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and William Kerr Higley**

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# BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

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VOL. IX.

MARCH, 1901.

No. 3

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## SPRING.

Gentle Spring! in sunshine clad,  
Well dost thou thy power display!  
For Winter maketh the light heart sad,  
And thou, thou makest the sad heart gay.  
He sees thee, and calls to his gloomy train,  
The sleet, and the snow, and the wind, and the rain;  
And they shrink away, and they flee in fear,  
When thy merry step draws near.

Winter giveth the fields and the trees, so old,  
Their beards of icicles and snow;  
And the rain, it raineth so fast and cold,  
We must cower over the embers low;  
And, snugly housed from the wind and weather,  
Mope like birds that are changing feather.  
But the storm retires, and the sky grows clear,  
When thy merry step draws near.

Winter maketh the sun in the gloomy sky  
Wrap him around with a mantle of cloud;  
But, Heaven be praised, thy step is nigh;  
Thou tearest away the mournful shroud,  
And the earth looks bright, and Winter surly,  
Who has toiled for naught both late and early,  
Is banished afar by the new born year,  
When thy merry step draws near.

—From the French of Charles D'Orleans,  
Henry Wadsworth Longfellow.

## ABOUT PARROTS.

Naturalists place the parrot group at the head of bird creation. This is done, not, of course, because parrots can talk, but because they display, on the whole, a greater amount of intelligence, of cleverness and adaptability to circumstances than other birds, including even their cunning rivals, the ravens and the jackdaws.

It may well be asked what are the causes of the exceptionally high intelligence in parrots. The answer which I suggest is that an intimate connection exists throughout the animal world between mental development and the power of grasping an object all round, so as to know exactly its shape and its tactile properties. The possession of an effective prehensile organ—a hand or its equivalent—seems to be the first great requisite for the evolution of a high order of intellect. Man and the monkeys, for example, have a pair of hands; and in their case one can see at a glance how dependent is their intelligence upon these grasping organs. All human arts base themselves ultimately upon the human hand; and our nearest relatives, the anthropoid apes, approach humanity to some extent by reason of their ever-active and busy little fingers. The elephant, again, has his flexible trunk, which, as we have all heard over and over again, is equally well adapted to pick up a pin or to break the great boughs of tropical forest trees. The squirrel, also, remarkable for his unusual intelligence when judged by a rodent standard, uses his little paws as hands by which he can grasp a nut or fruit all round, and so gain in his small mind a clear conception of its true shape and properties. Throughout the animal kingdom generally, indeed, this chain of causation makes itself everywhere felt; no high intelligence without a highly-developed prehensile and grasping organ.

Perhaps the opossum is the best and most crucial instance that can be found of the intimate connection which exists between touch and intellect. The opossum is a marsupial; it belongs to the same group of lowly-organized, antiquated and pouch-bearing animals as the kangaroo, the wombat, and other Australian mammals. Everybody knows that the marsupials, as a class, are preternaturally dull—are perhaps the least intelligent of all existing quadrupeds. And this is reasonable when one considers the subject, for they represent a very early type, the first “rough sketch” of the mammalian idea, with brains unsharpened as yet by contact with the world in the fierce competition of the struggle for life as it displays itself on the crowded stage of the great continents. They stand, in fact, to the lions and tigers, the elephants and horses, the monkeys and squirrels of America and Europe, as the native Australian stands to the American or the Englishman. They are the last relic of the original secondary quadrupeds, stranded for centuries on a Southern island, and still keeping up among Australian forests the antique type of life that went out of fashion elsewhere a vast number of years ago. Hence they have brains of poor quality, a fact amply demonstrated by the kangaroo when one watches his behavior in the zoological gardens.



OWL PARROT (NEW ZEALAND).  
(*Strigops habroptilus*.)  
 $\frac{1}{3}$  Life-size.  
FROM COL. CHI. ACAD. SCIENCES.

Every high-school graduate is well aware that the opossum, though it is a marsupial, differs in psychological development from the kangaroo and the wombat. The opossum is active and highly intelligent. He knows his way about the world in which he lives. “A ‘possum up a gum tree” is accepted by observant minds as the very incarnation of animal cunning and duplicity. In negro folklore the resourceful ‘possum takes the place of the fox in European stories; he is the Macchiavelli of wild beasts; there is no ruse on earth of which he is not amply capable; and no wily manoeuvre exists which he cannot carry to an end successfully. All guile and intrigue, the possum can circumvent even Uncle Remus himself by his crafty diplomacy. And what is it that makes all the difference between this ‘cute marsupial and his backward Australian cousins? It is the possession of a prehensile hand and tail. Therein lies the whole secret. The opossum’s hind foot has a genuine apposable thumb; and he also uses his tail in climbing as a supernumerary hand, almost as much as do any of the monkeys. He often suspends himself by it, like an acrobat, swings his body to and fro to obtain speed, then lets go suddenly, and flies away to a distant branch, which he clutches by means of his hand-like hind foot. If the toes make a mistake, he can recover his position by the use of his prehensile tail. The result is that the opossum, being able to form for himself clear and accurate conceptions of the real shapes and relations of things

by these two distinct grasping organs, has acquired an unusual amount of general intelligence. And further, in the keen competition for life, he has been forced to develop an amount of cunning which leaves his Australian poor relations far behind in the Middle Ages of psychological evolution.

At the risk of appearing to forsake my ostensible subject altogether, I must pause for a moment to answer a very obvious objection to my argument. How about the dog and the horse? They have no prehensile organ, and yet they are admitted to be the most intelligent of all quadrupeds. The cleverness of the horse and the dog, however, is acquired, not original. It has arisen in the course of long and hereditary association with man, the cleverest and most serviceable individuals having been deliberately selected from generation to generation as dams and sires to breed from. We cannot fairly compare these artificial human products with wild races whose intelligence is entirely self-evolved. In addition, the horse has, to a slight extent, a prehensile organ in his mobile and sensitive lip, which he uses like an undeveloped or rudimentary proboscis with which he can feel things all over. We may conclude, I believe, that touch is "the mother-tongue of the senses;" and that in proportion as animals have or have not highly developed and serviceable tactile organs will they rank high or low in the intellectual hierarchy of nature. It may well be asked how all this concerns the family of parrots. In the first place, anybody who has ever kept a parrot or a macaw in slavery is well aware that in no other birds do the claws so closely resemble a human or simian hand, not indeed in outer form or appearance, but in apposability of the thumbs and in perfection of grasping power. The toes upon each foot are arranged in opposite pairs—two turning in front and two backward, which gives all parrots their peculiar firmness in clinging on a perch or on the branch of a tree with one foot only, while they extend the other to grasp a fruit or to clutch at any object they desire to possess. This peculiarity, it must be admitted, is not confined to the parrots, for they share the division of the foot into two thumbs and two fingers with a large group of allied birds, called, in the exact language of technical ornithology, the Scansorial Picarians, and more generally known by their several names of cockatoos, toucans and wood-peckers. All the members of this great group, of which the parrots proper are only the most advanced and developed family, possess the same arrangement of the digits into front-toes and back-toes, and in none is the power of grasping an object all round so completely developed and so full of intellectual consequences.

All the Scansorial Picarians are essentially tree-haunters; and the tree-haunting and climbing habit seems specially favorable to the growth of intellect. Monkeys, squirrels, opossums, wild cats, are all of them climbers, and all of them, in the act of climbing, jumping, and balancing themselves on boughs, gain such an accurate idea of geometrical figures, distance, perspective and the true nature of space-relations, as could hardly be acquired in any other way. In a few words, they thoroughly understand the tactual realities that answer to and underlie each visible appearance. This is, in my opinion, one of the substrata of all intelligence; and the monkeys, possessing it more profoundly than any other animals, except man, have accordingly reached a very high place in the competitive examination perpetually taking place under the name of Natural Selection. 102

So, too, among birds, the parrots and their allies climb trees and rocks with exceptional ease and agility. Even in their own department they are the great feathered acrobats. Anybody who watches a wood-pecker, for example, grasping the bark of a tree with its crooked and powerful toes, while it steadies itself behind by digging its stiff tail-feathers into the crannies of the outer rind, will readily understand how clear a notion the bird must gain into the practical action of the laws of gravity. But the true parrots go a step further in the same direction than the wood-peckers or the toucans; for in addition to prehensile feet, they have also a highly-developed prehensile bill, and within it a tongue which acts in reality as an organ of touch. They use their crooked beaks to help them in climbing from branch to branch; and being thus provided alike with wings, hands, fingers, bill and tongue, they are the most truly arboreal of all known animals, and present in the fullest and highest degree all the peculiar features of the tree-haunting existence.

Nor is this all. Alone among birds or mammals, the parrots have the curious peculiarity of being able to move the upper as well as the lower jaw. It is this strange mobility of both the mandibles together, combined with the crafty effect of the sideways glance from those artful eyes, that gives the characteristic air of intelligence and wisdom to the parrot's face. We naturally expect so clever a bird to speak. And when it turns upon us suddenly with some well-known maxim, we are not astonished at its remarkable intelligence.

Parrots are true vegetarians; with a single degraded exception, to which I shall recur hereafter, they do not touch animal food. They live chiefly upon a diet of fruit and seeds, or upon the abundant nectar of rich tropical flowers. And it is mainly for the purpose of getting at their chosen food that they have developed the large and powerful bills which characterize the family. Most of us have probably noticed that many tropical fruit-eaters, like the hornbills and the toucans, are remarkable for the size and strength of their beaks; and the majority of thinking people are well acquainted with the fact that tropical fruits often have thick or hard or bitter rinds, which must be torn off before the monkeys or birds, for whose use they are intended, can get at them and eat them.

As monkeys use their fingers in place of knives and forks, so birds use their sharp and powerful bills. No better nut-crackers and fruit-parers could possibly be found. The parrot, in particular, has developed for the purpose his curved and inflated beak—a wonderful weapon, keen as a tailor's scissors, and moved by powerful muscles on both sides of the face which bring together the cutting edges with extraordinary energy. The way the bird holds a fruit gingerly in one claw, while he strips off the rind dexterously with his under-hung lower mandible, and keeps a sharp look-out meanwhile for a possible intruder, suggests to the observing mind the whole living drama of his native forest. One sees in that vivid world the watchful monkey ever ready to swoop down upon the tempting tail-feathers of his hereditary foe; one sees the parrot ever prepared for his rapid attack, and eager to make him pay with five joints of his tail for his impertinent interference with an unoffending fellow-citizen of the arboreal community.

Of course there are parrots and parrots. The great black cockatoo, for example, the largest of the tribe, lives almost exclusively upon the central shoot of palm-trees; an expensive kind of food, for when once this so-called "cabbage" has been eaten the tree dies, so that each black cockatoo must have killed in his time whole groves of cabbage-palms. Other parrots live on fruits and seeds; and quite a number are adapted for flower-haunting and

honey-sucking.

As a group, the parrots must be comparatively modern birds. Indeed, they could have no place in the world till the big tropical fruits and nuts were beginning to be developed. And it is now generally believed that fruits and nuts are for the most part of recent and special evolution. To put the facts briefly, the monkeys and parrots developed the fruits and nuts, while the fruits and nuts returned the compliment by developing conversely the monkeys and parrots. In other words, both types grew up side by side in mutual dependence, and evolved themselves *pari passu* for one another's benefit. Without the fruits there could be no fruit-eaters; and without the fruit-eaters to disperse their seeds, there could not be any great number of fruits. 103

Most of the parrots very much resemble the monkeys and other tropical fruit-eaters in their habits and manners. They are gregarious, mischievous and noisy. They have no moral sense, and are fond of practical jokes. They move about in flocks, screeching aloud as they go, and alight together on some tree well covered with berries. No doubt they herd together for the sake of protection, and screech both to keep the flock in a body and to strike consternation into the breasts of their enemies. When danger threatens, the first bird that perceives it sounds a note of warning; and in a moment the whole troupe is on the wing at once, vociferous and eager, roaring forth a song in their own tongue, which may be interpreted to mean that they are ready to fight if it is necessary.

The common gray parrot, the best known in confinement of all his kind, and unrivalled as an orator for his graces of speech, is a native of West Africa. He feeds in a general way upon palm-nuts, bananas, mangoes, and guavas, but he is by no means averse, if opportunity offers, to the Indian corn of the industrious native. It is only in confinement that this bird's finer qualities come out, and that it develops into a speechmaker of distinguished attainments.

A peculiar and exceptional offshoot of the parrot group is the brush-tongued lory, several species of which are common in Australia and India. These interesting birds are parrots which have a resemblance to humming birds. Flitting about from tree to tree with great rapidity, they thrust their long extensible tongues, penciled with honey-gathering hairs, into the tubes of many big tropical blossoms. The lorries, indeed, live entirely on nectar, and they are so common in the region they have made their own that the larger flowers there present the appearance of having been developed with a special view to their tastes and habits, as well as to the structure of their peculiar brush-like honey-collector. In most parrots the mouth is dry and the tongue horny; but in the lorries it is moist and much more like the same organ in the humming-birds and the sun-birds. The prevalence of very large and brilliantly-colored flowers in the Malayan region must be set down for the most part to the selective action of the color-loving, brush-tongued parrots.

The Australian continent and New Zealand, as everybody knows, are the countries where everything goes by contraries. And it is here that the parrot group has developed some of its most curious offshoots. One would imagine beforehand that no two birds could be more unlike in every respect than the gaudy, noisy, gregarious cockatoos and the sombre, nocturnal, solitary owls. Yet the New Zealand owl-parrot is a lory which has assumed all the appearances and habits of an owl. A lurker in the twilight or under the shades of night, burrowing for its nest in holes in the ground, it has dingy brown plumage like the owls, with an undertone of green to bespeak its parrot origin; while its face is entirely made up of two great disks, surrounding the eyes, which succeed in giving it a most marked and unmistakable owl-like appearance.

Why should a parrot so strangely disguise itself and belie its ancestry? The reason is not difficult to discover. It found a place for itself ready made in nature. New Zealand is a remote and sparsely-stocked island, peopled by various forms of life from adjacent but still distant continents. There are no dangerous enemies there. Here, then, was a great opportunity for a nightly prowler. The owl-parrot, with true business instinct, saw the opening thus clearly laid before it, and took to a nocturnal and burrowing life, with the natural consequence that those forms survived which were dingy in color. Unlike the owls, however, the owl-parrot, true to the vegetarian instincts of the whole lory race, lives almost entirely upon sprigs of mosses and other creeping plants. It is thus essentially a ground bird; and as it feeds at night in a country possessing no native beasts of prey, it has almost lost the power of flight, and uses its wings only as a sort of parachute to break its fall in descending from a rock or a tree to its accustomed feeding-ground. To ascend a steep place or a tree, it climbs, parrot-like, with its hooked claws, up the surface of the trunk or the face of the precipice. 104

Even more aberrant in its ways, however, than the burrowing owl-parrot, is that other strange and hated New Zealand lory, the kea, which, alone among its kind, has adjured the gentle ancestral vegetarianism of the cockatoos and macaws, in favor of a carnivorous diet of remarkable ferocity. And what is stranger still, this evil habit has been developed in the kea since the colonization of New Zealand by the British, the most demoralizing of new-comers, as far as all aborigines are concerned. The English settlers have taught the Maori to wear silk hats and to drink strong liquors, and they have thrown temptation in the way of even the once innocent native parrot. Before the white man came, the kea was a mild-mannered, fruit-eating or honey-sucking bird. But as soon as sheep-stations were established on the island these degenerate parrots began to acquire a distinct taste for raw mutton. At first they ate only the offal that was thrown out from the slaughter-houses, picking the bones as clean of meat as a dog or a jackal. But in course of time, as the taste for blood grew, a new and debased idea entered their heads. If dead sheep are good to eat, are not living ones? The keas, having pondered deeply over this abstruse problem, solved it in the affirmative. Proceeding to act upon their convictions, they invented a truly hideous mode of procedure. A number of birds hunt out a weakly member of a flock, almost always after dark. The sheep is worried to death by the combined efforts of the parrots, some of whom perch themselves upon the animal's back and tear open the flesh, their object being to reach the kidneys, which they devour at the earliest possible moment. As many as two hundred ewes are said to have been killed in a single night on one "station"—ranch, we should call it. I need hardly say that the New Zealand sheep-farmer resents this irregular procedure, so opposed to all ideas of humanity, to say nothing of good-farming, and, as a result, the existence of the kea is now limited to a few years. But from a purely psychological point of view the case is interesting, as being the best recorded instance of the growth of a new and complex instinct actually under the eyes of human observers.



A few words as to the general coloring of the parrot group. Tropical forestine birds have usually a ground tone of green because that color enables them best to escape notice among the monotonous verdure of equatorial woodland scenery. In the north, it is true, green is a very conspicuous color; but that is only because for half the year our trees are bare, and even during the other half they lack that "breadth of tropic shade" which characterizes the forests of all hot countries. Therefore, in temperate climates, the common ground-tone of birds is brown, to harmonize with the bare boughs and leafless twigs, the dead grass or stubble. But in the ever-green tropics, green is the proper hue for concealment or defense. Therefore the parrots, the most purely tropical family of birds on earth, are chiefly greenish; and among the smaller and more defenceless sorts, like the little love-birds, where the need for protection is greatest, the green of the plumage is almost unbroken. Green, in truth, must be regarded as the basal parrot tint, from which all other colors are special decorative variations.

But fruit-eating and flower-feeding creatures—such as butterflies and humming birds—seeking their food among the brilliant flowers and bright berries, almost invariably acquire a taste for varied coloring, and by the aid of the factor in evolution, known as sexual selection, this taste stereotypes itself at last upon their wings and plumage. They choose their mates for their attractive coloring. As a consequence, all the larger and more gregarious parrots, in which the need for concealment is less, tend to diversify the fundamental green of their coats with red, yellow or blue, which in some cases takes possession of the entire body. The largest kinds of all, like the great blue and yellow or crimson macaws, are as gorgeous as birds well could be; they are also the species least afraid of enemies. In Brazil, it is said, they may often be seen moving about in pairs in the evening with as little attempt at concealment as storks in Germany.



GRAY PARROT (AFRICA).  
(*Psittacus erithacus*.)  
 $\frac{2}{3}$  Life-size.  
FROM COL. CHI. ACAD. SCIENCES.

Even the New Zealand owl-parrot still retains many traces of his original greenness, mixed with the brown and dingy yellow of his nocturnal and burrowing nature.

I now turn to the parrot's power of mimicry in human language. This power is only an incidental result of the general intelligence of parrots, combined with the other peculiarities of their social life and forestine character. Dominant woodland animals, like monkeys and parrots, at least if vegetarian in their habits, are almost always gregarious, noisy, mischievous, and imitative. And the imitation results directly from a somewhat high order of intelligence. The power of intellect, in all except the very highest phases, is merely the ability to accurately imitate another. Monkeys imitate action to a great extent, but their voices are hardly flexible enough for very

much mimicry of the human voice. Parrots and some other birds, on the contrary, like the mocking bird, being endowed with considerable flexibility of voice, imitate either songs or spoken words with great distinctness. In the parrot the power of attention is also very considerable, for the bird will often repeat to itself the lesson it has decided to learn. But most of us forget that at best the parrot knows only the general application of a sentence, not the separate meanings of its component words. It knows, for example, that "Polly wants a lump of sugar" is a phrase often followed by a gift of food. But to believe it can understand an exclamation like "What a homely lot of parrots!" is to credit the bird with genuine comprehension. A careful consideration of the evidence has convinced almost all scientific men that, at the most, a parrot knows the meaning of a sentence in the same way as a dog understands the meaning of "Rats" or a horse knows the significance of "Get up."

Lawrence Irwell.

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How can our fancies help but go  
Out from this realm of mist and rain,  
Out from this realm of sleet and snow,  
When the first Southern violets blow?

—Thomas Bailey Aldrich, "Spring in New England."

108

## POLLY.

Letty was out under the big elm tree watching the kitten playing with the autumn leaves that were on the ground.

Suddenly something struck Letty on the shoulder. She looked around quickly, thinking that somebody had thrown a stone at her. No one was in sight, though she looked all about and even up in the tree. Then she noticed that the kitten was rolling something with its paws. She stooped and picked up what looked like a little bunch of elm leaves. She thought it strange that they should be stuck together, and when she found that it was quite heavy she was still more surprised.

She carried it into the house to show to her mother. "What is it?" she asked. "It came down off the tree and hit me on my shoulder. Is there a stone inside of it?"

"No," said her mother. "It is a chrysalis. Some worm that lived on the elm tree drew these leaves together and spun a little case inside, and when the leaves were ready to fall, the chrysalis came down with them."

"What kind of a worm do you suppose it was?"

"I do not know, but it must have been a large one, or the chrysalis would not be so heavy. We will keep it, and in the spring when the worm has turned into a butterfly and comes out of the case, perhaps we can learn what its name is."

"But how will it get out?" asked Letty, anxiously. "It is so hard and tough. I tried to pull off one of the leaves and it stuck on tight."

"Yes," said her mother, "it is very tough and you could not tear it open with your fingers even if you tried very hard. But the butterfly throws out some kind of fluid which softens the silk—for it is a kind of silk, you know—and makes a hole large enough to crawl through. It does not have to be very big, as the butterfly's wings are soft and wet. It has to let them dry and grow strong and stiff before it can fly."

The chrysalis was put in a safe place and Letty forgot all about it for many months, which was not strange when there were so many things for her to do all through the winter and early spring.

But her mother did not forget, and one day in June she called Letty in from her play telling her that she had something to show her.

"Do you remember the elm chrysalis?" she asked, and she put it in Letty's hand.

"Why how light it is!" she cried. "The butterfly has come out, oh! where is it?"

Her mother led the way to the plant stand. "See, on that begonia," she said.

"Oh, oh!" cried Letty, "what a beautiful butterfly!"

It was very large, nearly five inches across when its wings were spread. It was dull yellow, with darker shadings, a little red in waving lines, and a gray stripe along the front edge of its outer wings. It was quite furry, especially the large yellow body. Each of the four wings had a transparent eye spot, and the under wings had a good deal of black about these little round windows, as Letty called them.

"And, mamma, see! It has beautiful little dark-blue eyes."

"Yes, it has, but I did not notice them before."

"Well, what kind of a butterfly is it?"

"It is not a butterfly at all."

"Not a butterfly?" said Letty, surprised.

"No; it is a moth. Have you noticed its antennae—the horns on the front of its head?"

"They look like feathers," said Letty; "no, like ferns."

"So they do," said her mother. "Well, that is how we know it is not a butterfly, for they have thread-like antennae, with a little knob on the end. Moths fly by night and that is probably why this one stays so still now." 109

"I wish I knew its name," said Letty.

"If you will take my card and run over to the public library and ask the librarian to give you a book that tells about moths and butterflies, we will find out."

Letty came back in a little while with the book and her mother began to look in it.

"Oh!" she said pretty soon, "it has such a long name that I don't believe you can remember it. It is *Telea polyphemus*."

"I'll call it Polly for short," said Letty.

When they had learned all they could about the moth Letty asked what they should do with it.

"This book says they do no very great harm," said her mother, "and it is so beautiful that I think we will let it have its liberty."

So the *Telea polyphemus* was carried out and placed on a tree trunk where it stayed all the rest of the day. But the next morning when Letty went to look for it, it was gone.

Susan Brown Robbins.

---

Hark! 'tis the bluebird's venturous strain  
High on the old fringed elm at the gate—  
Sweet-voiced, valiant on the swaying bough,  
Alert, elate,  
Dodging the fitful spits of snow,  
New England's poet-laureate  
Telling us Spring has come again!

—Thomas Bailey Aldrich, "Spring in New England."

110

## THE AMERICAN WHITE PELICAN. (*Pelecanus erythrorhynchos*.)

In the year 1758 the naturalist Linnaeus gave to the birds called Pelicans the generic name *Pelecanus*. In this genus he also placed the cormorants and the gannets. These with the snake-birds, the frigate-birds and the tropic-birds were for a long time grouped together under the family name *Pelecanidae*. This name, however, is now restricted to the various species of the Pelicans which are included in a single genus.

The generic name *Pelecanus* and the common name Pelican are derived from *pelekan*, the Greek name for these birds. They were well known to the ancients by whom they were called *Ornacrotalus*. There is a legend of great antiquity for which there is no foundation in fact, which states that the pelican feeds to her young blood drawn from her own breast, in which she herself has made the incision.

There are about ten species of pelicans distributed throughout the world, mostly confined to those countries having warm climates. Two or three species, however, extend their range into the colder regions during the summer months. Three of the species inhabit North America and two of these are seldom seen except on the sea coasts; the brown pelican (*Pelecanus fuscus*) on the Atlantic coast and the California brown pelican (*Pelecanus californicus*) on the Pacific coast. The other species is the bird of our illustration, and is common in the interior as well as on the seaboard of California.

The pelicans are notably social in their habits, a large number nesting together. The flight of a large flock is an attractive sight. Their wings move in unison and apparently without much effort. After a few strokes of the wings they frequently sail, forming graceful circles, often at great elevations.

The most remarkable characteristic of these birds, however, is the large pouch formed by an elastic skin depending from the two sides of the lower mandible and extending nearly the whole length of the bill. This pouch



may be greatly distended and will hold a large quantity of either solid or liquid matter. The bills are depressed and strongly hooked.

The American White Pelican ranges throughout the whole of North America as far north, in the interior, as the 61° north latitude, and as far to the southward in winter as Central America. Northward from Florida, along the Atlantic coast, it is now rare.

In the year 1838 Audubon gave this species the specific name *Americanus*, in view of his discovery that it differed in essential characteristics from the European form, called *Ornacrotalus*. The most marked difference that he noticed was the crest upon the upper mandible which he supposed was permanent and not, as we now know, a characteristic of this species only during the breeding season. In writing of the naming of this species he uses the following beautiful language: "In consequence of this discovery, I have honored it with the name of my beloved country, over the mighty streams of which may this splendid bird wander free and unmolested to the most distant times, as it has already done in the misty ages of unknown antiquity."

Much as we desire to honor Audubon, who has given us so much of interest concerning the life histories of the birds, yet we are restrained by the rules of scientific naming, which require under ordinary circumstances, the use of the earliest name. Audubon's name was antedated by that of Gmelin, a German Naturalist, who in 1788 noticing the peculiar characteristics of the American White Pelican and that it differed from the European form, gave it the name *erythrorhynchos*, which is now used by ornithologists. This name has its origin in two Greek words, meaning red and bill.



AMERICAN WHITE PELICAN.  
(*Pelecanus erythrorhynchos*.)  
About 1/2 Life-size.  
FROM COL. CHI. ACAD. SCIENCES.  
CHICAGO COLORTYPE CO.

The peculiar growth or crest on the bill which disappears soon after the breeding season, varies greatly both in size and shape. Dr. Ridgway says: "Frequently it consists of a single piece, nearly as high as long, its vertical outlines almost parallel, and the upper outline quite regularly convex, the largest specimen seen being about three inches high, by as many in length. More frequently, however, it is very irregular in shape, usually less elevated, and not infrequently with ragged anterior, or even posterior continuations." At this time the bill is also more or less orange-red in color. 113

An excellent narrative of the habits of the White Pelican is given in the *Ornithology of Illinois*, where Dr. Ridgway quotes the words of Col. N. S. Goss regarding those who "have not seen the White Pelicans upon their feeding grounds, but may have read Audubon's interesting description of the manner in which the birds unite and drive

the fishes into shallow water, where they can catch them, which they cannot well do in deep water, as their skins are honey-combed with air cells that buoy them up like cork, and prevent their diving, and they do not plunge for their food when upon the wing, like their cousins, the Brown Pelicans, and therefore have to adopt fishing habits suited to shallow waters. I have often noticed the birds in flocks, in pairs, or alone, swimming on the water with partially opened wings, and head drawn down and back, the bill just clearing the water, ready to strike and gobble up the prey within their reach; when so fishing, if they ran into a shoal of minnows, they would stretch out their necks, drop their heads upon the water, and with open mouths and extended pouches, scoop up the tiny fry. Their favorite time for fishing on the seashore is during the incoming tide, as with it come the small fishes to feed upon the insects caught in the rise, and upon the low form of life in the drift, as it washes shoreward, the larger fishes following in their wake, each, from the smallest to the largest, eagerly engaged in taking life in order to sustain life. All sea-birds know this, and the time of its coming well. The White Pelicans, that have been patiently waiting in line along the beach, quietly move into the water and glide smoothly out so as not to frighten the life beneath. At a suitable distance from the shore they form into line in accordance with the sinuosities of the beach, each facing shoreward and awaiting their leader's signal to start. When this is given, all is commotion; the birds, rapidly striking the water with their wings, throwing it high above them and plunging their heads in and out, fairly make the water foam as they move in an almost unbroken line, filling their pouches as they go. When satisfied with their catch, they wade and waddle into line again upon the beach, where they remain to rest, standing or sitting as suits them best, until they have leisurely swallowed the fishes in their nets; then, if undisturbed, they generally rise in a flock and circle for a long time high in air."

The White Pelicans will consume a large amount of food; in fact, they are gluttonous. It is said that the remains of several hundred minnows have been taken from the stomach of a single pelican. Usually they are the most active in the pursuit of their prey for a short time after sunrise and also before sunset.

The chief breeding grounds of the White Pelican are from Minnesota northwards to the limit of its range. It nests also in isolated and greatly separated localities to the westward. It is said that several thousand permanently breed on the islands of the great Salt Lake. There are reasons for believing that it also breeds in Florida and westward along the Gulf of Mexico as far as Texas.

The White Pelican builds its nest on the ground using small sticks and twigs. They usually select a clump of sage or some other plant that will afford the nest some protection. Frequently sand is heaped around the nest to the depth of about six inches. The nests are about one foot in diameter. The color of the two to four eggs is a chalky white and the surface is quite rough, due to the irregular thickness of the outer coating. The average size of the eggs is about three and one-half by two and one-third inches.

The White Pelican as it calmly floats on the surface of the water, some distance from the shore, has been mistaken for the sail of a boat as the moist white feathers glisten in the sunshine. 114

Longfellow has beautifully woven this fact into the "Song of Hiawatha."

O'er the water floating, flying,  
Something in the hazy distance,  
Something in the mists of morning,  
Loomed and lifted from the water,  
Now seemed floating, now seemed flying,  
Coming nearer, nearer, nearer.

Was it Shingebis the diver?  
Or the pelican, the Shada?  
Or the heron, the Shuh-shuh-gah?  
Or the white-goose, Waw-be-wawa,  
With the water dripping, flashing  
From its glossy neck and feathers?

It was neither goose nor diver,  
Neither pelican nor heron  
O'er the water floating, flying,  
Through the shining mist of morning,  
But a birch canoe with paddles,  
Rising, sinking on the water."

Seth Mindwell.

## THE SANDPIPER.

The glitter of the sunlit river  
In his flashing, fearless eye,  
There on his unwearied pinions  
See the bird go sailing by!

Slender, sword-like wings, and dainty,  
How they cut the thin air now!  
And without a trace of languor  
Soars he to the mountain's brow.

Back again—for whim has moved him—

And where rippling water lies,  
Scanning all the shore line closely,  
Light as thistle-down he flies!

On the white sand scarce a footprint  
Makes he, touching here and there;  
Singing his two notes so gladly,  
Ah, this bird is passing fair!

Sweet content in voice and motion;  
Following splash of many a wave;  
Or o'er pine that faces ocean  
Mounts this rover, gay and brave!

—George Bancroft Griffith.

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## A BIT OF BIRD GOSSIP.

The sun shone brightly through the green leaves of the trees and crowned each tiny ripple on the lake with a glistening diamond. A Robin Redbreast hopped along the shore, picking up a few pebbles, for the poor thing has to wear her false teeth in her stomach, as it were, having no teeth in her head with which to chew her food.

There was a rush of wings above her and she dropped the grain of sand with which she had thought to fill up her gizzard, cocked her smooth black head on one side and watched the approach of another bird. Was it friend or enemy? It proved to belong to the aristocratic family of Thrushes—real high-flyers among birds—who alighted on the same sandy shore and advanced “with many a flirt and flutter” to greet her old friend, for they had been neighbors in the same sunny orchard the year before.

“So glad to meet you again, Mrs. Redbreast,” said the gracious Thrush in a most musical voice, “but are you not a long way from the willows on the river bank where I last had the pleasure of seeing you?”

“Oh, we never finished that house among the willows. We became dissatisfied with the neighborhood,” answered Mrs. Redbreast, after performing the graceful courtesy of a well-bred bird, as are all Robin Redbreasts.

“Ah, I was afraid of malaria when we looked the ground over together in the spring. It was too low, almost swampy. Mr. Thrush and I went to a little knoll about three miles away and built in the loveliest, the most fragrant wild crabapple tree you ever saw,” and Mrs. Thrush smoothed with shining beak a mottled feather on her handsome breast.

“But would not those lovely blossoms tempt those creatures—boys, I think they are called—to climb until they found your home?”

“The thorns stand sentinel and the thick leaves hide it well, and I wanted my children to grow up strong, and swift on the wing. They would never grow up well feathered and beautiful amid those lovely willows on account of the low ground,” replied the Thrush.

“It was not malaria that caused us to abandon our half-built nest, but boys, some black as crows and some white as doves, kept coming to get materials for whistles. It seems that the very tree we chose had bark that slipped the easiest, and sometimes a flock of three or four would be perched on the limbs (they always sit astride, so awkwardly, you know), with jack-knives in their hands, and of course we could not stay. Robin wanted to come to the park—it is a lovely place—where those fine big creatures with bright stars on their gray coats are put to take care of us birds. Why,” she went on, “they will not let boys stone even an English Sparrow, but I think that is altogether too particular. There comes a party of the little cockneys now,” as a handful of winged brown balls came fluttering through the air close to the heads of the larger birds, who could easily have put them to flight if they would but try. However, they ducked their heads and scampered into the weeds, leaving the smooth shore to the new-comers, who dipped and splashed in the shallow edge of the lake as if they enjoyed it mightily.

“Just see the horrid little things washing themselves in water, but they never can get clean. Why, my Robin, who is a very venturesome fellow and sometimes follows the boulevards almost into the heart of the city, says that he has seen them in the dirty city streets washing themselves in the dust like common barnyard fowls.”

“Don't let's look at them,” exclaimed Mrs. Thrush. “They are doing it just because it looks respectable, and they know that we wash in water;” and the two birds spread their wings and swept disdainfully away from the neighborhood of the Sparrows.

“And where did you finally build, Mrs. Redbreast?” asked the other as they settled gracefully on the shore a half a mile away.

“Well, Robin, as I said, wanted very much to live in the park. He is so fond of company, but I told him there were too many children on the grass. Why, they are as thick as dandelions any fine day, and in spite of the care of the great gray creatures it would be impossible to safely teach our children to fly. We finally found a lovely suburban place within easy flying distance of the park. An apple tree with perfect branches for a nest grew in the back yard, the cherry trees were white with bloom and the whole place fragrant with the blossoms of the grape. There was a flat jar always kept filled with water for the birds, with a stone in it that reached nearly to the

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surface on which to stand while bathing. The water made the birds come in flocks, so that the place was gay with songs, and really that yard was a little Eden. But you know," she went on, dropping her voice, "there is a story of something terrible that walked in the garden of Eden, and I think it was a black cat, for that is what walks in our garden. He lies on the back steps in the sunshine pretending to be asleep, but where his eyes ought to be in that big black ball he calls his head I can see a narrow yellow stripe, and out of that stripe of yellow he watches every bird that comes."

"Does he get any birds?" asked the Thrush in an awe-struck whisper.

The Redbreast shook her black head sadly. "Every now and then his mistress finds him with feathers in his whiskers, and she scolds him. But there is a serpent in every Eden," she added philosophically; "if it isn't cats it's boys."

"Did you ever hear what became of the family of Wrens that lived in the honeysuckle over the back door?" asked Mrs. Thrush, who cared more for gossip than moralizing. "They were so pleasant and cheery."

"Oh, yes. We started south before they left and I haven't seen them since. They were a proud little folk, that made believe they were not proud, always wearing the finest clothes, yet in such sober colors. I always called them stuck up."

"Their tails certainly were—he, he, he," giggled Mrs. Thrush.

"Ha, ha, ha," laughed Mrs. Redbreast. "That's pretty good. I must tell that to Robin. But don't you remember," she went on, "the Blue Jays that lived in the elm tree down the lane?"

"I never thought them very well-bred," replied Mrs. Thrush, bridling prettily, for she and her family pride themselves on their correct behavior. "Wonderfully pretty, but too loud."

"Altogether too gay and noisy. Mrs. Jay was a great scold, and Blue almost as bad. You could hear them all over the neighborhood. Well, they lost all their children by a Hawk, though Mrs. Jay fought bravely for her little ones, and Blue proved himself a real hero. She over-exerted herself, however, and died shortly after of nervous prostration. I saw a girl, who had found her body, spreading out her poor dead wings and holding them up against her hat. She finally wrapped Mrs. Jay up in her handkerchief and carried her away."

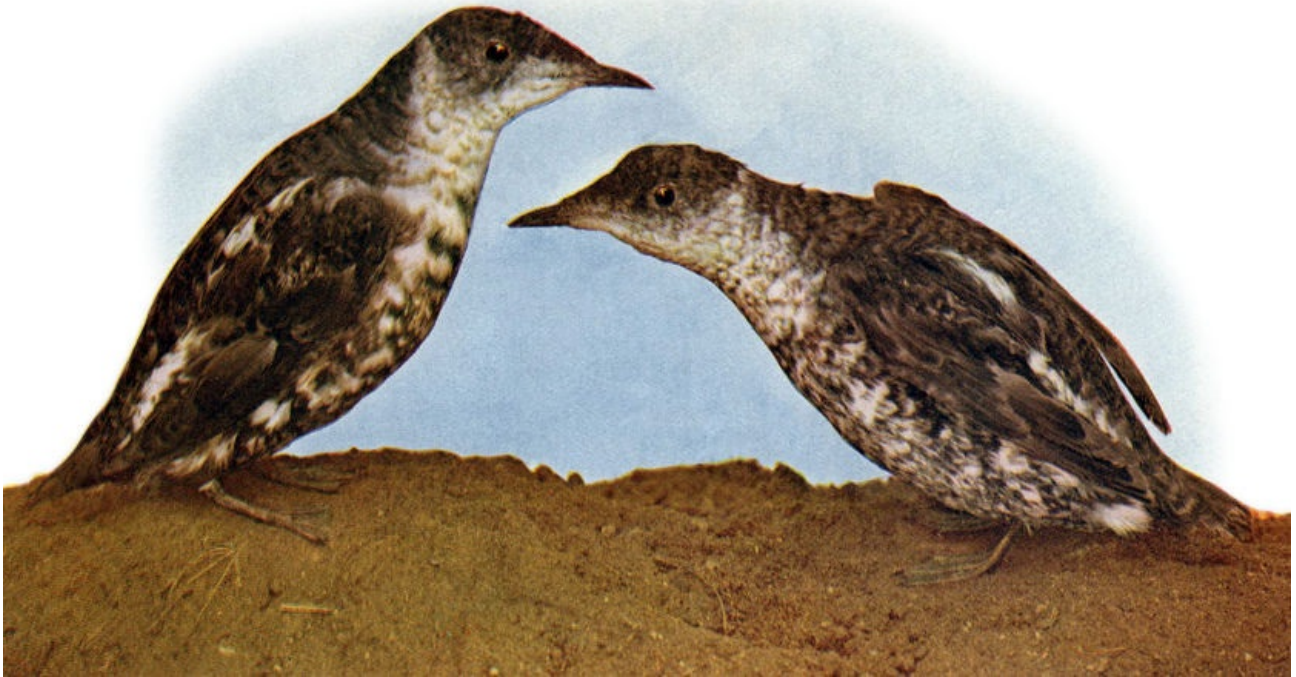
"If women would only be satisfied with the wings of a bird that had died a natural death we would not complain," said Mrs. Thrush, as she folded her own pretty wings a little closer. "Blue Jay married again right away, of course," she went on, as she dropped a little red ant down among the mill stones of her gizzard to be ground up.

"He did not even wait the conventional two weeks. If I thought Robin Redbreast would be looking out for another housekeeper so soon after my death he would not have such a good wife as he has to-day. He would have to hunt more worms and bugs than he does, instead of just bringing home a little bit of dessert in the shape of cherries or grapes to please the children;" and the mother fluffed up her feathers alarmingly.

"That makes me think," said Mrs. Thrush, "that I promised the children an especially nice supper to-night if they would not chirp or stick up their heads and look over the edge of the nest. They are really getting so big now that Mr. Thrush and I can do nothing with them. Last night when I went home I found my eldest son, Brown Thrush, sitting on the edge of the nest, and he is taller——"

Just then a large shadow wavered over the sunshiny sward, and with a scared exclamation of "Hawk!" the birds flew swiftly in different directions, not waiting to see that the object which cast the shadow was nothing but a harmless paper kite.

S. E. McKee.



MARbled MURRELET.  
 (Brachyramphus marmoratus.)  
 About ½ Life-size.  
 FROM COL. CHI. ACAD. SCIENCES.

**THE MARbled MURRELET.**  
 (*Brachyramphus marmoratus.*)

This little bird belongs to the family of auks and puffins, the guillemots and the dovekie. It is the sea bird family (Alcidae) for all the species are maritime, spending most of their time on the ocean. Nearly all the species frequent the Pacific coast of North America. A few are, however, found on the Atlantic coast. They seem to frequent the wildest and most rocky shores and generally congregate in large colonies which may include several species. Their structure unfits them for locomotion on the land where they move in an uncouth and awkward manner, but they are agile and quick swimmers and expert divers. It is said that they will remain under water for several minutes, swimming for long distances. They use their wings in diving. The Marbled Murrelet inhabits the coast of the Pacific ocean from San Diego, California, northward, breeding only in the northern part of its range. These birds are seldom found at any great distance inland. It is said that their nests, like those of the petrels, are built in holes in banks or in burrows in the ground. They have also been known to lay their eggs in the open crevices of cliffs where but little effort is made to build a nest other than the gathering together of a few sticks and twigs.

The ovate eggs are of a buffy color and are marked with varying shades of brown.

**BEFORE THE STORM.**

A whirl and sweep of snow-white wings,  
 Soft brown-flecked breasts, now here, now there  
 A-sway upon the ragged weeds  
 Or darting through the wintry air.  
 I watch you from the frosted pane  
 Beside the glowing hearth-stone warm,  
 And shudder as I hear the wail  
 Of angry winds before the storm.

—Mary Morrison.

**BOY-CHICKADEE.**

I doubt if any one was ever haunted by a more commonplace object than a fence-post; yet, terminating a fence



that borders a little farm, there is a gray old post which has haunted my imagination for several years. The fence has long ceased to fence anything in or out; the uppermost rail is the only one left and that is fastened to my post about five inches from the top. Just under the lee of that rail is a round hole which is rather jagged about the lower edge as if gnawed by sharp little teeth. Every time I travel that road I am impelled to stop and put a finger into that hole. I always expect to discover a secret, yet never do. Still, the post haunts me for once Boy-Chickadee kept house there.

Boy-Chickadee is one of our smallest birds. He wears a dumpy little gray coat surmounted by a pair of bright black eyes under a velvety black cap. Dear to the heart of every bird-lover, he is especially so in winter. It is then that his crystal pendulum of song swings lightly to and fro where other bird-song is rare. It is rather plaintive—two minor notes swing to the left, then two more to the right—and seems to belong only to frosty mornings. Boy-Chickadee stays to wish you “A Merry Christmas” and “A Happy New Year,” and comes daily to dine on sunflower seeds stowed in a large gourd for him. I should be ashamed to say how many seeds he consumes at a sitting, or flitting better describes it. He flits in for a seed, then out to the apple-tree to hammer it, uttering gurgles of content all the while. He spends so much time eating them that I eye my store anxiously wondering if it will hold out under such onslaughts. Sometimes he brings a companion and they take turns going into the gourd. His British enemies tag him enviously and hang about the gourd-door; but it is cut too small for them and they can only gaze in. It is Boy-Chickadee’s cache.

In summer time Chickadee deserts us and we must seek him in the fields, and that is how we came to find the fence-post. We sat waiting for birds to bathe, but waited in vain. They bathed up-stream and they bathed down-stream. We saw them drying their feathers, but they would not bathe by us. A dripping Chickadee flew overhead and sat preening his feathers in a sweetgum tree. How nearly we had come to seeing that bath! (a thing we had never achieved). In despair we crossed the road and hid behind the sassafras hedge. Presently something strange passed us and there was Dame Chickadee with a very queer burden. Imagine yourself with a mouthful of excelsior larger than your head, and you will have some idea of her comical appearance. She peered at us from behind her treasure first with one eye and then with the other. We were all attention. A dozen times she darted towards the old fence, but we were too alarming and she could not make up her mind to brave us. Each time she retreated to the sweetgum, holding tight to her bundle—it might have been a clematis blossom, I could not say. It was the first time I had ever seen a Chickadee look self-conscious. At the same time we saw that Boy-Chickadee had dipped in once more and was dripping wet. It was maddening. At last she made a wide curve towards us and disappeared. I sprang to the fence-post and discovered the round hole, and with an ecstatic catch of the breath I put one finger in. A bunch of indignant feathers hurled itself against my hand and out came the finger and out came she and whisked away with such lightning rapidity that we barely saw her. The hole was too deep and too well shadowed to tell us anything more than that it had a secret in its keeping and although we should have liked to camp by the post it was not to be.

At our next visit we found Dame Chickadee setting and Boy Chickadee feeding her; again, and the post had become a nursery. It seemed too ludicrous that such babes-in-the-woods should ever attain to the dignity of fatherhood and motherhood; but this time neither parent was there to be laughed at, and as I tapped at the door a perfectly intelligible “Day-day-day-day” came from the nursery; the babes had already learned to talk! 121

It was so long before we visited them again that we expected to find the post deserted. There was no sign of occupancy and I felt depressed because it was all over. But a gentle tap brought a tiny, angular cranium and a careworn baby face to the door. It didn’t seem possible that Boy Chickadee could have such a homely bairn! We withdrew in haste when he threatened to come out; but we had summoned him and the moment had come to seek his fortune. The youngster stepped into the door and set sail straight across the wide roadway. When we caught a rear view of the tiny sailboat our gravity was undone, for not a vestige of tail adorned it and he was the most unfinished fledgling we had ever seen.

This was the last sign of life the old fence-post yielded, but I cannot learn to believe it final. I am constantly expecting to see more Chickadees set sail, and its possibilities still haunt me.

Elizabeth Nunemacher.

## **THE STORY BIRD.**

The parrot has been called the “bird-man” on account of its intelligence; but so many anecdotes are told of it that it might well be styled the Story-bird.

Of the four hundred and thirty different species known, America claims one hundred and twenty-six. Europe is the only large country that does not possess native tribes of parrots.

The parrot is the monkey of the feathered world, because of his imitative powers. He also uses one of his feet as a hand to carry what he eats to his beak.

A parrot possessed of remarkable linguistic powers, being able to speak in Spanish, Portuguese, French, German and English, was accustomed whenever a visitor was at all boisterous to imitate his laugh and then groan in anguish, exclaiming in tones of commiseration, “Poor, poor Polly!”

A cardinal is said to have paid a hundred crowns for a parrot that could recite without a blunder the Apostles’ creed and chant the Magnificat correctly.



An attempt was once made to reform a bad parrot which kept saying, in reference to his mistress, "I wish the old lady would die."

The curate sent over his own bird, that had been religiously trained, hoping its influence would have a good effect on the bad bird. But whenever the latter said, "I wish the old lady would die," the clergyman's bird rolled up its eyes and exclaimed, "We beseech Thee to hear us, good Lord."

Belle P. Drury.

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## THE BEAR.

Though the Bear is classed with the Carnivora, or flesh-eating animals, it is really omnivorous in the best acceptance of that word, for it will thrive on a vegetable diet for many weeks at a time. Bears will devour the various kinds of berries, grains, the succulent leaves of herbs and the fleshy roots, with evident relish. There is, perhaps, no more dainty morsel for them than the young and tender buds of trees and shrubs as they are prepared by Nature, wrapped in their winter covering and containing an abundant food, stored there for the nourishment of the growth of the coming season—a food useful to the animal as well as the plant. The young seem to depend entirely on vegetable food, but as they grow older, though still preferring the products of the plant, they will eat a variety of animal forms, such as insects, mollusks, crustaceans, worms, birds and their eggs. When driven by hunger they will kill and eat larger prey, such as deer and domestic cattle. They will also devour the dead bodies of animals freshly killed, but only before there is any taint or odor. Thus, though Bears have the structural characteristics of the flesh-eating animals, this classification is misleading to the untutored observer who watches them in our menageries or even in their native homes.

The Polar Bears are perhaps the most carnivorous of them all, living almost entirely on animal food, when in their natural homes. The Grizzly Bear is also a flesh-eating species, though it will subsist on a vegetable diet. It is an interesting fact that the nature of their food seems to determine the degree of strength and the ferocity that they possess. The influence of the diet is shown not only on the various species but also upon the individuals of the same species. The Bears fed only upon vegetable foods exhibit a much milder disposition and are less resentful when crossed.

Bears are distributed throughout the world except in Australia. In the words of Brehm, "They inhabit the warmest as well as the coldest of countries, high mountains as well as the coasts of the Arctic Sea. Nearly all species select dense, extensive forests or rocky regions, generally lonely spots. Some delight in watery or damp situations, streams, rivers, lakes, swamps and the sea, while others prefer stretches of dry land. One species is confined to the sea-coast and seldom penetrates the depths of the continent, but still undertakes more extensive migrations than the others, traversing great distances on drift ice, crossing the northern Arctic Ocean and migrating from one continent to the other."

Besides the bears of the present day there are extinct forms, remains of which occur in the later geologic ages. The Great Cave Bear, remains of which have been found in the caves of Central Europe, indicate that this species was even larger than our Polar Bear, which may measure nine feet in length.

The opinion is prevalent that the movements of the Bear are awkward and slow and that they are neither fleet nor active in locomotion. This is true, to a certain extent, in the case of the larger species, though they are endowed with great endurance. On the other hand the smaller species are notably quick and active in their motions. In fact all species when excited will pass over the ground at a rapid rate, their strides resembling a sort of gallop. All climb, especially when young or until their great weight prevents them from doing so.

A few of the species are excellent swimmers and can remain under water for some time. The Polar Bear well illustrates this characteristic, for it has been seen many miles from the shore, swimming easily and showing a wonderful power of endurance.



BLACK BEAR.  
(*Ursus americanus*.)  
Greatly reduced.  
FROM COL. JOSEPH STEPPAN.

We are told that "some species are sensible and sagacious and may be trained to a certain extent; but they exhibit no high mental development. Some individuals become very tame, though they display no particular affection for their master and keeper. They always revert to their grosser animal instincts in old age, for then they become wicked, intractable and violent. The Bears signify their various moods by modulations of their remarkable voices, finding utterance in dull growling, snorting and murmuring, or grunting, whistling and sometimes barking sounds." 125

A family of young Bears consists of from one to six, which are fed and protected in the most tender manner by their watchful and careful mother. Born naked and blind, it is usually five or six weeks before they can see and have a seasonable coat of hair. After this, they are full of life and very playful, and their antics are very amusing.

Bears may be classed under three groups; the Sea Bears, the Land Bears and the Honey Bears.

The Polar or White Bear is the only representative of the first class. This species has been wonderfully provided for by Nature. Living as it does in the regions of perpetual ice and snow, the pure white color of its fur becomes a protection, as it is less easily observed. It also, unlike the other species, has the soles of its feet covered with hair which enables it to move more freely and safely on the ice. They have been noted at a distance of fully fifty miles from the nearest shore, swimming without effort and showing no fatigue.

One of the best known of the Land Bears is the Brown Bear of Northern Europe and Asia. It varies greatly and some authorities divide it into several distinct species. It is easily tamed and because of the ease with which it supports itself on its hind feet it is often taught to step to the sound of music. Here also is classed the Grizzly Bear, which is nearly as large as the Polar Bear and much more ferocious. It has been known to attack the bison and carry a body weighing one thousand pounds or more to its den some distance away.

The Black Bear of our illustration is also a member of this class. It is a native of the wooded parts of North America. This species is timid though agile, strong and is of great endurance. Its fur is soft and even and shining black in color. It can run more swiftly than can a man and will escape in this manner if possible.

Though it principally feeds on herbs, fruits and grains, it will also devour live stock of the smaller kinds and may even attack cattle. In captivity they are much better natured than the other species. "They never make hostile use of their strength in their relations with their keepers, but completely acknowledge human supremacy and present no difficulties in their training. At any rate, they fear their keeper more than he does them."

The third class is illustrated by a single species, the Sloth, or Honey Bear, also called the Aswal. It is a native of India and frequents hilly localities. It feeds upon fruits, honey and the lower animals, such as ants and the grubs of various insects. It also enjoys the comb and honey of bees. With its large and scythe-shaped claws it will destroy the strongly built homes of the white ants. In its native country the Sloth is trained by jugglers to perform many tricks and in captivity it is docile and comparatively good-natured.

Wrens versus Sparrows: Some time since in the early spring, a pair of English Sparrows made up their minds to take possession of a bird house in our garden which a pair of Wrens had occupied for two previous years.

Mr. and Mrs. Wren had not yet arrived, so there was none to dispute the sparrows' right or suspend operations. All went well and the nest was nearing completion, when one bright sunny morning, the former occupants arrived on the scene and trouble at once began. They evidently resented the action of the sparrows in taking the house which they anticipated using for a summer residence. An indictment of evacuation was at once served and being met by a show of sparrow impudence, forcible expulsion was next in order.

Mr. Wren took up his position on the front porch of the little house, and by a series of savage attacks and much loud scolding, succeeded in keeping the pair of sparrows off, while Mrs. Wren, working with desperate determination, proceeded to tear the nest apart and carrying the materials out the little back door, scattered them in all directions. My! what a shower of hay, straw, feathers, sticks, etc. This was continued until the house was entirely cleared. Then, without delay, began the process of reconstruction. During this time the sparrows did not sit idly by and see their work destroyed, but there was a continuous battle between them, and when the action became too pressing, both Wrens would make a grand charge which invariably resulted in driving the enemy back. By and by the new nest was finished, and although bad feeling existed for several days afterward, with frequent passages at arms, the sparrows finally gave up the fight as hopeless, and Mr. Wren mounted the chimney, standing guard, and at the same time giving vent to his feelings in loud and spirited song. Of course, our sympathies were with the victors.

Cat Bird and Cherry Stone: During one of my many rambles through the woods, I discovered the nest of a Cat Bird in a thick clump of briars and upon drawing near found it contained four little ones. Retreating for a short distance, I stopped and watched the mother bird who was greatly excited at first, but seeing that I meant no harm to her little family, she proceeded with household matters.

After giving the young ones two or three worms and other choice morsels, she brought a good-size red cherry and offered it to one of the nestlings. The little bird could not swallow it, so what did the mother do but take the cherry out of its mouth, remove the stone with her beak and feet, and then give it back to the nestling in a crushed state. This time it disappeared in a trice. The incident impressed me as being not only amusing but an excellent illustration of "bird sense."

Chippies Dividing Crumbs: While sitting under a shade tree in the yard, I observed a pair of Chippies eating two crumbs of bread. One crumb was much larger than the other, and of course the bird having the smaller one finished first. Then what! Simply this, the other Chippy at once broke his crumb in half and proceeded to place a portion of it within reach of his mate. In this way each had nearly an equal amount. Beautiful incident; well might man take this lesson home to himself; what an exhibition of love and generosity; what a different world this would be if people acted more on the principle of these innocent little birds!

Berton Mercer.

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## SEA-MEWS IN WINTER TIME.

I walked beside a dark gray sea,  
And said, "O world, how cold thou art!  
Thou poor white world, I pity thee,  
For joy and warmth from thee depart.

"Yon rising wave licks off the snow,  
Winds on the crag each other chase,  
In little powdery whirls they blow  
The misty fragments down its face.

"The sea is cold, and dark its rim,  
Winter sits cowering on the world,  
And I, besides this watery brim,  
Am also lonely, also cold."

I spoke, and drew toward a rock,  
Where many mews made twittering sweet;  
Their wings upreared, the clustering flock  
Did pat the sea-grass with their feet.

A rock but half submerged, the sea  
Ran up and washed it while they fed;  
Their fond and foolish ecstasy  
A wondering in my fancy bred.

Joy companied with every cry,  
Joy in their food, in that keen wind,  
That heaving sea, that shaded sky,  
And in themselves, and in their kind.

The phantoms of the deep at play!  
What idlers graced the twittering things;  
Luxurious paddlings in the spray,  
And delicate lifting up of wings.

Then all at once a flight, and fast  
The lovely crowd flew out to sea;  
If mine own life had been recast,  
Earth had not looked more changed to me.

"Where is the cold? Yon clouded skies  
Have only dropped their curtains low  
To shade the old mother when she lies,  
Sleeping a little, 'neath the snow.

"The cold is not in crag, nor scar,  
Not in the snows that lap the lea,  
Not in yon wings that beat afar,  
Delighting, on the crested sea;

"No, nor in yon exultant wind  
That shakes the oak and bends the pine.  
Look near, look in, and thou shalt find  
No sense of cold, fond fool, but thine!"

With that I felt the gloom depart,  
And thoughts within me did unfold,  
Whose sunshine warmed me to the heart:  
I walked in joy, and was not cold.

—Jean Ingelow.

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## SNAILS OF POND, RIVER AND BROOK.

Many of my readers have doubtless kept an aquarium at some time in their life and have stocked it with several goldfish, a small turtle and some fresh-water snails. They have also, without doubt, stood in front of the aquarium and watched the strange antics of each of the three kinds of animals and have wondered at the swiftness with which the little snails progressed about the glass sides of the artificial pond. It is of these molluscan denizens of fresh water that I shall write in this article.

In the fresh-water species the shell is not often rounded like that of the land snails, but is more frequently long and pointed, the spire resembling a church steeple. The animal, too, differs very greatly, the tentacles being either flat and triangular or long and very tapering. The eyes are not placed at the end of the eye-peduncles, as in the land shells, but are generally situated on little swellings at the base of the tentacles. They may be found in almost any body of water, adhering to stones, sticks, and other submerged objects, or crawling over the sandy or muddy bottom.

Our fresh-water snails may be divided into two classes; first, those which breathe by means of a lung and which must come to the surface at regular intervals to take in a supply of air, and, second, those which breathe by means of plume-like gills which take the oxygen directly from the water.

One of the most common and best known of the first class is the Limnaeidae, comprising the pond snails. These animals have generally a long, graceful shell, horn-colored for the most part, but sometimes greenish without and reddish within the aperture. The animal has a broad, flat foot, an auriculate or eared head, and flat, triangular tentacles. The habits of these animals are very interesting. They will wander about the sides of an aquarium, eating the growths of green scum which have collected. At this time the mouth may be seen to open, exposing the radula and the operation of eating is not unlike the motions of a cat lapping milk. They are such voracious eaters that the dirtiest aquarium will be cleansed by them in a very short time. It is interesting to note that the young animals breathe air through the water for a long time, and finally acquire the normal characteristic of the family of breathing the air directly. While submerged, the mantle chamber containing the "lung" is tightly closed so that no water can possibly get in. It is thought by some that the species of Limnaea living at great depths retain the early habit of allowing the water to fill the mantle cavity and so breathe oxygen through the water and are not, therefore, compelled to come to the surface for air.

Limnaea lives under many varying conditions, being found in the arctic regions of Greenland and Iceland as well as in the tropics, in thermal springs and those containing mineral matter, as sulphur, as well as in brackish and fresh water. They have been found at a height of over fourteen thousand feet in Thibet and at a depth of eight hundred feet in Lake Geneva, Switzerland. During times of drought when the streams are dried up and the surface of the mud is sun-cracked, the species of this family bury themselves deeply in the mud and cover the aperture with an epiphragm, in much the same manner as the land shells. This fact accounts for the apparent disappearance of all life from a pond when it dries up, and its sudden and seemingly unaccountable reappearance when the pond is again filled with water.

A genus of pond snails closely allied to Limnaea, but having discoidal or spiral shells, is Planorbis, the flat-orb

shells. Instead of dragging their shells after them, as in the last genus, they carry them perfectly perpendicular, or perhaps tilted a little to one side. The animals are very rapid in movement, more so than *Limnaea*, which are rather sluggish. They delight in gliding rapidly about, their long, filiform tentacles waving about like a whip in the hands of an impatient driver.



LAND AND RIVER SHELLS.  
FROM COL. CHI. ACAD. SCIENCES.

Top row:

- Physa gyrina* (U. S.)
- Melania tetrica* (Viti Islands.)
- Angitrema verrucosa* (U. S.)

Second row:

- Planorbis trivolvis* (U. S.)

Third row:

- Pleurocera elevatum* (U. S.)
- Ampullaria depressa* (U. S.)
- Limnaea stagnalis* (U. S.)

Bottom row:

- Vivipara contectoides* (U. S.)
- Campeloma subsolidum* (U. S.)
- Limnaea megasoma* (U. S.)

The *Limnaeas* of which we have been speaking have mostly dextral or right-handed shells, that is, have the aperture on the right side when you hold the shell in the position pictured on our plate. In the family Physidae the shell is left-hand or sinistral. The members of this family have shining, horn-colored shells, more or less fusiform. The tentacles are long and filiform and are constantly moving about as in the allied genus *Planorbis*. The animal is very active and moves about with a steady, gliding motion. It is very interesting to watch a number of Physae in an aquarium; as they are crawling along the bottom, one will be seen to rise suddenly to the top of the water and move along with the foot applied to the surface, the shell hanging down. Again, they may be seen descending, suspended by a thin thread of mucus. When the animal rises suddenly, the branchial cavity which contains the lung is heard to open with a faint, clicking sound, which is probably due to the pressure of air in the

lung being suddenly liberated. Several of the species of *Physa* inhabit water as cold as the freezing point and they may be frequently seen in winter gliding over the bottom of a stream or pond when the surface is frozen. The little glairy, transparent masses of jelly-like matter which are seen attached to stones and the under side of sticks, are the eggs of *Physa* or *Limnaea*.

Not all of the fresh-water pulmonates have spiral shells. A whole family, the *Ancylidae*, have a conical shell formed like a rounded shield, and resembling the limpets, hence called the river limpets. They are generally quite small and live attached to the interior of dead river shells and to submerged plants and to rocks. They are very interesting, but hard to find on account of their small size and inconspicuous habitat.

The second class of mollusks or those that breathe air through the water, have a respiratory cavity instead of a lung, in which is placed a series of leaflets, arranged like the teeth of a comb in two series of lines, forming the so-called gills. The mouth, also, is placed at the end of a long rostrum, or proboscis, and not in the lower plane of the head, as in the first class. Among the most common of this class are the river snails, known as *Strepomatids*. There are about three hundred species in this family, and with two or three exceptions they are confined entirely to the United States in geographical distribution. The shells are more or less graceful, having long, turreted spires and small apertures. The color of the shells is generally a uniform greenish or yellowish, although some species have color bands, and the aperture is frequently tinged with purple or reddish.

The animal is very interesting in captivity. It is not very bold and will lie on the bottom of an aquarium with its head and foot half protruding from its shell, and its rostrum and tentacles slowly moving about. Frequently it may be seen moving along with its head and rostrum bent down and moving about like a hound on the scent.

A family closely allied to the last is the *Melaniidae*, the animals of which inhabit the entire world, except North America. They may be distinguished from the last family by the presence of little finger-like digitations on the edge of the mantle. The shells are generally larger and more highly colored than those of the last family, many of them being of a dark chocolate color and some are of a beautiful glossy black; some shells are smooth, while others are ornamented by knobs and spines. The genus *Melania*, a species of which is illustrated on the plate accompanying this article, is the most characteristic form.

The largest and handsomest of the fresh-water snails belong to the two families *Viviparidae* and *Ampullariidae*, the shells of the latter family frequently attaining a length of three inches. The animals of the first family prefer a sandy beach in a large lake or river, while those of the second generally live in more or less muddy rivers, ponds and creeks. A single genus of *Viviparidae* (*Campelona*) is confined solely to the United States, east of the Rocky Mountains. Their shells are generally of a rich grass green and in certain localities they may be collected by the thousands. Unlike many of the snails of which we have been writing, this family is viviparous, that is, brings 132 forth its young alive, instead of laying eggs, as in the family *Limnaeidae*. This character has given the family its name, which is certainly well chosen. When born the shell is about one-sixteenth of an inch in length and is perfectly transparent. The animal is very active and eats voraciously of any vegetation within reach. Another handsome shell belonging to this group is the *Vivipara contectoides*, which is about an inch in length and is encircled by several color bands. It is a common shell in many of our ponds.

Somewhat larger and handsomer than the *Viviparas* are the *Ampullarias*, or apple-shells (also called idol-shells and pond snails). These animals live mostly in tropical and subtropical regions and are noted for the tenacity with which they retain their hold on life. So tenacious of life are they that instances are known of their living for several years away from the water, in this respect resembling some of the land snails. It is also recorded that hollow pieces of logwood from Honduras have frequently contained specimens of this family alive after a journey of thousands of miles. They may be said to be truly amphibious.

The writer has collected in Florida the large *Ampullaria depressa* in considerable numbers. It was noted particularly that this species furnished the principal food of the Everglade Kite, a bird inhabiting the southern part of Florida. Large quantities of these shells were found about the nesting places of these birds, from which the animal had been neatly extracted without damaging the shell in the least. The bird is, curiously enough, provided with a curved bill which easily fits into the aperture of the mollusk and extracts the animal with little difficulty, and the feet and claws are so constructed that the shell may be firmly held during the operation. This shell is figured on the plate.

In Central Africa there is a lake, *Tanganyika*, having a length of four hundred miles and a width of from ten to fifty miles, and at an elevation of twenty-seven hundred feet above sea level, which has one of the most interesting and peculiar fresh-water molluscan faunas known. It is thought that at some remote period in geological history this lake formed a part of the ocean and that in the course of time it was cut off from the sea, gradually became fresh and was finally raised to its present elevation. The reason for such a theory is the presence in the lake of certain molluscan organisms whose shells closely resemble those of the salt water family, *Littorinidae* (*Periwinkles*). The fact that certain species of the family inhabit brackish water and are even subject to the influence of fresh water, adds additional weight to this theory. The shell of this species (*Limnotrochus thomasi*) also resembles certain of the top-shells (*Trochus*), which are marine in habitat. Most of the other species inhabiting this lake are like the fresh water *Viviparas* in form.

The animal of *Ampullaria depressa* is very curious and interesting when studied alive. The foot is very wide, almost square in some positions; the head is narrow, separated from the body by a neck and the region of the mouth is produced into two long, cylindrical, tapering, tentacular processes, which are probably tactile organs like the elongated lips of *Glandina*, described in the last article. On the top of the head are placed the two whip-like tentacles, which are longer than the length of the whole animal and are always waving about when the animal is in motion. Just back of the tentacles the eyes are placed at the end of two short, rounded prominences or peduncles. From the left edge of the aperture extends the long, hollow, cylindrical siphon formed by two extensions of the mantle. On the upper side of the posterior end of the foot is placed the horny, concentric



operculum or door. When the animal withdraws into its shell the head first disappears with its appendages and the siphon, and the foot is doubled up in the middle, the operculum shutting in last and closing the interior against all enemies.

All of the different groups of the mollusca have their giants and their pigmies and the fresh-water mollusks are no exception to the rule. We have thus far studied the animals of normal size and the giants. Let us now turn our attention to some of the pigmies among the fresh-water snails. One of the commonest of these small mollusks is the *Bythinia tentaculata*, the shell of which does not exceed half an inch in length, and is formed in a graceful, tapering turret. This species, like many other European animals, has been introduced into this country and bids fair to eclipse many of the native species in the number of individuals. It probably first came over with some merchandise, which was shipped west by the way of the Erie canal. The snail, once established in the canal, has had every opportunity to spread over the entire United States. The canal is emptied every year and cleaned and the water, with its organisms, is allowed to flow into the little streams and the larger rivers and thence into Lake Ontario. From this lake this species has spread so that it is also found in Lakes Erie and Michigan, and will eventually spread over the entire northern portion of the United States. This is but one of the many examples of different species being carried by human agencies from one part of the world to another.

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But there are many species of these smaller fresh-water snails that are pigmies, indeed, whose tiny shells do not exceed an eighth of an inch in length and which require the aid of a microscope to adequately study their delicate organisms. These minute animals live on water plants and on any submerged object. They vary from long, pointed, steeple-like shells to those which are perfectly rounded like a miniature apple. In our own country these little creatures may be found in any of our ponds or streams, and the lively little animals are well worth a closer acquaintance. They are known scientifically under the difficult names of *Paludinella*, *Amnicola*, *Somatogyrus*, *Fluminicola*, with many others, and do not bear any specific English titles.

Much more might be written concerning the habits and variations of the freshwater snails. The best way to become acquainted with these interesting animals is to collect them alive and study their various modes of life in an aquarium. This receptacle need not be an elaborate or expensive affair. A fish globe six or eight inches in diameter makes an admirable aquarium and even a quart Mason fruit jar has been successfully used by the writer. The bottom should be covered to a depth of an inch or more with clean, fine sand and several stones should be introduced for the snails to "roost" upon. If the aquarium is large enough a few water plants like water cress might be introduced to assist in purifying the water.

The best Mollusks for this purpose are the *Limnaea*, the *Planorbis*, the *Physa*, the *Vivipara* and some of the "pigmies" just mentioned. Much can be learned concerning the habits of our common snails if a record is kept of everything the animal does, such as its mode of eating, what it will eat and the increase in size from day to day of the little snails after they are hatched from the egg. If these creatures could be considered by the majority of people as living, breathing animals, performing many of the functions carried on by our own bodies they would be regarded with more favor and hence aquaria would become more numerous and they would also be studied more intelligently. The writer has been frequently amused (and sometimes pained) by the careless question of some otherwise intelligent person, when he has been exhibiting the shell of some interesting mollusk, "Well, really, now, was that thing ever alive?" It is to be earnestly hoped that this series of articles will reach many of this class of people and lead them to a better understanding of these lowly creatures.

Frank Collins Baker.

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## **THE ORANGE.** **(*Citrus aurantium*.)**

The tree which produces the well-known Orange of commerce is closely related to the lemon, the citron and the lime, and with them belongs to the genus *Citrus*.

By some it is supposed that Linnaeus selected this name, deriving it from a corruption of the Greek word meaning cedar-tree, because, like the cedar, it is an evergreen. By others it is held that the name was chosen in honor of the city of Citron in Judea. In ordinary language the name citron is applied to another species of the genus, the fruit of which is oblong, about six inches in length and with a thick rind.

Many consider that the name Orange is a direct corruption of the Latin word *aureum*, meaning golden; but our best authorities on the derivation of words believe that the name, though a corruption, reached its present form in the following manner: "The Sanskrit designation *nagrungo*, becoming *narungle* in Hindustani, and corrupted by the Arabs into *naranj* (Spanish *naranja*), passed by easy transitions into the Italian *arancia* (Latinized *aurantium*), the Roman *arangj*, and the later Provincial Orange."

In regard to the original home of the Orange there is a great diversity of opinion, yet there is little doubt that it was in some portion of southern Asia. Both the Orange and the lemon were unknown to the Romans, hence they must have been indigenous in a country not visited by this people. The region traversed by them was great and they even penetrated India. They were a people who were inclined to please the palate and would surely have used the Orange and taken it home with them if discovered and would doubtless have recorded the finding of so important a fruit. These facts tend to prove that the Orange was not then cultivated in India unless in the remoter parts. Other portions of Asia were unknown to the Romans but, with the exception of the southeastern portion, climatic conditions would not have permitted the growth of the Orange.

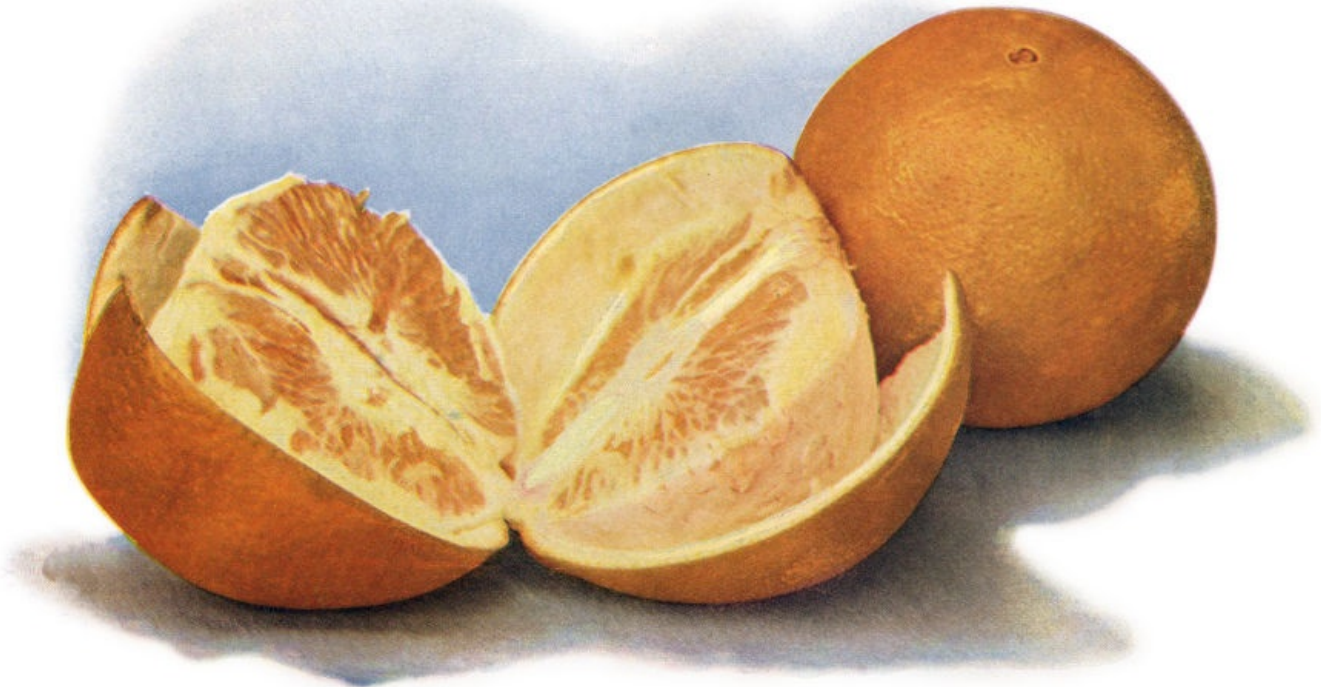
De Candolle, an eminent botanist and one the truthfulness of whose investigations cannot be questioned, held that the original home of the Orange was the Burmese peninsula and southern China. Throughout both China and Japan this fruit has been cultivated from very ancient times.

Though not found by the Romans in India it was later cultivated there and without doubt it was carried from there by the Arabs to southwestern Asia previous to the ninth century and from there into Africa and to some of the European islands. The Arabian physicians were familiar with the medicinal virtues of the Orange and have spoken of it in their writings. It was probably afterwards introduced into Spain and possibly to other portions of southern Europe by the same agency as it seemed to follow the spread of Mohammedan conquest and civilization. Thus in the twelfth century we find that the bitter Orange was a commonly cultivated tree in all the Levant countries. There is no reference to the sweet Orange in the literature of this time and it must have been introduced at a later period. It was certainly cultivated in Italy as early as the sixteenth century.

In more recent years the cultivation of the various varieties has spread throughout the world wherever the climate and the conditions of the soil will permit the ripening of the fruit.

Risso, in his valuable history of the Orange family, enumerates one hundred and sixty-nine varieties with distinct characteristics. Of these he classes forty-three under the *Citrus aurantium*.

Besides the sweet and bitter varieties the more common ones are the Mandarin Orange of China, a flat and spheroidal fruit the rind of which easily separates from the pulp; the Tangerine, which is very fragrant and originally derived from the Mandarin, and the Maltese or Blood Orange, commonly grown in southern Italy and notable for its deep red pulp. There are many other varieties that bear geographical or local names.



ORANGES (NAVEL).  
(*Citrus aurantium*.)  
PRESENTED BY LOUIS KUNZE.

Few forms of plant life present to the beholder more beautiful characteristics than an Orange tree in full bearing. Such a tree, in addition to the unripe and ripe yellow fruit has also numerous white flowers, which give off their wonderful perfume, and its symmetrically arranged branches are covered with rich dark green leaves. It is a tree that appeals not alone to the sense of taste but to the esthetic nature as well. 137

### **THE MUSICAL SWAN.** (*Cygnus musicus*.)

“What moonlit glades, what seas,  
Foam-edged, have I not known!  
Through ages hath not flown  
Mine ancient song with gathered music sweet—  
By fanes o’erthrown,  
By cities known of old, and classic woods,  
And, strangely sad, in deep-leaved northern solitudes?”

If those living Avian gems aglow amid the trees that form Earth's emerald diadem, are the jewels of Nature's crown, then is the great white swan afloat upon the ripples of her glistening lakes and seas, a shimmering pearl amid the chasing of her silver breastplate.

Yet it was not the beautiful Mute Swan, most beautiful, most stately, and most silent of all created beings, that typified to the men of old the reincarnation of the poet's soul; neither the Trumpeter, with its loud clarion, but the more slender Singing Swan of song and story, that "thro' its deathless music sent a dying moan." It was to this swan alone that the ancients could attribute the power of melody—the singular faculty of tuning its dying dirge from among the reedy marshes of its final retreat, where "in a low, plaintive and stridulous voice, in the moment of death, it murmured forth its last prophetic sigh;" and it was this swan, too, that inspired the philosopher Pythagoras to teach that the souls of poets passed at death into swans and retained the powers of harmony they had possessed in their human forms.

M. Antoine thinks that it is not improbable that the popular and poetical notion of the singing of the swan was derived from the doctrine of the transmigration of souls; yet the traveler Pausanius, who spake as one having authority, affirmed the swan to be "the glory of music," at the same time preserving the following testimony to the repute of the swan as a bird of prophecy: "In the night before Plato was to become the pupil of Sokrates, the latter in a dream saw a swan take refuge in his bosom. Now the swan has a reputation for music, because a man who loved music very much, Kuknos, the king of the Ligyes beyond the Eridanus, is said to have ruled the land of the Kelts. People relate concerning him that, through the will of Apollo, he was changed after his death into a swan." From this evidence Pausanius thus subtracts the weight of his private opinion: "I am willing to believe that a man who loved music may have ruled over the Ligyes, but that a human being was turned into a bird is a thing impossible for me to believe."

Mr. Rennie cites, also: "In his Phaedro, Plato makes Socrates thus express himself: 'When swans perceive approaching death, they sing more merrily than before because of the joy they have in going to the God 138 they serve; but men, through fear of death, reproach the swans, saying that they lament their death and sing their grief in sorrowful tones.' After digressing to assert that no bird sings when either hungry or sorrowful, he resumes, 'Far less do the swans sing out of grief, which, by reason of their belonging to Apollo, are diviners, and sing more joyfully on the day of their death than ever before, as foreseeing the good that awaits them in the other world.'"

Charles de Kay wrote: "Not the magnificence merely, but the element of superstitious reverence accounts for the frequency of the swan as a crest and charge of coats of arms," stating that in heraldry the swan runs back through heraldic devices to totemism, and that among the "oath-birds" which wizards of Lapland called upon in their incantations, the swan often figured.

It is also asserted that German local legends retain the idea of the swan as an uncanny bird, prophetic of death or the under world, and that the Klagesee, or Lake of Complaining, near Liban, was so named from the numbers of musical swans that congregated there.

Pliny says, "Some affirm that swans sing lamentably a little before death, but untruly, I suppose, for experience of many has shown the contrary." But Aristotle says, "Swans are wont to sing, particularly when about to die, and mariners in African seas have observed many of them singing with a mournful voice, and expiring with the notes of their dying hymn."

Cicero affirmed that Lucius Crassus spoke with the divine voice of a swan about to die; while Homer makes no allusion to their singing, but mentions their "flying round the springs of Cayster, clanging on sounding pinions." Oppian asserts, "They sing at dawn before the rising of the day as if to be heard more clearly through the still air. They also sing on the sea-beach, unless prevented by the sounds of storms and boisterous weather, which would not permit them to enjoy the music of their own songs. Even in old age, when about to die, they do not forget their songs, though they are more feeble than in youth, because they cannot so well erect their necks and expand their wings. \* \* \*

"They are invited to sing by Favonius, and as their limbs become sluggish and their members deficient in strength when death approaches, they withdraw to some place where no bird can hear them sing, and no other swans, impelled by the same cause, may interrupt their requiem."

While on the one hand Julius Scaliger vituperates Cardan for "lauding the nonsense of the poets, and the mendacity of the Greeks about the singing of the swan," Aldrovand cites on their behalf the testimony of one Frederico Pendasio, a celebrated professor of philosophy and a person worthy of credit, who told him that he had frequently heard swans singing melodiously while he was sailing on the Mantuan Lake; also that one George Braun had heard the swans near London "sing festal songs."

Besides this, Mr. Rennie says, Olius Wormius professed that many of his friends and scholars had heard them singing, and proceeded to give the experience of one John Rostorph, a student in divinity, and a Norwegian by nation. "This man did, upon his credit, and with the interposition of an oath, solemnly affirm, that once in the territory of Dronten, as he was standing on the seashore early in the morning, he heard an unusual and sweet murmur, composed of the most pleasant whistlings and sounds; he knew not at first whence they came, or how they were made, for he saw no man near to produce them; but looking round about him, and climbing to the top of a certain promontory, he there espied an infinite number of swans gathered together in a bay, and making the most delightful harmony—a sweeter in all his life-time he had never heard."

To this testimony Goldsmith appends his personal opinion in the following words: "Thus it appears that our modern authorities in favour of the singing of swans are rather suspicious, since they are reduced to this Mr. George Braun and John Rostorph, the native of a country remarkable for ignorance and credulity." 139

Goldsmith's own belief was that the ancients had some mythological meaning in ascribing melody to the swan, "and as for the moderns, they scarcely deserve our regard. The swan must, therefore, be content with that share of fame that it possesses on the score of its beauty, since the melody of its voice, without better testimony, will scarcely be admitted by even the credulous."

This better testimony is furnished by Charles de Kay, who says that modern bird-lovers have heard the swans of Russia singing their own dirge in the North, when, having lingered too long before migration, reduced in strength by lack of food, and frozen fast to the ice where they have rested over night, they clang their lives out, even as the ancients said.

Inasmuch as we have record of the Singing, or Whistling Swan from Egypt to Alaska and the Aleutian Isles, with testimony of modern scientists as well as ancient poets in proof of the vocality of this, the largest of singing birds, the question becomes one of quality of song rather than of the actuality of the song itself. M. Montbeillard's opinion of the whistler's vocal exertions is thus expressed: "The bursts of its voice form a sort of modulated song, yet the shrill and scarcely diversified notes of its loud clarion sounds differ widely from the tender melody, the sweet, brilliant variety of our birds of song." And M. Morin even composed a memoir, entitled "Why swans that sang so well in ancient times now sing so badly." It is probable that the ancients, with due consideration for the difference in size between the swan and all other songsters, may have also given consideration in the same ratio to the theory of the enchantment that distance lends; and it is more than probable that all of this confusion of testimony resulted from confusion of species; for, as Charles de Kay explains, observations of the Mute Swan caused people to assign the song of the dying swan to the most fabulous of fables; while Hearne, who observed the Trumpeter, makes the following vigorous statement: "I have heard them in serene evenings, after sunset, make a noise not very unlike that of a French horn, but entirely divested of every note that constituted melody, and have often been sorry that it did not forebode their death."

Aldrovand, referring to the structure of the organs of voice as countenancing the poetical creed of the singing swan, says, "For when we observe the great variety of modulations which can be produced from a military trumpet, and, going upon the axiom that Nature does nothing in vain, compare the form of such a trumpet with the more ingenious mechanism of a swan's windpipe, we cannot but conclude that this instrument is at least capable of producing the sounds which have been described by the ancient authors."

In distinguishing between the Whistling and Tame or Mute Swans, Bingley describes this strange form of windpipe, "Which falls into the chest, then turns back like a trumpet, and afterwards makes a second bend to join the lungs. The curve being inside the neck of the Whistler or Hooper, instead of being an external adornment, as in the case of the graceful Mute, in whom

'Behold! The mantling spirit of reserve  
Fashions his neck into a goodly curve,  
An arch thrown back between luxuriant wings  
Of whitest garniture, like fir-tree boughs,  
To which, on some unruffled morning, clings  
A dusky weight of winter's purest snows——'

while with the Musical Swan the gift of voice is balanced by a corresponding detracting from personal appearance; for the straight neck and smaller stature impart, we are told (alas!), a certain goose-like suggestion."

This aesthetic obstacle is, however, successfully surmounted by the fact that their songs are uttered mostly at night, when flying far overhead in the darkness; but there is no help for the statement of Albertus Magnus, which must needs be taken for better or for worse, that "When swans fight, they hiss and emit a sort of bombilation, not unlike the braying of an ass, but not so much prolonged."

The Abbe Arnaud, whose observations were said to be very minute, completes the list of odious comparisons as follows: "One can hardly say that the swans of Chantilly sing; they cry, but their cries are truly and constantly modulated; their voice is not sweet; on the contrary, it is shrill, piercing, and rather disagreeable. I could compare it to nothing better than the sound of a clarinet winded by a person unacquainted with the instrument." 140

Proceeding then to depict the manner of their dual concerts, he continues: "The swan, with his wings expanded, his neck stretched and his head erect, comes to place himself opposite to his mate, and utters a cry to which she replies by another which is lower by half a tone. The voice of the male passes from A to B flat; that of the female from G sharp to A. The first note is short and transient, and has the effect which our musicians call sensible, so that it is not detached from the second, but seems to slip into it. This dialogue is subjected to a constant and regular rhythm, with the measure of two times. Observe that, fortunately for the ear, they do not both sing at once!"

Nuttall is likewise arrayed with the witnesses for quantity rather than quality of sound. Of the dying song, he says, "These doleful strains were heard at the dawn of day or when the winds and waves were still, and, like the syrinx of Pan, were in all probability nothing more than the murmurs and sighs of the wind through the marshes and forests graced and frequented by these elegant aquatic birds." Speaking of the natives of Iceland comparing their notes, "very flatteringly," to those of a violin, he suggests that "allowance be made for this predilection, when it is remembered that they hear this cheerful clarion at the close of a long and gloomy winter, and when, at the return of the swan, they listen to the harbinger of approaching summer; every note must be, therefore, melodious, which presages the speedy thaw and return of life and verdure to that gelid coast." He adds that "it emits its notes only when flying or calling on its companions—the sound being very loud and shrill, but by no means disagreeable when heard high in the air and modulated by the winds."

Of the "Peaceful Monarch of the Lake," Thomas Bewick wrote: "Much has been said, in ancient times, of the singing of the Swan, and many beautiful and poetical descriptions have been given of its dying song. 'No fiction of natural history, no fable of antiquity, was ever more celebrated, oftener repeated, or better received; it occupied the soft and lively imagination of the Greeks; poets, orators, and even philosophers, adopted it as a truth too pleasing to be doubted.' 'The dull, insipid truth,' however, is very different from such amiable and affecting fables, for the voice of the swan, singly, is shrill, piercing and harsh, not unlike the sound of a clarionet when blown by a novice in music. It is, however, asserted by those who have heard the united and varied voices of a numerous assemblage of them, that they produce a more harmonious effect, particularly when softened by the murmur of the waters."

To Cassell the voice of the swan "is low, soft and musical, and when heard from multitudes congregated together has a very pleasing effect." Shakespeare repeatedly alludes to the music of the swan with manifest confidence in its melody; Pallas, the ornithologist, likens their notes to silver bells; and Olafsson says that in the long Polar night it is delightful to hear a flock passing overhead, the mixture of sounds resembling trumpets and violins.

So now, though we no longer know that the soul of the poet returns to float, the embodiment of rhythmic grace, before our mortal eyes as in the years so long gone by, there yet remains to us the splendid imagery of that stately form in spotless plumage against the setting of the darkening sea, the wonder of that solemn requiem, and the prophecy and the mystery of the shadowy orchestra passing onward in the depths of the midnight sky.

Juliette A. Owen.



BLACK PEPPER.  
FROM K€EHLER'S MEDICINAL-PFLANZEN.

Description of Plate—A, flowering twig; 1, portion of spike; 2, ovary with stamens; 3, stamens; 4, young fruit; 5, 6, portions of spike (colors are wrong, 5 should be red and 6 should be green); 7, 8, fruit.

**PEPPER.**  
(*Piper nigrum* L.)

The pepperer formed an important member of the community in England during the Middle Ages, when a large proportion of food consumed was salted meat, and pepper was in high request as a seasoner.—S. Dowell, Taxes in England, IV. 35.

The plants yielding the black and white pepper of the market are climbing or trailing shrubs. The stem attains a length of from 15 to 25 feet. The climbing portions cling to the support (usually large trees) by means of aerial



roots similar to the ivy. The leaves are entire, simple, alternate, without stipules. The flowers are very insignificant in appearance, sessile upon a long, slender, pendulous spadix. They are mostly unisexual, either monoecious or dioecious, that is the staminate (male) flowers and pistillate (female) flowers are separate, either upon different branches of the same plant (monoecious) or upon different plants (dioecious). The fruit is berry-like, with a thin, fleshy pericarp enclosing a single seed. The young fruit is grass-green, then changes to red and finally to yellowish when ripe. In southern India the flowers mature in May and June and the seeds ripen five or six months later.

*Piper nigrum* is a native of southern India, growing abundantly along the Malabar coast. It thrives best in rich soil in the shade of trees to which it clings. It also grows in Ceylon, Singapore, Penang, Borneo, Luzon, Java, Sumatra and the Philippines. It is cultivated in all of the countries named, especially in southwestern India. Attempts at its cultivation have been made in the West Indies.

In India the natives simplify the cultivation of pepper by tying the wild-growing vines to a height of six feet to neighboring trees and clearing away the under-wood, leaving just enough trees to provide shade. The roots are covered with heaps of leaves and the shoots are trimmed or clipped twice a year. In localities where the pepper does not grow wild, well drained but not very dry soil not liable to inundations is selected. During the rainy season or during the dry season in February cuttings are planted about a foot from the trees which are to serve as support. The plants are manured and frequently watered during the dry season. They begin to yield about the fourth or fifth year and continue to yield for eight or nine years. The methods of cultivation differ somewhat in different countries. The harvest begins as soon as one or two berries of the base of the spike begin to turn red, which is before the fruit is mature. Two crops are collected each year, the principal one in December and January, the second in July and August. The spikes are collected in bags or baskets and dried in the sun on mats or on the ground. Ripe berries lose in pungency and also fall off and are lost.

Pepper is of extreme antiquity. It received mention in the epic poems of the ancient Hindoos. Theophrastus differentiated between round and long pepper, the latter undoubtedly *P. longum*. Dioscorides and Plinius mention long, white and black pepper and dwell upon the medicinal virtues of spices. Tribute has been levied in pepper. In 408, Alaric the daring ruler of the barbaric Visigoths, compelled the conquered and greatly humiliated Romans to pay as part of the ransom 3,000 pounds of pepper. During the Dark and Middle Ages pepper was a very costly article, as is evidenced by the fact that it was frequently found among royal presents. The pepper-corn rents, which prevailed during the Middle Ages, consisted in supplying a certain quantity of pepper at stated times, usually one pound each month. The high price of pepper was the prime motive to induce the Portuguese to seek a sea-route to India, the land of pepper. The route via the Cape of Good Hope led to a considerable reduction 144 in price. About this time, also, began the extensive cultivation of pepper in the Malay peninsula.

The black pepper is the unripe, dried fruit of the pepper plant. The white pepper consists of the ripened fruits from which the pulpy pericarp has been removed. It is not nearly as pungent as the black pepper, but it has a more delicate aroma. Occasionally the dried black pepper is "decorticated" by blowing, thus giving the "corns" a smooth appearance resembling the white pepper. This is a very absurd proceeding, as by this process the most spicy portions are removed. The quality of the pepper is almost proportionate to the weight of the corns; the lighter the poorer the quality. After the fruits are dried they should be carefully winnowed to remove light grains and all refuse. Very frequently these winnowings are ground and placed on the market. Adulteration of pepper is quite common, especially when ground. A wise plan is never to purchase ground spices. Buy them whole and grind them at home or have them ground before your eyes. Good whole peppers should sink in water and should not crumble between the fingers.

There are several commercial varieties of pepper, as Malabar, Penang, Batavia, etc., differing considerable in quality.

The pungent taste of pepper is due to a resin and the odor is due to an ethereal oil. Besides these there is present an alkaloid known as piperin.

The chief use of pepper is that of a spice, added principally to meats, but also to other food substances. Its use is, however, less now than it was during the latter part of the Middle Ages. So extensive was the dealing in pepper that the English grocers of the time were known as pepperers. It was very liberally used with all meats, especially chopped or sausage meats. It was used as snuff or added to snuff tobacco to increase its effectiveness. It is still highly prized as an aid to digestion. Applied externally it is used as a counterirritant in skin diseases. Italian physicians recommend it highly in malarial diseases.

Albert Schneider.

## MARCH.

March, thou bully grim and gruff,  
Ever grumbling, hoarse, and rough!  
Always howling at the door  
Of the rich man or the poor;  
Screaming words that do not reach—  
Words unlike our human speech.  
Down the hollow chimney-bore,  
Hark the raging tyrant's roar!  
Beat not with thy sleety flail,



Or the keen lash of thy hail,  
Infant Spring, that tender child,  
Frightened when thou even smiled.  
Cruel March, Sir!

—Walter Thornbury.

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