rank and unpalatable, but the egg, which is as large as that of the goose, is good for food.

Though after dinner the Albatross is not in a very brilliant frame of mind, when the effects of the enormous meal have passed away, he will defend himself bravely against his enemies. His long bill, which is hooked at the end, is a formidable weapon, and with it he can deal a severe blow. When enraged, he utters a harsh and deafening cry, as a warning to those disturbing his peace.

During the brooding season, the male takes good care of his mate, as she sits on the nest, and keeps her well supplied with food. The female is so tame, or so dull, that the egg on which she sits may be taken from her, without arousing any resistance on her part. Other birds hover about the breeding-places of the Albatross, intent upon stealing the egg, if the female leaves the nest; and the nest itself is appropriated by the penguin, as soon as the young Albatross has flown.

THE PELICANS

THE Pelicans are uncouth birds, yet their peculiar habits make them objects of study. They are the largest of the web-footed waterfowls, some of them being over five feet in length. Their plumage is generally white, with a tinge of yellow or orange. The remarkable bill, fifteen or twenty inches long, with a strong sac or

pouch of skin attached to the lower side, is one of their chief characteristics. This pouch is large enough to hold two or three quarts of water, and it was formerly believed that the Pelican carried water in his pouch to birds and animals in the desert.

Many other fabulous tales were circulated by travelers, before men began to study closely the habits of birds and beasts, and to correct the false impressions given by imaginative tourists. The pouch is simply a fish basket or dip-net, which the Pelican uses to scoop up fish from the swarming schools of fry. Or if he is catching larger fish, he stows them in his pouch one by one, until he has enough to carry home for his family.

Most Pelicans consider ten or twelve pounds of fish an ordinary meal. After such a hearty repast, they are not very energetic, but remain quiet for several hours, often dozing, while the process of digestion is going on.

The White Pelican of Europe builds a nest of grass, etc., loosely put together, at the top of a heap of sand or gravel, and for a nesting place he prefers the beach of an island, or some spot not easily reached by enemies. Usually ten or a dozen birds live together in a community. The eggs, which are two in number, are white, with a rough surface.

The American White Pelican is found in the Mississippi Valley, along the Gulf coast, sometimes on the Great Lakes, and occasionally, but not regularly, on the seacoast.

The American White Pelican thrives in captivity, and, if plentifully supplied with proper food, will live for many years, for he is naturally a long-lived bird, and some specimens have been known to reach the age of seventy-five years. At the National Zoölogical Park, near Washington, D. C., is a captive Pelican, which affords great amusement to visitors, especially the young folks. He has quite a large yard to himself and prances from one end of it to the other, flapping his wings and hopping with ludicrous steps, while he utters loud, hoarse cries, something like the "honk" of a goose, though much louder.

THE GULLS

THE Gulls follow the same calling on the sea that the buzzards have chosen on the land, so that neither trespasses upon the feeding-places of the other. Like the vultures, they win our gratitude by performing services that would be distasteful to many. Although there is nothing poetical suggested in their diet, the Gulls are very pretty birds, and graceful in their motions.

Gulls are found in all parts of the world where there are large bodies of water. Their staple food is fish, which they catch at the surface of the water, but, in addition, they eat all kinds of animal refuse, which they find floating on the waves or cast up on the shore. They follow outgoing steamers, sometimes for fifty or a hundred miles from shore, to pick up the scraps of food which are thrown overboard. On the beach, they feed on decaying animals and other refuse which has drifted in with the tide, and remove it before it becomes a nuisance. They seem to be constantly on the wing, flying low and keeping a sharp watch for anything eatable, for they have enormous appetites.

These birds have webbed feet and are perfectly at home in the water. Wet and cold have no terrors for them; even in the arctic regions they are found in abundance.

Some Gulls nest in a hollow in the sand, others in trees or on rocky cliffs. They are found not only on the seacoast, but on the shores of large lakes and rivers.

The Herring Gull is the commonest of these birds. His head, tail and under parts are white, and his wings and back are gray. He has a touch of black on his outer wing feathers, and on his yellow bill is a splash of red. His length is from twenty to twenty-five inches. In winter his head and neck are streaked with gray. When he makes a nest on the beach or on a rock, it is a loosely-built structure of grass or moss; sometimes he builds it on a low tree and then it is more strongly made, of sticks, seaweed and feathers.

The eggs, which are as large as a hen's egg, are buff, tinted with green and marked with brown and lilac. In winter the Herring Gull goes to the coasts of the southern states and to the shores of the inland lakes. He is a shy bird, but quarrelsome, and attacks smaller birds or bravely defends his own young. He is a noisy fellow, and screams harshly when disturbed or excited. As we see him flying steadily over the blue water, his white plumage glistening in the sun, he is a beautiful creature. It is interesting to see him descend swiftly to the water, seize a fish, and rise with it into the air. He flies on and on and seems never to grow weary.

The Ring-billed Gull is similar in plumage to the Herring Gull, but has a greenish-yellow bill that has a band of black near the end. He is also smaller. This Gull is common in the interior of the continent, where he seeks bodies of water like Great Salt Lake, but is not so plentiful on the fresh-water lakes. He feeds on fish and refuse, like other Gulls, but also eats grasshoppers and other insects.

The great Burgomaster Gull is the giant of his species. He is about thirty inches in length, with large webbed feet of a bright pink

color, which form a striking contrast to his white plumage. This Gull is an arctic bird and is rarely seen as far south as New England. He is the tyrant of the polar regions, as the pirate eagle is the monarch in countries farther south. He robs the other birds of their fish, and, when very hungry, devours the birds themselves. His loud, harsh cry is extremely disagreeable, and the smaller birds learn to regard the Burgomaster Gull as a veritable ogre.

Bonaparte's Gull is one of the most beautiful of the sea-birds. He is a small bird, being only twelve to fourteen inches long. He seems to think that entering the domestic sphere is equivalent to taking the black veil, and during the nesting season wears a gray hood, which covers his face and neck. In the winter, he discards this for a simple dusky spot on each side of the head. His nest, which is more pretentious than that of most of the Gulls, is made of twigs lined with feathers and moss, and is found in trees and bushes rather than in the sand.

Bonaparte's Gull winters in the South, and brings up his family there. He is rather more fastidious than other Gulls in his diet and does not eat carrion. Insects and fish comprise his bill of fare, and his flesh is good for food. This is not true of the Gulls that feed on refuse and decayed flesh, which imparts a rank, fishy flavor to the flesh.

The Black-headed Gull, or Laughing Gull, as it is often called, is found not only in America, but also on the warmer coasts of Europe. This bird is larger than Bonaparte's Gull. His plumage is deep gray above, with slaty-brown feathers on the head and neck, and the white feathers underneath are tinged with pink. He feeds on insects, worms and crabs, picks up refuse on the shore and catches fish, but spends less time on the ocean than some of the other species. He has a note that sounds like a broad "Ha, ha, haw!" and for this reason is nicknamed "Laughing Gull."

The Terns belong to the same family as the Gulls, for they are long-winged swimming birds, and as they make similar nests, eat similar food and have similar plumage, they are often mistaken for Gulls.

The Common Tern has gray plumage above, white underneath, and black feathers on the crown of his head and the nape of his neck. His tail is long and deeply forked, and distinguishes him at once from the Gulls. His body, too, is much more slender, and his bill is longer. He is a light and active bird, and from his graceful flight is often called the Sea Swallow.

The Common Tern scoops a hollow in the sand, and sometimes adds a little grass or seaweed, to serve for a nest. In this the eggs are laid and left part of the time for the sun to hatch, for the mother



FROM COL. CHI. ACAD. SCIENCES

AMERICAN HERRING GULL.
1/2 Life-size.

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bird sits on them only at night or in wet weather. When the young Terns appear, the parent birds take good care of them, bring them fish and insects for food, and finally teach them to provide for themselves.

The Common Tern is a sea-bird, but the Black Tern is found chiefly around the lakes and on the rivers of the interior. His tail is shorter than that of the Common Tern and his plumage is gray and black. In winter, however, he puts on a coat of white feathers. His nest is sometimes a hollow in the mud of a marsh, lined with weeds and grass; but at other times he builds it on a floating platform of growing water-plants, and makes a substantial nest of reeds well woven together. Those who have closely watched the Black Tern say that he seems to eat little or no fish, but feeds chiefly on insects which swarm about the water.

There are many other species of Gulls and Terns. They are the most numerous of the sea-birds, and on bright days are always to be seen near large bodies of water. They move north or south, according to the season, and always travel in flocks. They do not allow their domestic duties to interrupt their social pleasures, for instead of going into retirement to rear their young, they often nest on a rocky headland in such numbers that thousands of eggs are to be found in a very small area. It should be remembered that these are useful birds and do no harm. Some species have been cruelly persecuted by the hunters of feathers who supply the milliners, but as many species breed only in the far North, where they are not easily reached, the various species are not likely to be entirely destroyed.

THE LOON

THE Loon, or great Northern Diver, is one of the most expert of the diving birds, and is well known in all the cold and temperate countries of the North, in Europe as well as in America, wherever there are lakes with sparsely populated shores.

He is larger than a duck and has a beautiful coat. On the back it is black, with curving rows of white spots. The head and neck are also black, with beautiful shades of green and purple intermingling, and around his throat is a wide collar of white stripes. The Loon has a strong bill, not flattened like that of the duck, but tapering to a point. With this bill he can defend himself against enemies and spear the fish, which he catches below the surface of the water.

This bird's wild and dismal scream sounds like the laughter of an insane person, and doubtless you have heard the expression, "as crazy

as a Loon." As a diver, this bird is justly famous. He swims swiftly on the surface of the water, until his keen eye detects a fish in the depths of the lake. Then down he dives, as straight as an arrow, and, seizing his prey, returns with it to the surface. He dives to great depths in pursuit of his prey, and it is said that Loons have been caught seventy feet below the surface, on hooks baited for fish.

He dives so quickly that he is often able to dodge a gunshot when he sees the flash of the gun, and is cunning enough to swim under the water for a considerable distance, before reappearing on the surface, thus puzzling the hunters, who are watching to sight him as he rises. He may turn after diving, and swim under the boat in which the hunter sits, and, after some lapse of time, the eager sportsman turns to see that the Loon has been swimming away from him while his back was turned.

The Loon is at all times shy and watchful. He never allows man to approach him without instantly seeking escape by flying or diving. In the air, he is an easier mark for the gunner, and as he knows this well, he trusts to the water when he can reach it. When he has made his escape, he is often heard to utter his weird laugh, as much as to say, "You have been outwitted by a bird, after all."

An island in a lake, with wide reaches of water about it, is a favorite nesting-place for the Loon, or he may build on the margin of the mainland, where the marsh-grass and reeds grow rank and tall. These serve to hide the nest, which is placed on the ground and rudely made of grass and reeds. The eggs are as large as those of the goose, of a dusky olive color and marked with irregular patches of dark brown. As a rule, only two eggs are found in the nest.

The Loon is not a model father, for he shifts upon his mate all the responsibility of bringing up his children. As soon as the young are hatched, he deserts the nest to join the other males that are assembling in flocks, in bays and creeks near the ocean. But the mother bird remains to care for her young until they are able to fly and look out for themselves. Then the whole family flies off to the sea.

When the Loons feel the nip of frost in the air, they know the lakes and streams will soon be covered with ice; so they move southward by easy stages, in order to be near open water.

The Black-throated Loon is usually found only in the far North. In this country, he is seen about Hudson Bay, and in Europe he is abundant in Norway, Sweden and Siberia. The Eskimos and Norwegians use his skin for making garments. It answers admirably, as it is thick and tough and sheds water perfectly.

The Red-throated Loon is also a bird of the cold North, but in winter has been seen as far south as the middle states. His coat is

black, with fewer spots of white than that of the common Loon, and the head and neck are gray, with a patch of chestnut on the throat.

Besides fish, these birds eat frogs, insects, and the seeds of water plants. Their flesh is eaten by the people of the far north, but to the taste of many, it is too fishy to be pleasing, and is tougher than our duck and turkey.

THE COMMON PUFFIN

THE Puffin is one of the sea-birds that prefer the cold, bleak regions of the north to warmer climates. He is sometimes called the Sea Parrot, from the resemblance of his head and bill to those of the real parrot.

There are several species of these birds. One is the Tufted Puffin, which has a coat of black and dusky brown, with a tuft or crest of buff or yellow, and a large patch of white on the side of his head. His enormous bill, which ends in a sharp point, is vermilion red and yellowish green. This bird is found on the shores of the North Pacific Ocean. The Common Puffin is found on the shores of the North Atlantic. It has a dark collar and a white breast, but no crest.

Puffins do not make nests as do most other birds, but lay their eggs on the rocks, or, more commonly, where the soil permits, in burrows, which they dig in the earth to a depth of three or four feet. Where there is a rabbit-warren near the sea, the Puffin takes possession of a rabbit's burrow and with his strong, sharp bill puts the four-footed owner to flight.

The single egg laid by the Common Puffin is white, marked with brown and purple, and is shaped like a pear. When the young birds are hatched, the parent Puffins take good care of them, bringing them an ample supply of fish to eat, and defending them against the attacks of other birds or of hunters. They will not desert the little ones, but remain to fight any intruder, often inflicting serious bites on the hands of bird-hunters who try to take the little Puffins from their burrows.

The Puffin eats fish, crabs, shrimps, and some kinds of seaweed. He is a good swimmer, but his wings are not powerful and he flies laboriously. On the land, his gait is ungraceful, for he rests the weight of his body on the whole length of the leg and foot, and waddles along with an awkward shuffle.

The flesh of the Puffin, like that of other birds which eat little besides fish, is rank and oily; nevertheless, it is spiced and potted, and sold in the markets of Europe; some people like it very much.

Puffins are found in great numbers among the islands off the coast of England and Wales, and in America as far south as Nova Scotia.

THE CRANES

THE Whooping Crane, also called the Great White Crane, is one of the largest of American birds. He is found in the West, beyond the Mississippi River, and ranges northward from Texas. Sometimes one or two birds of this species are seen in Illinois or in the swamps of the southeast, but never in the northeastern states.

This bird is between four and five feet in length. His plumage is white, with black outer wing feathers. His head is nearly naked, and the bright orange-colored skin is relieved only by black feathers as fine as hair. From the inner part of the wing grow long plumes, which are very graceful and attractive. The Crane has a long, stout, pointed bill, of a greenish yellow color.

This Crane is usually found near marshes and swamps, for he is one of the long-legged birds intended by nature to find their food while wading. He does not depend so largely upon fish for his food as the herons do, but seeks for frogs, snakes, mud-worms, grasshoppers, fruit and grains, and often prowls about the fields looking for mice and moles.

His nest is built of rank grass, on a mound of dry earth near the margin of a swamp. The two or three eggs are bluish gray, marked with bright brown, and have a rough surface.

Except during the nesting season, Whooping Cranes live in communities, and when they migrate from one part of the country to another, they fly in great flocks. When migrating they give utterance almost continuously to their peculiar cry, which is so loud that it sounds like a whoop or yell and can be heard at a distance.

The Crane is a shy bird and avoids the vicinity of man, but, if attacked and wounded, is able to defend himself with his sharp, pointed bill. The Sand-hill Crane is sometimes mistaken for the Great Blue Heron; he is about the same size, four feet in length, and has long, slender legs. His plumage is a bluish gray, with touches of dull yellow; the wings are a grayish brown, and the long bill and legs are dark-colored. He has graceful plumes, like those of the Whooping Crane. This bird makes his nest on the marshy shore of a pond or river on the prairie. Sometimes the nest is nothing more than a hollow scooped in the earth, but occasionally the hollow is lined with tufts of dry grass. The eggs, two or three in number, are of a drab-brown color, with brown blotches, and have a rough surface. The food of the Sand-hill Crane is insects and frogs, fruit, grain and grass, but he is like the ostrich in snapping up stones, nails and other hard substances, to assist in digestion.

THE HERONS

THE Herons are wading birds, provided with unusually long legs, which enable them to wade into deep water to watch for the fish, which form the chief part of their food. They have not only long legs, but long necks and bills, which they thrust under water in order to seize their prey.

The Great Blue Heron, sometimes called the Blue Crane, breeds from Hudson Bay to South America, and is well known throughout the continent, though he is abundant in few places. His height is between four and five feet. His color is a slaty blue above, and black underneath, with brown leg-feathers. He has a black crest, from which wave two long, slender feathers, the crown of the head being white. From the breast hang long plumes of gray. His sharp, stout bill, longer than his head, is yellow, and his legs and feet are nearly black. This description gives but a faint idea of the stately appearance of this great bird, as he stands motionless on the edge of a swamp or in the water.

When he rises in the air, with a harsh "squawk," his legs dangling beneath him and his great wings extended, he is less graceful, yet his flight is easy and he soars high. The Heron is a splendid bird, and it is a pity that he should ever be shot, for he does no harm whatever to man. He is timid, in fact, and asks only to be let alone. Herons usually live in communities, and make their nests in lofty trees in a swamp or a deep wood. These places are called heronries, and in some places, where there are desolate swamps of great extent, the heronries are occupied by scores of the great birds.

In repose, the Heron looks very sober and majestic. But just before the mating season he relaxes somewhat, and the Herons all assemble in one spot, where the males indulge in a curious performance. Standing in a circle, they allow one of their number to show off inside the ring. He prances around and flaps his wings in a manner to attract the females, who give vent to their approval in hoarse murmurs, which have been compared to the croaking of a bullfrog. His rivals freely criticize his performance in low, rasping notes. When one bird has acquitted himself as best he may, he returns to the circle to give place to another performer, who does his part for the amusement of the company.

The nest is coarsely built of sticks and, with a lining of fresh twigs each season, is used year after year. The female lays three or four large eggs, of a greenish blue color.

When the Heron is hungry, he wades out into the water and stands motionless. When the fish come near, he bends his long neck and

seizes his prey in his powerful bill with a stroke as true as that of the fish-hawk. If the fish is a large one, the Heron beats it to death, and then swallows it, head first. On the land, the Heron catches moles, mice, and crawfish, and snaps up grasshoppers and other large insects. Herons have been known to eat the young of other birds. All birds and animals are more or less inclined to be inactive and stupid when they have eaten a large amount of food, and at such times they are more easily captured. The Heron, however, if in danger of capture when he has recently eaten, often disgorges the food he has swallowed, so that he may not be hampered in his flight by the weight of the undigested food. This bird often migrates to great distances.

The Snowy Heron, or little White Egret, is much smaller than the Great Blue Heron. He is only about two feet in height. His plumage is snowy white. He has a long crest, with fine plumes, like hairs, on the back of his neck, and plumes on the breast and back. Those on the back reach beyond his tail and curve backward at the tip. These delicate, airy plumes have made the Egret an object of prey to hunters.

They are in great demand for use in millinery, and in order to obtain them, the birds have been slaughtered by thousands, so that in some parts of the country the Snowy Heron is no longer seen. The most cruel feature of this slaughter is that these plumes appear only during the nesting season, and to get them, the birds must be taken when the young Herons are still in the nest and require the care of the parent birds. When the parent birds are killed, the young Herons die for want of food, and a few years hence these beautiful birds are not likely to be seen at all. The Snowy Heron dwells in swamps and builds a nest on a cedar or willow tree. Fish, frogs, crabs, and worms are his chief items of food, and he also eats the seeds of the pond lily and other water plants.

The Black-crowned Night Heron is sometimes called the Qua Bird, from its hollow note, which sounds like "Qua! Qua!" The top of his head and his back are greenish black; the wings and the sides of the neck are bluish gray; and the throat and sides of the bird are white. The under feathers are white, with a tinge of pale buff. He has no plumes like the Egret, but two very long, slender white feathers extend from the back of the head and fall gracefully over his back. His eye is red, his stout bill black, and his legs yellow. From this description, it is readily seen that he is a beautiful bird. This Heron ranges south from Nova Scotia, and lives in swamps and marshes, as other Herons do. He occupies the heronries year after year, and in his habits of feeding and nesting and in his fear of man, resembles the other birds of this family.



From col. Chi. Acad. Sciences.

GREAT BLUE HERON.

¹/₅ Life-size.

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The most common of these long-legged wading birds is the little Green Heron. His crown and crest are of a rich green color; the rest of his head and the neck are chestnut; the dark slaty gray of his coat is tinted with green, and the tail and wings are dark green. He is only eighteen or nineteen inches in height, but no less beautiful because of his size. His habits are similar to those of the larger Herons, though he is a more venturesome bird, and is sometimes seen near small ponds in gardens and large parks, where he seeks to allay his hunger with frogs and fish.

The American Bittern, or Stake Driver, belongs to the Heron family, and gets his nickname from the explosive, hollow, booming noise he makes. It sounds like the noise made by pounding on a post or stake, and may be heard a long way off. The Bittern's plumage is mostly spotted brown and black; he has no plumes. His nest is made of grass, rudely put together, and is always found on the ground, usually near a swamp or marsh. The flesh of the Bittern is said to be excellent for food.

THE AMERICAN RED FLAMINGO

ONE of the tallest of our wading birds is the Flamingo. This bird is a native of Florida and the Gulf coast, and southerly, and is nearly related to the Old World Flamingo.

The Flamingo is five feet in height and has very long, slender legs and a long neck. His plumage is bright scarlet, with black on the wing feathers. He has a thick, stout bill, almost as wide as his slender head. The bill is yellow at the base and black at the tip. These birds live in colonies, like the herons, but do not build nests in trees, as herons do. Instead, the Flamingo scoops a hole in the mud or builds a cone of mud, and in this nest the eggs are laid. The eggs are long and white, with a rough, chalky surface.

Fish, frogs, and water insects, are the favorite food of these birds. They wade into deep water and stamp on the mud at the bottom to stir up the fish. Then they plunge their long necks under water and with their sharp bills seize their prey. One of a troop of Flamingoes remains on the bank as a sentinel, to watch for enemies, and if he gives the alarm, the others immediately rise in the air and fly with him to a place of safety. When sitting on the nest, the bird curves his long neck backward and hides his head among the feathers on his back.

ROSEATE SPOONBILL

THE Red Spoonbill is one of our largest wading-birds, though not as tall as the Flamingo. His height is usually about two and a half feet. He has a long, wide, flat bill, which rounds out at the end, like the bowl of a spoon. His head is bare of feathers. The plumage on his neck and back is white, underneath it is a lovely rose color, and the plumes of his wings and tail are deep carmine. On his neck is a patch of yellow. It is not hard to think of him as a bird of beautiful colors.

Like many other waders, the Spoonbills live in colonies in swamps where they build rude nests of sticks in the low trees. The nest is a simple collection of sticks, put together so as to make a platform, not far from the ground. The eggs are three in number, dull white, blotched with brown.

When the Spoonbill is hungry he thrusts his long bill, partly open, into the soft mud and moves it to and fro, capturing small fishes, crabs, and water-insects.

The Red Spoonbill is found in the tropical part of America, and was formerly a common bird in Florida, but hunters have destroyed so many of these birds, in order to get their plumes for the milliners, that they are becoming rare. They are still found, though rarely, in small flocks in the Gulf states and in the Valley of the Mississippi River. A nearly-related Spoonbill is also found in Europe. This species lives in cooler regions than its American cousin, and its plumage is white.

THE STORKS

IN HOLLAND and Germany the Common White Stork is one of the most familiar features of the landscape. He is a half-domesticated bird, building his nest on the house-top or on the roof of a church. The quaint, red-tiled cottages, with chimneys surmounted by Storks, each on one leg, make one feel that the centuries have lost track of the sleepy villages, whose picturesque repose has never been disturbed by the progressive spirit of the time.

The little Dutch boys and girls, as well as those of Germany, are taught a pretty fiction regarding this bird. They believe that the Stork has it in his power to bring them little brothers and sisters from some fabled pond, where tiny human children lie dreaming until their patron bird provides them with a home. Whenever a Stork lights on a chimney, the little ones of that household are on tiptoe of expectancy, for to them it is a sure sign that a child is to be brought to that family.

The Stork is a large wading-bird of the heron order. He is common to Europe, but does not visit the United States. In South America, however, a species of Stork is found. In Holland, Storks are very common, and because they act as scavengers, just as the turkey buzzards do in this country, they are protected by law, and no Dutch boy would venture to hurt one of them.

The Stork is a migratory bird, and spends the winter in Africa, returning to the north of Europe in the spring. He is found in marshy regions where there is sufficient food, such as fish, reptiles, insects, birds, and mice. He builds a large nest of sticks, in which the female lays three or four buff-white eggs. Both the parent Storks take good care of their young and the young birds are said to return the affection bestowed upon them. Because of their kind treatment of each other, Storks were regarded by the people of ancient times as symbols of piety, filial love, and gratitude.

The species of Stork best known, because most common, has white plumage, with some black on the wings. His bill and feet are red. He has very long legs and stands about three feet high.

The Stork has no voice and the only noise he can make, to express pleasure or excitement, is made by snapping his jaws together. When a flock of Storks has assembled for the purpose of migrating to the South, the general clashing of bills is a noisy proceeding.

When the Stork sleeps, he rests on one leg, drawing the other up under him, folds his neck and rests his head on his shoulder. He walks slowly and gracefully, and flies very easily, high in air, with his legs extended behind him.

The Black Stork is found in nearly the same countries as his white relative, but is not so fond of man, building his nest in lofty trees, where he is likely to be safe from interference.

In India and Africa, there is a species of Stork called the Adjutant, because he is often seen about camps and barracks where he goes to look for offal. This great bird is about six feet in height. From his neck hangs a remarkable pouch, which fills with air during flight and helps to sustain his weight while on the wing. Marabou is another name given to this Stork, perhaps you have seen the "marabou feathers" used on ladies' hats. They are the plumes of the Adjutant Bird.

Storks are useful creatures, for they remove decaying flesh-matter which might breed pestilence, besides eating snakes and troublesome insects. They are harmless and become very tame when brought into close association with man. In some of the European cities they may be seen stalking solemnly about the streets in search of refuse, confident that no one will do them harm. The flesh of the Stork is rank and not fit for food.

THE SECRETARY-BIRD

THE Secretary-bird is found only in Africa, and even there he is not a common bird in the settled parts of the country. He stands about four feet high. He has long legs, like the wading-birds, but they are feathered down to the knee, as in the falcons, while those of the wading-birds are not. His bill is short and curved and has a hook at the end. He is, in fact, a bird of prey. His plumage is bluish gray, with white on the chest and throat and black on the wings and tail.

On the back of his head is a crest of black or gray plumes, which stand out distinct from each other and readily suggest the appearance of a bunch of quill-pens stuck behind a clerk's ear. It was this resemblance that gave the bird the name "Secretary." He is also called the "Snake-eater," from the fact that he attacks and devours snakes. He does not pounce on a snake from the air, but walks toward it, extending one wing to receive the snake's attack, and holds himself ready for a blow with his foot. When he knocks the snake down, he tramples it and, as soon as it is lifeless, swallows it.

So quick and cautious is this bird in his movements, that he can defeat any snake in a contest of this sort, and he does not hesitate to attack the most venomous of reptiles. Frogs, toads, and lizards, are the Secretary-bird's favorite food, but he also eats rats and other small animals. In some parts of South America these birds are tamed by the farmers, who keep them about the poultry yards to destroy rats and snakes, which steal young chickens and eggs; and the Secretary-bird makes an excellent police-officer, for the rats and snakes soon disappear from his neighborhood. These birds always have good appetites, however, and unless well supplied with food, they may eat a few chickens themselves. They often add birds and insects to their diet of reptiles.

The Secretary-bird does not often fly, unless hard pressed by enemies, and even then he usually trusts to his long legs, with which he can outrun a pony. Usually he is seen stalking about the country with a stately stride, accompanied only by his mate, for these birds live in pairs and never in flocks. He walks very fast and keeps a keen lookout for prey as he goes along.

The nest of this bird is a bulky structure, made of sticks and lined with feathers and wool. It is placed at the top of the highest tree in the neighborhood, or if there are no trees, on a bush. The female lays two white eggs, spotted with brown at the larger end. The young birds remain in the nest a long time—much longer than any of the birds with which we are familiar in this country. Sometimes

four months go by before the young Secretaries are able to use their slender legs, to go in search of food. Meanwhile, the parent birds keep them well supplied with small snakes, frogs, and insects.

The Secretary-bird is regarded with favor by the African farmers, because of his destruction of reptiles and vermin, and is protected by law from hunters. Naturally he is very shy, but once tamed, he makes himself thoroughly at home about the house, and comes and goes as independently as the cat or dog.

THE IBISES

THE Ibises form a family of large birds related to the storks and herons. They have long bills, usually arched, unlike the straight bill of the stork, a long neck and moderately long legs.

The most famous member of this family of birds is the Sacred Ibis of Egypt. This bird is about two and a half feet long, with white plumage, except for the black primaries and tail plumes. His head and neck are black, and without feathers. He has a very long, curving beak, and stout legs. The modern Egyptians call this bird "Father John," and, as his flesh is excellent food, they snare and shoot the birds in great numbers. But in ancient Egypt, a person who killed an Ibis was at once put to death.

Ibises dwell in flocks and build their nests on tall trees, like the mimosa—sometimes twenty or more nests on a single tree. The nest is made of coarse twigs, and is lined with grass and feathers. The eggs are a pale green, and about the size of a duck's egg.

The bill of fare of the Ibis is much like that of the stork,—fish, reptiles, insects, and offal. He drives his long bill into the mud, in search of worms and small shellfish, and eats frogs and lizards. The ancient Egyptians believed that they destroyed snakes, but modern naturalists say this is not true, except in rare instances.

The Ibis was venerated by the Egyptians, because he appeared at the time of the rise of the Nile, which brought prosperity to the country by flooding the land and making it possible to raise crops. Of course the Ibis came at that season because, with the rise of the river, he found more food in the shape of fish and mollusks; but the priests taught the people to believe that the contrary was true,—that is, that the river rose because the Ibis had come. It was thought that the Ibis drank only the purest water, and pools where the bird was seen to drink were reserved for the use of the priests. The Egyptians believed that the Ibis loved Egypt so much that if taken to foreign countries he would die of grief.

Flocks of Ibises were kept in the sacred temple and the birds were worshiped as the most holy of all animals. When they died, their bodies were embalmed with as much care as were those of persons, and thousands of Ibis mummies have been found in Egypt, wrapped in fine linen or preserved in stone jars. Representations of the Ibis were carved on the monuments and obelisks, and in every way the highest honors that could be thought of were paid to this bird.

Several species of the Ibis are found in America, but none appears farther north than the southern United States.

The Scarlet Ibis is a beautiful bird. His entire plumage is a rich scarlet color, except the tips of the longest wing feathers, which are black. This bird is found only in the warm regions of the tropics, and is accidental as far north as the Gulf states.

The White Ibis ranges farther north, and has been seen in New Jersey and in Illinois, but only rarely does it go northward beyond North Carolina. The plumage is pure white, except for black tips to the wing feathers. The long, curving bill is red. This bird is about twenty-five inches long, and has a bill seven inches long. White Ibises are found in colonies near the seashore or on the shore of a pond, sometimes a hundred miles or more from the sea. The nest is woven of reeds and twigs and lined with leaves. It is placed among the rushes or on a bush or low tree. The eggs are white, with a faint blue tinge, and marked with brown. The Ibis rests and sleeps standing on one leg, with his neck thrown back and the bill resting on his breast. Crawfish, fry, water insects, and small mollusks, furnish him with food.

The Wood Ibis, or Wood Stork, is found in all the southern states, where he was once a common bird, and has been known to go as far north as Ohio and Indiana. He never lingers in cold regions, however, and in winter goes to the tropics. The Wood Ibis is gregarious at times, like other birds of this family, but at other times is solitary. It breeds in colonies, and makes its nests in the tops of lofty trees, usually in a dense cypress swamp. The nest is made of twigs, loosely put together and lined with the soft moss that hangs from the trees. Two or three eggs are laid, dull white in color and having a rough, chalky surface.

The general color of the Wood Ibis is white. The tail and outer wing feathers are black. The head and upper part of the neck are without feathers, and the skin is a dusky color. The Wood Ibis is larger than other species, and measures forty inches or more in length. With his long bill, curving slightly downward, he probes in the mud for shellfish and worms, or, wading into the water, watches for frogs, fish, insects, and like prey.



FROM COL. F. KAEMPFER.

SCARLET IBIS.
 $\frac{1}{3}$ Life-size.

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From col. Chi. Acad. Sciences.
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SOUTH AMERICAN RHEA.
 $\frac{1}{8}$ Life-size.

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He stirs up the fish by scratching the bottom of the river or lake with his feet, and as they dart away, scoops them up in his long and powerful bill. He occasionally scoops out the meat from the shell of a turtle, and even a young alligator may be included in his prey. When his hunger is satisfied, he flies to the top of some tall tree, rests his great bill on his breast, and dozes for hours at a time. When his hunger returns, he goes fishing again.

THE OSTRICH

THE Ostrich is the largest of all birds. When full-grown, he reaches a height of eight or nine feet, and weighs from three hundred to four hundred pounds. His long neck and his general appearance suggest the camel, and he is sometimes called the camel-bird, not only on that account but because he lives in the desert and, like the camel, eats almost anything that offers for food. The true Ostrich is found in Africa, but in Australia and the East Indies are found other Ostrich-like birds, namely the Emu and the Cassowary.

The feathers of the male Ostrich are a glossy black, except for the plumes of the wings and the tail, which are snowy white. It is these beautiful curling plumes which ladies admire so much; and for these the Ostrich is still hunted wherever he is found wild, and is now raised on "Ostrich farms," whose owners find the enterprise highly profitable. It takes sixty or seventy Ostrich plumes to weigh a pound, so light and delicate are these beautiful feathers.

No one could accuse this great bird of having a dainty appetite. He picks up a living even in the sandy wastes of the desert, and though he takes vegetable food when he finds it, he swallows stones, keys, knives, broken glass and crockery, and many other things which would seem hard to digest. Any bright-colored object catches his eye at once, and his only idea of showing that it pleases him is to swallow it.

It does not seem possible that any bird can run away from a horse, but that is what the Ostrich really does. When he is feeding, his steps are short, measuring only two feet, but when he starts to run, his long legs shoot out in earnest and he covers nearly twenty feet at a single stride. He can run for a long way, too, though he is a stupid bird, and will rarely alter his course after he is well under way, to choose a safer one. He is said to be so stupid that when run down he hides his head in the sand, and, because he, himself, cannot see, supposes that he cannot be seen.

The Ostrich is very shy, and has sharp eyesight, as well as a keen scent, so that he usually detects an enemy in time to get a

good start in a race. When cornered he fights savagely, depending on his legs for weapons, and with these he can strike a terrific blow.

Owing to his shyness and the speed at which he can move, the Ostrich is not an easy prey, and the African native sometimes conceals himself in an Ostrich skin and walks among the birds, shooting them with poisoned arrows before they suspect that the Ostrich skin contains a man instead of a bird. To protect their young, Ostriches feign lameness, as the quails and partridges do, in order to lead the hunter away from the nest.

This great bird makes a very rude nest. It is simply a hole scooped in the sand, five or six feet across and a foot and a half deep. In this hole the eggs are laid, and sometimes as many as fifty are found in one nest, laid by several birds. The eggs are placed on end in the nest so as to occupy less room, for they are very large. A single Ostrich egg is as heavy and contains as much matter as two dozen hen's eggs. The shell is thick and rough, and is used by the natives as a cup. The skin of this great bird may be tanned and is so tough that it makes excellent leather. The cry of the Ostrich is a hoarse, gruff chuckle, or a deep roar.

The South American Ostriches, or Rheas, are much like their African cousins in habits and in appearance, except that they are much smaller and grayer. It is said that the male Rhea does the greater part of the hatching, sitting patiently upon the eggs for many hours at a time. The natives hunt these birds with the bolas, a weapon of their own, which consists of three thongs of leather that have at one end of each a ball of lead or iron. They are joined together at the other end. The natives throw the bolas with great skill, and it winds about the neck, body, and legs, of an Ostrich so as to cripple him and throw him to the ground, when he is easily captured. There are three species of Rhea, two large and one small.

Full-grown wild Ostriches are not easily tamed, but the young birds, which, when hatched, are about the size of pullets, may be brought up in captivity to be so tame that they will eat from the hand, or permit a very light man to ride on their backs, as he would on horseback.

BIRD ROCKS

IF YOU will look on your map you will see in the Gulf of St. Lawrence a group of islands known as the Magdalen Islands. At the extreme north of the group, a little black speck is marked "Bird Rocks." The only one of these of any considerable size is a great, solid red sandstone, rising one hundred and sixty feet above

the water and having an upper surface of about six acres in extent. The steep sides of this rock are broken into ledges or shelves that make resting places for the sea-birds and their nests. Almost everywhere around the island the walls are so nearly perpendicular that there is no place where they can be scaled by ordinary means of climbing.

The waters near the Bird Rocks are so shallow and the bottom so rocky that vessels cannot approach the island with safety. The English government maintains a lighthouse on the top of the rock, and the keeper and his family are the only people living on the island. Once a year, in October, the ships bring them their year's supply of food and other necessaries, and the only mail they receive during the year. The government vessels approach the island at the most favorable place, and a very long-armed windlass conveys the supplies from the ship to the top of the rock. It is sometimes ten days or two weeks before the vessel can get close enough to make this landing.

The only vegetation on the island is a little grass, that grows, by encouragement, on the top, and the seaweed on the rocks. Only about seven people besides officials, a few fishermen, and possibly some cast-aways, have landed on the rock, and two of this number were women.

There is no beach, and only at certain favorable times in July can a landing be made. The traveler wishing to reach the island at this season must leave the large vessel about a mile from the rock, and be taken in a dory to a narrow ledge at one side. Even then it is necessary for a boatman to get into the water where it is still several feet deep, and pull the boat to the shore.

A large crate or basket is let down from the top of the rock by means of a rope attached to the beam of the windlass, and in this the passengers are drawn to the top, as in an elevator, swinging out beyond the crags.

Lest this elevator might at some time fail and leave the occupants of the island prisoners, the lighthouse keeper has provided another means of descent. A succession of ladders, one below another, is bolted to the rocks, and to the bottom of one of these another ladder, secured by a rope, swings down to the water.

The sandstone which forms the island crumbles easily, and is being rapidly washed away by the action of the waves. One who climbs about the rocks must be careful not to depend too much upon holding to the ledges for support, as they may break, under even so slight a strain, and let the climber down.

In this bird's fairyland, there are hundreds of thousands of sea-birds, far out of the reach of hunters. The bird-lover, however, who

is willing to endure the discomfort, is permitted by the keeper to go down the ladder to examine the great shelves of birds and nests. Another plan is sometimes adopted by one who is willing to take greater risks in order to visit other sides of the wall. A rope is attached to his body and he is lowered over the crags to places that can be visited by human beings in no other way.

Of the birds that summer in this quiet retreat, the Gannet, or Solon Goose, is the largest. A fully grown Gannet can easily take a man's finger off at one snap of his powerful beak, and can carry five or six good-sized mackerel at one time. A large specimen of this bird measures seven feet across the wings, and weighs between thirty and forty pounds. The coat of the Gannet is pure white, except for the black tips of its wings and a beautiful golden spot or crown on its head. Its ugly, green, vicious eye is a very unusual one for a bird.

The Kittiwake (from his cry), another of our fairyland birds, is more like a dove, and belongs to the Gull family. He is white, except for pearly-gray wings, tipped with black. The nest of this bird is of seaweed, and this is the only one of the island birds that lays two eggs.

The Murre is another member of this bird colony. The common Murre is about the size of a large duck. This bird is the Razor-billed Auk which is described among our wild birds. The feathers of this bird have a strong oily and fishy odor. Its feathers are much used in the English army, for pillows, and it is necessary to roast the pillows at intervals in order to destroy their odor.

The Puffin is the Sea Parrot. His head and beak are shaped like those of the parrot, and his color is black above and white below; the beak, feet and legs are red. A description of the habits of the Puffin will be found among the Wild Birds.

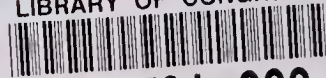
Mother Cary's Chicken is found on the rock in comparatively small numbers. He belongs to the family called Petrels, and in color is black above and white underneath. This bird flies only at night and its peculiar call has a weird sound in the darkness. This bird lays one egg, in a burrow in a cleft. To see one of Mother Cary's Chickens during the day, one must dig into this underground home.

By some law of their own, the different kinds of birds have divided the nesting-places among themselves, and observe boundary lines very carefully. The Gannets, which are the largest, are given the lower, wider ledges. The Kittiwakes have the next place above these, and the Murres cling to the narrow ridges that offer very little footing. The Puffins and the Mother Cary's chickens burrow among the rocks where there are no ledges.





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