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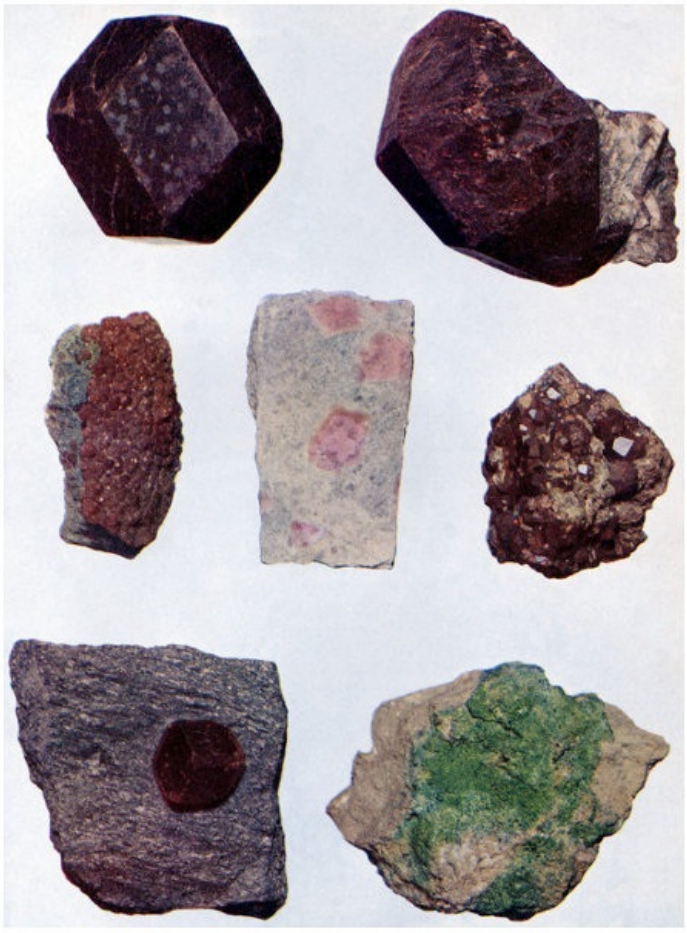
BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. XI. APRIL, 1902. No. 4.



BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

VOL. XI. APRIL, 1902. NO. 4.

CONTENTS.

WHAT TIME O' YEAR?

In leafless woods, the purpled wind-flower sways,
And violets, in penciled lines, or blue,
Blossom in gentle groups, and, blanched of hue,
The fern unfolds, by painted orchis sprays.
The columbine, on hills and sandy braes
Swings to the bees, that colored pollens strew
Below its bells, while singing, soared from view,
The meadow-lark still mounts the heavenward ways.

I know thee, April! thine the azure mist,
Lifted and lowered, like a lady's veil,
Before the rims of woodland sunshine kissed;
And thine the lated twilight's golden sail,
When slanting lines of fire and amethyst,
Riot in withered field and sodden swale.

—Eliza Woodworth.

APRIL.

"Here is April!" cuckoo cries
From the tall tree near the skies;
"April! April!" croaks the frog
From his dank hole in the bog;
"April!" sings the thrush again
From his clay nest in the lane.
April, 'tis thy merry weather
Makes the wild colt burst his tether;

April in his royal dower
Has soft sunbeam and sharp shower;
April is the very soul of youth,
Eye of love, and heart of truth—
That is April.

—Walter Thornbury, “The Twelve Brothers.”

THE BLACK-CHINNED HUMMINGBIRD.

(*Trochilus alexandri.*)

To the ornithologist who may be so fortunate as to visit Southern California in the spring, when Nature has put on her holiday attire, and everything appears at its best, our friends, the feathered midgets, will contribute not a little to the pleasure of his stay.

—Benjamin T. Gault.

The Black-chinned Hummingbird has a long and narrow range extending along the Pacific coast from Southern British Columbia southward into Southern Mexico, where it passes the winter. Eastward its range extends to Western Montana, Western Colorado, New Mexico, and Western Texas. In some portions of this range it is very abundant, while in others that are apparently as well suited to its habits it is rare, or never seen at all.

This Hummingbird, which also bears the name Purple-throated and Alexandre’s Hummingbird, is very similar in its habits to our eastern ruby-throat. Even in its call notes and antics while wooing its mate it is almost a counterpart of the eastern species.

Next to the Anna’s hummingbird, the Black-chinned is the most conspicuous of all the hummingbirds that frequent southern California. At twilight it is a frequent visitor to the orange groves, and later, as night approaches, it retires to the mountain sides, where, with numerous individuals of its own kind and other birds, it finds a resting place through the dark hours.

Mr. B. T. Gault has related an interesting anecdote that occurred in his experience with hummingbirds. He once found a nest of the Black-chinned species in which there were eggs nearly ready to hatch. Wishing the nest, which was an exceedingly fine one, he cut the branch only to find the eggs of no value as specimens. Finally, finding a nest in which there were two fresh eggs, he took them and substituted the two older ones. The female bird watched this action from a nearby branch. Returning a few days later, he was surprised to find two little naked worm-like bodies in the nest. Naturally satisfied and pleased over the result of his experiment he says: “The old bird seemed pleased too, as she watched me from a neighboring branch, while arranging her feathers, evidently wondering why I should take such a deep interest in her treasures. And well she might be pleased, for incubation had been robbed of all its tediousness in this case and the pair acting on this assumption undoubtedly hatched another brood, but not in such haste, I venture to say.”

The nests are delicate affairs, and in many cases resemble small sponges, readily assuming their normal form if the edges are pressed together. The inner cup is seldom more than one inch in diameter. The walls are usually composed of the down of willows. This is firmly woven by an unsparing use of spider web. Usually a few small leaves and scales of willow buds are attached to the outer face, evidently to give it stability.

It has been stated that hummingbirds invariably lay but two eggs in each set. The female Black-chinned Hummingbird seems to be at least one of the exceptions that prove the rule. Major Bendire says that “nests of this species now and then contain three eggs, all evidently laid by the same female, and such instances do not appear to be especially rare.”

The Black-chinned Hummingbird is like all the other birds of its kind. Always inquisitive, never afraid to combat a foe and always active, the lines of Jones Very are especially applicable to its character:

Like thoughts that flitted across the mind,
Leaving no lasting trace behind,
The humming-bird darts to and fro,
Comes, vanishes before we know.

BLACK-CHINNED HUMMINGBIRD.
(Trochilus alexandri.)
About Life-size.
FROM COL. CHI. ACAD. SCIENCES.

THE AUTOBIOGRAPHY OF AN ANTELOPE.

I cannot tell you the exact date of my birth. As I was separated from my mother at a very early age, this lack of knowledge on my part, I think, should be excused. But Polly has often told me it was the second day of April, 1866, that I came into her possession.

On that particular morning the wind was very high and had a stinging bite in it and my mother, after giving me my breakfast, left me nestled down in a bunch of tall, dry grass, and went out for her own breakfast.

I soon fell asleep. How long I had slept I do not know, when I was suddenly aroused from my comfortable nap by a large, dark animal snorting right over me. Of course, I was very much frightened and wished my mother would come to me. If I had not been so shaky on my legs I would have run away in search of her, but my feet had an uncomfortable way of getting too far apart, and my body seemed entirely too heavy for my legs; so I lay very still, hoping that this strange object might pass on and not disturb me. But a few moments later there bent over me what I soon after learned was a man.

“Hello!” he said, “here is a baby antelope. There—don’t struggle so, or you will break your pipe-stem legs.”

Soon I found that it was useless for me to try to free myself from his grasp, for while he was not at all rough, he held me quite firmly. Then I began to shiver from fear; also from the cold wind.

“Poor little fellow—he is cold,” the man said, soothingly, and he took a blanket from the pommel of his saddle and wrapped it around me. Then, mounting his horse, with me still in his arms, we set out across the prairie. After about half an hour he stopped at a gate, where there were several log cabins huddled together.

“Polly! Come here, Polly!” the man called, and a little flaxen-haired girl came running from one of the cabins.

“What is it, papa?” she called, as she opened the heavy gate.

“It is a new pet for you—a baby antelope,” and he handed me down to her.

Polly put me on the ground and lifted the blanket from around me.

“Oh, the funny little darling!” she cried. “Papa, he is all legs and spots, and—and ears.”

“Yes,” the man replied; “he will soon lose his spots, but his legs and ears will stay with him, and it won’t be very long until he will show you how he can use those long legs of his.”

The man rode away, and Polly carried me into the house, where everybody handled and looked at me, all of which made me feel forlorn indeed. But when Polly put me into a box half full of nice, clean hay, in a sunny nook between two of the cabins, I felt that the best thing for me to do was to lie down and go to sleep.

After a comfortable nap I awoke, feeling very hungry, and began to call feebly for my mother. But it was Polly, henceforth my foster mother and beloved friend, that came in answer to my call. She carried me into the kitchen, where a bottle, with a quill wrapped with a soft rag for a stopper, was standing by the fire. Polly took the bottle and put the stopper into my mouth. The rag was not pleasant to my taste, and the quill, although disguised by many soft wrappings, was hard and unyielding. Naturally, I objected, but Polly persisted, and after a while I got a taste of the warm milk that flowed through the quill. Then I ceased to struggle and proceeded to take my dinner in the only way I knew.

At an early age I was taught to eat cornmeal and wheat bran, both of which I liked very much.

Soon the yard became entirely too small for me. I longed to go outside, where there was room for me to use my legs, and I got to watching for the gate to be opened. Polly noticed my desire to get outside the gate, and one day when I was standing near it, looking out through a crack in the fence, she came and put her arms around my neck.

"Lopez," and her voice had a note of sadness in it that I had never heard before, "it is because I love you so 150
that I keep you shut up in this yard. A big, wicked panther lives near here, and he might carry you off, just as he did my little lamb. I never told you about it before, because I did not want to make you feel sad, and—and, Lopez, I thought maybe you would feel jealous if you knew how much I had cared for something else."

I tried to make her understand that I was not in the least jealous of the dead lamb; also that the fact that a panther lived near the ranch did not alarm me. I longed for freedom—glorious freedom—and felt that there was no animal of the plains that I would not willingly enter the lists against in a foot race.

One bright morning, soon after this, Polly's father opened the gate, at the same time saying to her, "I am going to turn Lopez out for a little while this morning and let him stretch his legs and eat some grass."

"Oh, papa!" she cried; "he will run away, and the panther will catch him."

"Oh, no," her father replied; "he will come back, and you need not fear the panther at this time of day."

Caution is one of the characteristic traits of my family, so I approached the open gate slowly and stood looking out for a few moments. The ranch is situated on the bank of a small stream, which here swings around, forming a deep crescent. Lying within the loop, between the stream and a low range of hills, which just above the house flattens down to a ridge, is a lovely valley, level as a floor, and perhaps a mile and a half in length. At the widest point it is not over three-quarters of a mile wide and narrows down to a point at each end of the crescent. When I saw this beautiful playground my heart leaped with joy, and I sprang away with the fleetness of the wind. When I had tired myself out running around the valley I came back to Polly, who still stood by the open gate.

After this Polly allowed me to go out every morning, and again late in the afternoon; and a little later I had perfect freedom, going and coming when it pleased me. I never stayed out at night, however, and but seldom went beyond the beautiful valley, which was my playground.

One warm day in midsummer Polly and her father came out to the live-oak tree by the gate, in the dense shade of which I usually took my noon nap. Polly was carrying her little work basket and some bright red ribbon. Her father had a strap of leather and a small bright buckle. I got up at once and went to them, curious to know what they were going to do, besides the scarlet ribbon was very attractive. I soon saw that they were making me a collar. The strap was measured to fit my neck and then covered with the ribbon. Then the buckle was put on and a very large bow of ribbon, which showed off handsomely against the white of my neck and breast, finished the collar.

Soon after I learned the utility of this collar. It was early morning, and I had gone over the ridge and was quietly feeding. Suddenly I raised my head and saw a man, not fifty yards away, with his gun leveled toward me. I looked at him very straight, and he lowered his gun and went away. My bright collar had saved my life.

One bright November day I had gone to the top of the hill and was looking away over that beautiful plain, when Polly came and stood by me, her hand resting gently on my neck. Suddenly the thought came to me that it would be a fine thing for Polly and I to go away and live on the plains. What a free and happy life we would lead! We probably would find other antelopes, and Polly in time might learn to run as fast as I.

As this idea took shape, I determined to try it at once. So, without giving Polly any warning, I sprang away and ran a short distance, then turned around and invited her to come on. She, thinking that I wanted to romp, came after me; but when she could almost touch me, I ran away as before, and again she came after me, laughing with glee. This maneuver I repeated several times, all the time going further out on the prairie. At last Polly stopped and looked back. Then, to divert her attention, I put forth all my efforts to draw her into a romp. First, by running around her in a circle, and then stopping near her to jump up and down with my legs very stiff. This always 151
amused her greatly, and it succeeded this time. She laughed and ran after me, trying to catch me, but I dodged first one way and then the other, just allowing her fingers to touch me, then slipping away from her, but all the time going further out on the prairie. At last Polly grew tired and stopped to look around her. She gave a little gurgling cry of terror that brought me to her side at once.

"Oh, Lopez!" she cried, "Lopez, I don't know the way home. It all looks alike, and I have forgotten which way we came." She clasped her arms around my neck and cried bitterly.

"Oh, Lopez!" she wailed, "don't you know the way home? You know, animals are smarter about such things than little girls."

I did know the way perfectly well, and Polly's grief hurt me so that I was strongly tempted to lead her straight back to the ranch; but I reasoned that it had cost me considerable effort to get her this far, and why should I now turn back? Besides, to me, there was no reason why Polly should not be perfectly happy in this new and free life, when she should become accustomed to it. And why should she not adapt herself to my mode of life as easily as I had myself to hers?

Reasoning thus, I deliberately started in the opposite direction to the ranch, walking slowly, with Polly by my side.

Thus we wandered on for perhaps an hour, then I stopped to graze, and Polly sank down on the grass to rest. But soon she sprang up, saying: "This won't do, Lopez; we must go on and try to find home. Just see how low the sun is." And then she began to cry.

We had started out early in the afternoon, and the warm sunshine made the air very comfortable. Now the sun hung, a great red ball, just above the dark line that marked the union of sky and plain, and the chill of evening was fast coming on. We wandered on, apparently the only living creatures on this vast plain—on and on, until the last ray of sunlight had been swallowed up by the dusk of evening. The sky was thickly dotted with glittering, twinkling stars, and still we wandered on. A band of white appeared just above the eastern horizon, quickly followed by the moon, which filled the lonely plain with the softened glory of its light, and still we wandered on.

After what seemed to me a very long time, Polly sank down by a bunch of tall grass, and I lay down close by her side. She slipped her hand through my collar and soon fell asleep. As the night grew colder, Polly nestled closer to me, and as we had a thick bed of dry grass we were tolerably warm.

Polly slept quietly, and now I, too, fell asleep, and was only awakened by the broad light of day.

I got up and went to grazing near where Polly was lying still asleep. Soon I saw a wolf go from the carcass of a dead cow to a pool of water and drink. Being quite thirsty, as soon as the wolf had gone away I went to the pool myself and drank. Then, thinking Polly might be thirsty, too, I went back to her and rubbed my nose against her face to wake her. She sat up and looked around her in a dazed sort of way for a few minutes, then stood up and strained her eyes, first in one direction and then in another. At last she turned to me, and I could see that her lips were quivering.

"Lopez, I think there is water where those small trees are growing; anyway, we will go and see."

When we reached the pool Polly knelt down and drank, and then gathered and ate several handfuls of red haws from the scrubby little trees that grew around the pool. We then started on, walking as fast as Polly could.

We had gone on for perhaps two hours, when I insisted upon stopping to eat some more grass. Polly pulled at my collar. "Oh, Lopez, come on," she said, a little crossly. "If I can do without something to eat, surely you can, too." But I would not go, and she sat down in the grass to wait for me.

When we started on again I noticed that Polly was shivering. The sun had disappeared behind a misty veil of clouds and it was much colder than it had been in the early morning. Later in the day we came to a deep ravine. A few pecan trees grew along its banks, and here Polly gathered some of the fallen nuts and ate them, while I ate my dinner of grass.

We found a place where a smooth trail crossed the gully. This we followed until it broadened out and was lost in the prairie grass.

The sky was now a dull slate color, and little feathery flakes of snow were falling. I could see a dark streak in the distance, which I knew must be timber. Instinct taught me that here we should find shelter, and towards this we were hurrying. Little drifts of snow were gathering in Polly's flaxen hair, and her hands were purple from cold. She stumbled often, sometimes quite falling down, but she would get up and struggle on. The timber still seemed a great way off, when Polly stopped.

"It is no use for me to try, Lopez," she said; "I can't go any further. You will have to go on alone," and she sank down into the snowy grass.

Now, this was a terrible fix to be in. The storm was growing worse every minute, and I knew that it must be almost night. I would run around Polly and stamp my feet, then rub my nose against her face, trying to persuade her to get up and go on, but she would only say, "Poor Lopez, I can't go any further." After awhile she would not notice me; then I knew she was asleep.

A feeling of despair was coming over me, when I saw two men, riding toward the timber. I ran out, so that I was directly in their path, and stood facing them, stamping my feet. It was evident that they were watching me with some interest, and when they were near me the older of the two exclaimed, "Why, that is Polly Vinson's pet antelope. Rope him, Bob, and we will take him home!"

The young man loosened a coil of rope from the pommel of his saddle and began to swing a loop above his head; but before the loop could descend I sprang away and ran to where Polly was lying, now almost covered with snow. The two men started on, and I ran round and round and stamped my feet. I was almost frantic.

They stopped again, and the younger one came to us. He got off his horse and bent over Polly, then turned and called to his companion, who was now coming toward us:

"Mr. Dawson, here is little Polly herself, and I fear she is dead." He lifted Polly up and shook her, rather roughly, I thought. "Polly! Polly!" he cried, "wake up and tell me how you came here."

Polly opened her eyes and sleepily looked at the young man. “Oh, Mr. Bob,” she said wearily, “Lopez and I are lost. Won’t you please take us home?” Then she leaned her head against him and closed her eyes again.

He quickly pulled off his overcoat and wrapped it around Polly, and handed her up to the older man. Then, tying the end of his rope through my collar he mounted his horse, when we started swiftly toward the timber. To be tied was an indignity that I had never before submitted to, but now I was so glad to have some help with Polly that I made no resistance.

Very soon were were at the Dawson ranch. Indeed, Polly and I, without knowing it, had been going straight to the ranch, and were not more than a mile away when she gave out and went to sleep in the snow.

When Polly was warm and had eaten something, Mr. Dawson put her to bed, and Mr. Bob took me to the warm kitchen, where I had a nice supper of wheat bran. While I was eating Mr. Dawson came to the kitchen and patted me on the neck. “Brave Lopez,” he said, “you saved the life of your little mistress.”

After a few minutes the young man stood up. “Mr. Dawson,” he said, “I am going to ride to Vinson’s to-night and let him know that his child is safe.”

“What,” cried Mr. Dawson, “ride ten miles through this storm? You must not think of such a thing.”

“Yes,” replied the young man, quietly, “I shall go. Blackbird will carry me there safely, and I shall only be doing as I would be done by.”

A little later I heard him ride away, and then I went to sleep.

Alice Moss Joyner.

BURROWING-OWL.
(Speotyto cunicularia hypogaea.)
½ Life-size.
FROM COL. CHI. ACAD. SCIENCES.

THE BURROWING OWL.

(*Speotyto cunicularia hypogaea.*)

The Burrowing Owl is a denizen of the prairies and plains west of the Mississippi and the Missouri rivers. It is

found from localities somewhat north of the United States as far to the southward as Guatemala. In some parts of this large area it is exceedingly common, and it is the only representative of the owl tribe that inhabits, in any numbers at least, the treeless regions of the western states.

Unlike other species of owls, the Burrowing Owl is especially fitted for a subterranean mode of life. It will make its home in the burrows of the various animals that inhabit the prairie regions. These birds are social and live in colonies consisting of several pairs. Some Indians have claimed that it retires into its burrow at the approach of winter, and there remains in a torpid condition during the cold weather. Careful observers have, however, shown that this is not the case. It may be said that, except in the northern part of its range, where the winters are severe, it is resident wherever found and not migratory. It is probable that it would not be migratory at all were it not that the animals upon which it feeds are not obtainable in severe weather. Investigation has proved that the stories of the confidential relations existing between the Burrowing Owl, the prairie dog and the rattlesnake are pure fabrications of an imaginative mind, greatly strengthened by additions as they are passed from person to person. The only foundation for these stories is the fact that this Owl and also the rattlesnake do occasionally enter the burrows of the prairie dog. Dr. Coues has said “that the Owls live at ease in the settlements and on familiar terms with their four-footed neighbors is an undoubted fact; but that they inhabit the same burrows or have any intimate domestic relations is quite another thing. It is no proof that the quadrupeds and the birds live together that they are often seen to scuttle at each other’s heels into the same hole when alarmed, for in such a case the two simply seek the nearest shelter independently of each other.” It is not at all strange that the snakes should also enter these holes. It may be that they do so for the want of some other retreat on a broad expanse of prairie, but it is much more probable that they are in search of food, either in the form of young dogs or the eggs of the Owl. Though the Burrowing Owls are found with the burrowing mammals, they do not occupy the same holes with them and do without doubt drive them out if they wish to pre-empt the burrows for their own use.

Though the Burrowing Owl probably obtains most of its food in the early twilight, it is frequently “in motion on the brightest days, capturing its prey or evading its pursuer with the greatest ease.” Like the sparrowhawk, it frequently hovers in the air and drops upon its prey. Its food consists of the smaller rodents, including the young of the prairie dog, frogs, fish, lizards, snakes and insects of various kinds. In fact, its food is so varied and consists of noxious animals to so great an extent that it is of great service to the agriculturist. Dr. Fisher says: “In summer and fall, when grasshoppers and crickets are exceedingly abundant on the western plains, the Burrowing Owl feeds almost exclusively on such food. Like the sparrowhawk, this little Owl will chase and devour grasshoppers until its stomach is distended to the utmost.” It is rare and only when pressed for food that it attacks and kills other birds.

Dr. C. S. Canfield gives the following account of its nesting habits: “I once took pains to dig out a nest of the Burrowing Owl. I found the burrow was about four feet long and the nest was only about two feet from the surface of the ground. The nest was made in a cavity of the ground, of about a foot in diameter, well filled with dry, soft horse-dung, bits of an old blanket and the fur of a coyote that I had killed a few days before. One of the parent birds was on the nest, and I captured it. It had no intention of leaving the nest, even when entirely uncovered with shovel and exposed to the open air. It fought bravely with beak and claws. I found seven young ones, perhaps eight or ten days old, well covered with down, but without any feathers. The whole nest, as well as the birds, swarmed with fleas. It was the filthiest nest I ever saw. There are few birds that carry more rubbish into the nest than the Burrowing Owls, and even the vultures are not more filthy.” In this nest Dr. Canfield found scraps of dead animals, both of mammals, snakes and insects.

Major Bendire believes that when these Owls are once mated they are paired for life. He also likens their love-note, which is heard about sundown, to the call of the English cuckoo. He says that it is “a mellow, sonorous and far-reaching ‘coo-c-oo,’ the last syllables somewhat drawn out, and this concert is kept up for an hour or more. These notes are only uttered when the bird is at rest, sitting on the little hillock surrounding the burrow. While flying about a chattering sort of note is used and when alarmed a short shrill ‘tzip-tzip.’ When wounded and enraged it utters a shrill scream and snaps its mandibles rapidly together, making a sort of rattling noise, throws itself on its back, ruffles its feathers and strikes out vigorously with its talons, and with which it can inflict quite a severe wound.”

LONGING.

I long for the wild woods and fields in the spring,
For the hills and the streamlets once more.
I long for a sight of all nature, to-day,
When the drear, frozen winter is o’er,

And Spring comes apace, and all nature in life
Is now quickened to action more free,
And the flowers are springing in valley and dell,
And green grows the shrub and the tree.

I long for a sight of the squirrels so gay,
As they spring up the trees on the hill,
I long for a sight of the waters that flow
And that sing as they turn the old mill.

I long for the songs of the birds in the grove,

As they sing, at the sweet early dawn,
And to feel the great heart-throbs of nature in glee—
It is Spring now, and Winter is gone.

—Frank Monroe Beverly.

THE WESTERN PINE SQUIRREL.

Many peculiar things have been written about the red squirrel, or what is called out west, the Pine Squirrel. These frisky little animals are found in great numbers throughout eastern Washington. The northern part of eastern Washington abounds in pine forests, and those regions are a favorite abode for the squirrel.

Next to the large silver fox squirrel and the diminutive chipmunk, the Pine Squirrel is the most handsome, graceful and interesting member of that numerous family found in the Northwest. He is a bright, sprightly little fellow. During the long, bright, sunny days of spring, summer and autumn, the Pine Squirrel makes his home out of doors. His life seems to be one of perpetual sunshine and pleasure.

From early dawn to dusk the Pine Squirrel is on the move. He is never still for an instant. You see him scampering up and down the great trunk of a pine, fir or tamarack. Next, he is out on the tip end of a long, swaying branch. Then he is on the ground. The next instant he is running along the body of some prostrate tree.

He is full of curiosity. If you stand and watch him, he will return the compliment with interest. If you are perfectly still, the little chap will venture close and eye you very sharply. He is as quick as a flash, and if you chance to move, away he darts, uttering his peculiar, sharp, chattering call.

Rarely will you see him without something in his mouth. He is very dainty, however, as to what he eats. For all that he lives in the trees and on the ground, yet the Pine Squirrel has a permanent home. When chilling frosts visit the earth and the snow softly descends, the little fellow whisks away to his hole. However, he does not hibernate, like the bear. Not he. Often during the winter the squirrel will come out and take a view of the upper world. But this he does only when the weather is fine. He never shows himself when it is bitter cold and when storms prevail.

The Pine Squirrel leads no butterfly existence. He has the prudent forethought of the ant. He enjoys life and sports in the sunshine, but all the while he is carefully storing away a good supply of food to tide him over the winter. His home is generally well selected and his bed is soft and warm. He knows what comfort means. However, this Squirrel has some queer ways. In some parts of northeastern Washington there are a great many mushrooms and toadstools. The Pine Squirrel will spend days in gathering these peculiar growths and carrying them away, but not to his hole. He will carry some of them high up into trees and place them in the forks of branches, where the wind cannot shake them out.

Hundreds and thousands of these fungi will be placed in the forks of tall saplings, bushes, shrubs and even weeds. Some of the toadstools are larger than the squirrel himself, but, like the ant, he will keep tugging away, and finally the little fellow will land them where he wishes to have them placed.

So far as known, the Squirrel never eats the fungi. He does not take any to his hole, and after placing the toadstools in the brush he does not disturb them again. The fungi dries away and may be seen for several years. What instinct prompts the little creature to do this, is a mystery. I have never yet found any naturalist, trapper, hunter or frontiersman who could give a satisfactory explanation of the matter.

The wood rat and magpie will steal every imaginable article about a house, carry it away and secrete it. Most of these articles can not be eaten and are of no possible use to the rat or bird. Perhaps the Pine Squirrel is prompted by a similar instinct.

The Western Pine Squirrel is a perfectly harmless and peaceable animal. He is not known to attack any other animal except the weasel, and then only in self-defense.

J. Mayne Baltimore.

THE AUDUBON'S WARBLER.

(*Dendroica auduboni.*)

Audubon's Warbler bears the same relation to the Western United States that the myrtle warbler bears to the Eastern States. It inhabits the forests and thickets of the West from British Columbia southward as far as Guatemala in winter. And, as Dr. Coues has stated, it has rarely been known to pass to the eastward beyond the line of arboreal vegetation, which marks the easternmost foothills and outlying elevations of the Rocky Mountains.

During its migrations it is often associated with the titmouse and the ruby-crowned kinglet. It may be seen skipping about in the tree tops, actively engaged in searching for insects, which it will at times pursue in the air. It may be readily distinguished from the myrtle warbler, which it so closely resembles both in habits and actions, by its yellow instead of white throat, which is characteristic of the myrtle warbler.

Its nest is usually built in cone-bearing trees at a variable altitude of from three to thirty feet. These homes are neatly woven and usually constructed of fine strips of bark, pine needles and twigs. They are lined with fine roots, bark fibers, hair and feathers. In Colorado it is known to breed on the mountain sides at an altitude of nine or ten thousand feet.

The habits of this little warbler are well portrayed by Mrs. Whitman:

The little bird upon the hillside lonely,
Flits noiselessly along from spray to spray.

THE SING-AWAY BIRD.

Have you ever heard of the sing-away bird,
That sings where the run-away river
Runs down with its rills from the bald-headed hills
That stand in the sunshine and shiver?
Oh, sing, sing away, sing away!
How the pines and the birches are stirred
By the trill of the sing-away bird!

And beneath the glad sun, every glad-hearted one
Sets the world to the tune of its gladness;
The swift rivers sing it, the wild breezes wing it,
Till earth loses thought of her sadness.
Oh, sing, sing away, sing away!
Oh, sing, happy soul, to joy's giver—
Sing on, by Time's run-away river.

—Lucy Larcom.

AUDUBON'S WARBLER.
(Dendroica auduboni.)
⅗ Life-size.
FROM COL. CHI. ACAD. SCIENCES.

SPRING NOTES FROM FEATHERED THROATS.
IN NEW JERSEY.

That individual unaffected by the first fluttering wings of returning spring migrants is an anomaly indeed. He must ever have been secluded beyond reach of trill or glint of the feathery kingdom, or else is pitifully invulnerable to one of nature's chiefest charms. For who, having listened to the enraptured love-notes and witnessed the extravagant devotion, intermingled with drollest buffoonery, during the progress of some field or forest courtship, is beyond feeling interest and pleasure in these half-human and wholly unique performances? Or who has not felt a thrill of admiration, to be followed by one of commiseration, when one of the hunters of the air made his terrific plunge, hurtling down like an animated catapult, to strike his quarry ere it found cover in wood or thicket? To all those having formed some degree of bird companionship and who live where winter robs them of those friends of the fields and woods—to such returning spring would be incomplete without their coming. The earliest break in winter's shackles tensions their ears to listen for the first returning migrant's note. Of these the last to leave and first to brave the still vigorous, retreating winter gales is Sir Crow. Painted by popular disfavor even blacker than he merits, his departing caw, mingled with the wild goose's "haunks," as they winged southward, barely escaping the first cold wave. His caw has mellowed with his sunny vacation. In place of the discordant medley echoing from the final grove convention will come his spring notes, cawing a domestic cadence half musical, suggesting a chuckle of delight. By twos and threes these black-coated scouts struggle back to former frequentings. In early February, perhaps, when the ambitious sugar-maker is trying for his first "run," he there catches his first glimpse of blue-black sheen as the northward flyer toilsomely sweeps through the naked trees. At this inhospitable season all of his proverbial cunning stands him in good stead, and truly he is a veritable solon of bird wisdom. Nature seemingly compensated for his gloomy dress and awkward flight by bestowing almost incredible sagacity behind his unattractive exterior.

We need not yet listen for other sweeter-voiced arrivals, but while waiting may give ear to some stay-at-home all-winter residents, the chickadee and his crested relative, the tufted titmouse, cheery chirpers and whistlers both, unconquered by the fiercest boreal blasts; the quiet-voiced and colored junco, the industrious creeper and nuthatch, not forgetting that hide-and-go-seek climber the downy woodpecker and his warmer colored, hairy relative. The woodpeckers, with their cheerful taps, trills and chatter, have done much to dispel the gloom of drear and frosty winter days.

But one is forgotten who in nature absolutely refuses to remain unnoticed—Sir Blue Jay—though an acknowledged cannibal and highwayman, he is withal so jaunty and attractive in everything but his voice and his habits as to convince his beholders that he is not half bad. With February's closing days we may listen for the hardier representatives of the sparrow family, those twin aristocrats, the white-crowned and white-throated beauties, the more timid and ruddier fox, and the well-known song sparrow. Being unobtrusive in both song and garb, their first greeting may be missed, but the trained ear will soon catch the cheerful notes from hedge or brush pile, elicited by a chasing gleam of sunshine. These sweet-toned singers will prove a welcome contrast to the tiresome, incessant, complaining notes of their English cousins, who have spent the winter at the granary door or skirmishing in the garbage on the city streets. The sparrows are the beginner's despair in ornithology, but are as interesting in habits, song and appearance as they are numerous and confusing. The observer who can readily distinguish them at all, from the familiar household "chippy" to the siskins, linnets and longspurs who frequent our latitudes only as erratic winter visitors, is truly to be envied. With March comes that steadfast commoner the robin and his warmer breasted thrush cousin, the bluebird. The former, with his matter-of-fact twitter of greeting, soon supplements it with a bar of his hearty if somewhat unpolished song. But the less intrepid bluebird will wait for a south wind's caress ere his gurgle of delight will float earward as airily as his hovering flight.

Now come two black-coated cousins, the purple grackle and shoulder-strapped redwing of the blackbird family. Field hunters like the robin, but unlike the thrushes, when on the ground they are staid walkers instead of hoppers. These dusky beauties no sooner announce their arrival with songless cackling notes than they hurry away to inspect their last year's nesting haunts, where scrambling clamor ensues for the most desirable locations. Like the crow they lose but little time in awaiting fine weather before preparing for housekeeping. Even before April's soft showers commence falling, their bristling stick nests are in readiness, as are the crows', jays' and hawks', while the owls' wide-eyed nestlings are even then becoming fluffy balls of feathers in their better sheltered hollow-tree nests. But we must pass with but a word of greeting to the arrivals, would we keep pace with their increasing numbers. Now listen to the purple finch as he perches on highest twig, proclaiming his arrival with no uncertain sound. A very torrent of bubbling melody is he, though his breakfast may still be snow-enshrouded below. While he rests may be heard the meadowlark's tremulous, plaintive diminuendo, as he alights from his halting, uncertain flight. Soon will follow the phœbe's name-calling, tail-wagging cry and the barn swallow's mumbling, metallic squeaking. His cliff or eaves-nesting cousin will a little later add his rasping notes as he repairs his plastered nest. In contrast to the swallow's rhythmic chatter comes the oriole's bugle call and flute-like whistle, which at evening was silent, but morning finds vocal. With increasing numbers, as the Mayflowers appear, come the crow-chasing kingbird and his twin-named fish-catcher. The first, with happy tinkling notes, the second with bill-chattering rattle. Again, morning hears the bobolink's ecstatic songburst of tumultuous melody. Like ships he "passes in the night" and heralds his coming as no other can. Now the whippoorwill proclaims his apt naming, as evening closes in, while his nighthawk cousin booms an accompaniment as he wheels through the air above. The wood pigeon's lament comes throbbing through the warm morning air, confirming his right to his other and better known "mourning dove" title. To drown the pigeon's dirge-like plaint may now be heard the rollicking song of the goldfinch, his song and flight dipping in unison as he goes his careless way. With still another contrast comes the clucking cuckoo's grumble as if in excuse for his tardy arrival. Now listen, for the chorus is complete! Though but few have been named, they are

best known and with the unnamed larger half compose nature's magnificent if sometimes inharmonious symphony. Among those unnamed are to be found many fully the equals of those so imperfectly represented in the preceding pen pictures. In fact, the wood thrushes and warblers unmentioned are as finished vocal performers as any of those heard in the open. Also in beauty and brilliancy of coloring some of the shyer and more silent wood residents eclipse their brethren of the fields. But birds are not learned in a day. Later on the student's eye and ear will begin to recognize such flashy men of color as Messrs. Tanager, Towhee, Redstart, Waxwings, Redpoll and scores of others making up the lengthy list of warblers, thrushes, wrens, flycatchers and others less well known, especially by voice, which is often discordant in proportion to attractiveness of plumage. These fragmentary glimpses and sound pictures of our flitting friends have been attempted with the intention of introducing them to the ear rather than to the eye. Too much importance is often attached to the appearance to the neglect of aural attractions. Nothing can exceed the pleasure afforded the enthusiast in ornithology when able to readily distinguish his feathered friends by songs, notes, trills, and twitters making up their repertoires. As their voices greet him when awakening, no calendar is needed to trace the advancing seasons. The new voices added to the morning chorus and its diminishing volume as summer departs gives audible record to the ear familiar with bird-voice harmony. Again, when abroad in pursuit of duty or pleasure, a single note is sufficient to introduce to his ear a new or old-time friend. He well knows the first glimpse will disclose a dull or bright-hued coat, whose owner's eyes are even then scanning him from some well concealed cover. If the learner would fully appreciate the charms of his bird acquaintances he should study each individual until known not only by appearance while at rest, but in every light, shade, attitude and movement, and he should study his voice until it is recognizable whether in full-throated song or modulated call or whistle. An occasional hour or vacation may accomplish much, and that often at our very doors; but to know these breezy, beautiful habitants aright city walls must be left behind.

Museum specimens, except for reference, must be shunned as inert, lifeless and voiceless. The bird only known by appearance is but half known. When known and understood their observers become their champions whose arms and voices will ever be raised to prevent their wanton destruction.

B. F. W. Thorpe.

THE SPIRIT OF SPRING.

It came to me this morning, in my room, and filled my whole being with a subtle feeling of delight and mysterious glad expectancy. When I went downstairs they told me that it was colder than yesterday; that the thermometer registered 14 degrees above zero. But what care I for the thermometer? What does it know about spring?

Spring is a spirit which takes possession of the air, be it hot or cold, and makes one's heart sing for joy.

The crows kept telling me the glad news, "Spring has come!" all the time I was dressing, and it was echoed in the tufted tit's questioning note when he flew round the house to his breakfast on the window sill. When I started out for my morning walk the very air seemed filled with tiny voices proclaiming the good tidings.

I had not gone far before I heard a cardinal singing gloriously, his song answering the one in my own heart; and the theme was ever, "Spring has come!"

But the crowning surprise and joy of all came when I had reached the brook pasture. I stopped, listened and caught my breath; could it be on the 27th of February? Yes, a song sparrow! No one who is unacquainted with the purity and simple charm of this bird's song, which breathes of all that is fair and good, can understand or appreciate the rapture I felt upon hearing it again this morning. Going on a little farther I heard another song sparrow; the two were singing by turns, answering each other in sweetest melody. One could scarcely wait until the other had finished his strain, so eager were they to pour out the good news.

Oh, if you who are tired or dull indoors will only go out these mornings and fill your lungs with the pure air of heaven and your hearts with the rapture of spring, how many of your cares will drop away! Nature's myriad voices will talk to you if you will listen; the birds will sing to you the sweetest music in the world—God's love in melody.

This joy in the beauties of Nature may be yours if you will; do not allow such a precious gift to escape you. It is beyond price, yet free to all. Each year adds to the wonder and value of Nature's treasures; they are ever new, ever more and more welcome with each returning season. Happy are they who know and love them well.

Anne Wakely Jackson.

FROM AN ORNITHOLOGIST'S YEAR BOOK.

FLUTE OF ARCADY.

In Ohio are many wide, grassy fields, covering the rounded hillslopes or filling open valleys. One day in March the world was white with snow, and I heard, as if in a dream, the soft cooing of the doves. Never before had I heard it except on sunny afternoons in pine woods, rich with warm, resinous odors. It is hardly a sound—rather silence perceptible, blending so perfectly with the sunshine, the hushed and brooding stillness of the air, the half-

conscious sense of life, that I would often hear it a long while without knowing that I listened—the soft, tremulous cooing of the wood-doves, yet here the earth was white with snow and the air chill.

But the doves were right. Spring was near, and in a little while the feathery grass was nodding in the warm wind, gray and hazy, as the great white clouds swept overhead with wing-like shadows, or shining, each tiny blade like burnished steel, in the sunlight. The cooing of the doves had been only a low prelude; now the air was ringing with melody.

"N'er a leaf was dumb;
Around us all the thickets rung
To many a flute of Arcady."

The fresh, glad songs of the western meadow larks! Everywhere, everywhere, the air was vibrant with the poignant sweetness of their silvery voices; everywhere you might see the shining yellow of their breasts as they rose with strong wing; everywhere you might perhaps chance to stumble upon some nest of woven grasses. Often with arched covering, on the very ground, with the dear little brownish mother bending over four or six white eggs, freckled with cinnamon spots. It is the season of the larks, and earth and sky are more lovely for the magic of their singing. One hardly knows how to describe it in words. Spring o' the year! Spring o' the year! it seems to say to the listener, both in the east and west, but the song of the western meadow lark has a richer melody, a more piercing delight. It seems to talk of forgotten things; of youth and first hopes; first love; it has all the glamour of the far-away, and yet a sweetness of the near. It rises from the thick grass at your feet, yet it mounts towards the blue sky! It is a veritable Flute of Arcady blown with a breath of joy.

ELLA F. MOSBY.

The dogwood blossoms white as snow
Their favors now to rambler show,
And where the Winter's latest drift
Through the dark moss did silent sift,
All blossomed-starred, above the ground
The shy arbutus now is found.

The cloud-capped mountains all appear
With verdant slopes and summits clear;
The sun has lost its soulless glare—
Earth, sea and sky are wondrous fair.

—George Bancroft Griffith.

RED-BACKED SANDPIPER.
(Tringa alpina pacifica.)
¾ Life-size.
FROM COL. CHI. ACAD. SCIENCES.

THE RED-BACKED SANDPIPER.

(*Tringa alpina pacifica.*)

The sandpipers trip on the glassy beach,
  Ready to mount and fly;
Whenever a ripple reaches their feet
  They rise with a timorous cry.

—Duncan Campbell Scott, “Sandpipers.”

Very early in the spring the Red-backed Sandpiper leaves its winter home in the States and countries bordering the Gulf of Mexico and starts on its long journey to the cooler region of the far north. It arrives in Alaska early in May, in full breeding plumage, and the males are soon engaged in prettily wooing the coy females. Mr. Nelson, who had unexcelled opportunities for studying the habits of these interesting sandpipers, well describes their courting habits. He says: “The males may be seen upon quivering wings flying after the female and uttering a musical, trilling note, which falls upon the ear like the mellow tinkle of large water-drops falling rapidly into a partly filled vessel. Imagine the sounds thus produced by the water run together into a steady and rapid trill some five or ten seconds in length, and the note of this Sandpiper is represented. It is not loud, but has a rich, full tone, difficult to describe, but pleasant to hear. As the lover’s suit approaches its end the handsome suitor becomes exalted, and in his moments of excitement he rises fifteen or twenty yards, and hovering on tremulous wings over the object of his passion, pours forth a perfect gush of music, until he glides back to earth exhausted, but ready to repeat the effort a few minutes later. The female coyly retreats before the advance of the male, but after various mishaps each bird finds its partner for the summer and they start off house-hunting in all the ardor of a rising honeymoon.”

The Red-backed Sandpiper is not a bird architect and it does not build even a simple home. A slight hollow on a dry knoll, which commands a clear view of some body of water, is the site usually selected. Here the eggs are laid, either upon the dry grass already in the hollow or upon a few bits of leaves, twigs and grass hastily gathered and placed without order. After the appearance of the eggs the male seems to realize the responsibility of family cares, for his merry song ceases and he devotes his share of time to sitting on the nest, protecting the eggs with his warm body. That this is the case is shown by the bare patches that appear on his breast at this season.

With such a home as is prepared for their reception, it is not surprising that the little red-backs leave the nest as soon as they are hatched and freely run about. When frightened they readily conceal themselves by sitting on the ground and remaining quiet.

This species exhibits considerable variation in the color of its plumage. In the spring and summer it may be known by the black patch on the belly and reddish color of its back, which is mottled with white and black. At this season it is often called Blackbreast. In the fall and winter the upper parts are brownish-gray in color and the under parts are whitish. It is then frequently called the Leadback. The Red-back is not as active as the other sandpipers and its unsuspicious nature makes it seem quite stupid. Though a beach bird, it is not infrequently met in grassy marshes, and by some it is called the Grass-bird.

A PANSY OF HARTWELL.

I was a Pansy of Hartwell, a dainty little thing, with gold and purple petals, touched with white, and leaves of tender green—“a dear, delicate thing, but fair,” so Louise said. I grew below her chamber window, where she had prepared a rich, warm bed of mother earth for me and for hundreds of my kindred. “But none,” she said, “no, not one of my kind, was ever so beautiful as I.”

I remember my birthland well. Our old home in Hartwell, where Louise and I were born, was surrounded by a wide, rolling lawn, filled with blooming flowers from the time of the first peep of the early March crocus to the stately bloom and decay of the autumn flowers. Here, too, near her window grew a straight, tall maple tree, whose branches stretched far and wide and even touched her window.

I liked this tree because it gave us a pleasant shade when the sun’s rays were inclined to be too warm and made us droop and feel so languid and so tired. Delicate, dainty things, as Louise and I, must not have too much sunshine, else we droop and die.

One day I asked Louise if this tree was old. I knew it was by the many deep furrows in its bark, but I loved the music of her voice so much that I often asked her useless questions that I might lift up my head and listen to its melody. Louise then told me its age and much else that I had never heard. She said that with each returning springtime this tree sent up the life-giving sap from its roots, which ran swiftly through the trunk to the branches. Soon on these branches little red buds appeared, then a bloom and finally leaves, and wonderful little wing-like looking keys which held the seeds of the maple tree.

These were strange, wonderful things for me to hear, but I knew them to be true, because Louise told them to me. No one ever doubted Louise, for all her life long she had worshiped at the altar of truth, and, because of her truthfulness, her beauty and her goodness, all things loved her.

Besides giving us moisture and shade, the south wind told me that this same fine old tree held in its forks a home for some little friends of Louise. When the March winds left us and the skies became clear and blue and warm,

her friends the robins would return to their old home as they had done for many seasons past, and there under her kindly, watchful care would raise their brood of young.

One day I saw her—I was always watching her—drop a bit of cotton and several strings down from her window. The cotton fell near my bed. I wondered and wondered why she had done this thing. A long time afterward I was told that it was for the use of Mother Robin in making her nest. Father Robin thanked my dear Louise for her thoughtfulness by singing for her his most beautiful notes at the dawn, the noon-time and the evening.

I lived in happiness in that quaint old town of Hartwell, caring naught for its bright skies, wide rolling plains, its peaceful waters, its fruits of tree and vine. I was young; I was happy; I lived near Louise; it was all that I desired.

I remember—but why should I tell you? I am only a little pansy, born, perhaps, for an hour or a day, to bloom and be gathered and die—so the south wind has told me. It must know. "God gave the flowers and birds and all things for man's use and abuse," so you say; but I had thought it different, for I lived in the sunshine of Louise's love and tender care. One day—how well I remember it!—it was a day in sunny, coquettish April—when I heard 169
voices approaching. Nearer and nearer they came, until I felt the presence of my dear Louise with her dark haired friend. I could not see them, for one of my sister pansies held her head so high and haughty that a little pansy such as I could not see or be seen.

This day Louise was more tender than usual. Alas! why is it ever true that dearest love is bought at the price of death and separation?

She bent down, half hesitatingly, and kissed me, touched my petals lovingly, and whispered so gently—only I could hear: "My beauty, my golden-hearted pansy, shall I—must I—give you to my friend?"

The wind gave back my answer. I was sacrificed on the altar of friendship.

Then I felt my heartstrings slowly tugged at, and quivering and wounded and bleeding I was taken from my home, the home Louise had made for me, and placed in a basket with my cousins, the violets, to be carried to a new home, to meet new faces and perhaps make new friends.

Louise and this friend loved each other very dearly. Alas! for me, they loved pansies, too.

Perhaps it was an honor for Louise to have chosen me from among a hundred others, for to her a pansy was the dearest, the daintiest and most coquettish of all the flowers that bloom and die. But, though I felt the honor, I would a thousand times rather have lived to lift my petals to the breezes in my native land without glory and without pain; or better still, death on Louise's breast, with her smiles and caresses, was preferable to honor and glory in a stranger's land. I say this was preferable, but how foolish I am; we pansies have no preference. We of the flower family must take what you of the human family choose to give us.

This friend of Louise's, I knew not her name and cared not to know, carried me very gently with the violets, protecting me from the sun and dust as we went; and when I awoke from my misery and my long, long journey, I found myself an exile, with my kindred, in the far south-land where the birds are always singing, and the flowers are ever blooming, and youth and beauty and old age go hand in hand.

It was a beautiful home to which I was brought. Here I was surrounded with all that a pansy's heart should long for; but I was not happy. I was not content. Soon my face looked sad; my shining green leaves began to wither and droop, and the breath of the south wind became so hot I felt as though I could not live. Then the battle against death began. I longed to live that I might see Louise once more. Then I tried to live for her to whom she had sacrificed me. I made a brave struggle for life, but all in vain. It was the battle of the weak against the strong.

Since life has left me and I have become a spirit flower with my earthly body caged between the pages of a musty old book, which my spirit may enter at will, Louise's friend often holds communion with me. It is then I ask, "Does she love me, or is it Louise, of whom she thinks, for whom she longs when she looks at me so lovingly and talks to me of the old days?"

LAURA CRAVENS.

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GARNET.

This stone exhibits many varieties of color and of composition. The color probably most often thought of in connection with it is dark red, but it would be a mistake to suppose this the only color which it may manifest. Green, red, rose and brown are other colors which garnet transparent enough to be used as gems exhibits, while among opaque garnets may be found black and many varieties of the shades above mentioned.

These variations of color are more or less connected with differences of composition which it may be well first of all to consider. Garnet as a mineral is, like most minerals used as precious stones, a silicate. United with the silica the element most commonly occurring is aluminum. If calcium be united with these two the variety of garnet known as grossularite, or essonite, or cinnamon stone, is produced. If magnesium takes the place of calcium, then pyrope is formed. If iron, we have almandite, and if manganese, spessartite. Another variety of garnet, andradite, is composed of calcium and iron in combination with silica, and still another, uvarovite, of calcium, chromium and silica. Though they seem to differ so much in composition, all kinds of garnet crystallize in the same system and are closely allied in all their properties, so that it is always an easy matter to distinguish garnet of any variety from other minerals.

Garnet crystals may be of the twelve-sided form, known as dodecahedrons, the faces of which have the shape of rhombs, or the twenty-four-sided form known as trapezohedrons, the faces of which have the shape of trapeziums. Quite as commonly occur crystals which are combinations of these two forms, and then exhibit thirty-six faces, as in the crystal from Alaska shown in the accompanying illustration. Sometimes the crystals attain considerable size, some perfect ones from Colorado weighing fifteen pounds, while crystals two feet in diameter are reported from North Carolina. A curious feature of garnet crystals is that of often inclosing other minerals. The garnets from New Mexico, for instance, when broken open are sometimes found to contain a small grain of quartz. In the crystals from East Woodstock, Maine, only the outside shell is garnet and the interior is calcite. Other crystals are made up of layers of garnet and some other mineral.

Garnet has a strong tendency to crystallize, and hence is usually found as crystals. The grains of garnet found in the sands of river beds and on beaches, though not often showing crystal form, may be really fragments of crystals. Garnet is one of the most common constituents of such sands because of its hardness and power of resisting decay. These properties enable it to endure after the other ingredients of the rocks of which it formed a part have been worn away. It is quite heavy as compared with the quartz of which the sand is mostly composed, and hence continually accumulates on a beach, while the quartz is in part blown away. In such localities it will always be found near the water line, because the waves, on account of its weight, can carry it but a slight distance inland. Practically all garnet is three and one-half times as heavy as water, and some four times as heavy. Garnet, as a rule, is somewhat harder than quartz, its hardness being 7½ in the scale of which quartz is 7. Some varieties are, however, somewhat softer. The hardness of garnet and its uneven fracture are properties which give it an extensive use for rubbing and polishing wood. For this purpose it is spread upon glued paper in the manner of sandpaper and is used similarly, but it is superior to the latter. Most varieties of garnet fuse quite readily before the blowpipe, and the globules thus formed will be magnetic if the garnet contains much iron. The green garnet, uvarovite, is almost infusible, however. Garnet is not much affected by ordinary acids, although it may be somewhat decomposed by long heating.

GARNET.
LOANED BY FOOTE MINERAL CO.

Top row:
Almandite (Colorado.)
Almandite (Connecticut.)
Center:
Essonite (Italy.)
Garnet in Matrix, polished (Mexico.)
Garnet (Hungary.)
Bottom:

Garnet in Matrix (Alaska.)
Uvarovite in Matrix (Canada.)

The name garnet is said by some authorities to come from the Latin word granatus, meaning like a grain, and to have arisen in allusion to the resemblance of its crystals in color and size to the seeds of the pomegranate. The German word for garnet, granat, is the same as the Latin word. Others think the word derived from the Latin name of the cochineal insect in allusion to a similarity in color. 173

The use of garnet for gem purposes seems to date back to the earliest times. Among the ornaments adorning the oldest Egyptian mummies there are frequently found necklaces containing garnet. The Romans prized the stone highly, and it is a gem very largely used at the present day, its hardness and durability and richness and permanency of color giving it all the qualities desired in a precious stone.

Two varieties of garnet, almandite and pyrope, may exhibit the dark blood-red color especially ascribed to garnet. Almandite or almandine garnet derives its name from Alabanda, a city of Asia Minor, in the ancient district of Caria, whence garnet was first brought to the Romans. The finest almandite for a long time came from near the city of Sirian, in the old province of Pegu, Lower Burmah. While this was the center of supply, it is not known just where the garnets were obtained. Such garnets are still known as “Sirian” garnets. Their color tends toward the violet of the ruby and gives them a high value. There are several localities in Northern India where almandite is mined on a large scale, and the stone is much used in Indian jewelry. Some of these localities are Condapilly, Sarwar and Cacoria. Almandite is also found in Brazil, in Australia, in several localities in the Alps, and in the United States. Stones from all these regions are found suitable for cutting, the only qualifications needed being sufficient size and transparency and good color. The almandite of Alaska shown in the accompanying plate occurs in great quantities near the mouth of the Stickeen river, but has not been extensively cut on account of its being too opaque. Almandite usually occurs in metamorphic rocks, such as gneisses or mica schists; also in granite. It is also found in many gem gravels. From the ruby it can be distinguished, as can all varieties of garnet, by its lower hardness and single refraction of light. In artificial light, too, it borrows a yellow tint, rendering it less pleasing, while the color of ruby grows more intense.

Pyrope, the magnesian variety of garnet, does not differ much in color from almandite. Both are dark red, but while almandite tends toward a violet tone, pyrope shades toward yellow. Pyrope is lighter than almandite, the specific gravity being 3.7 to 3.8, while that of almandite is 4.1 to 4.3. It is also less easily fusible. It rarely occurs in crystals, and where found in place is always associated with the magnesium-bearing rocks, peridotite or serpentine.

It is thus probably always of eruptive origin. Pyrope is a characteristic constituent of the diamond-bearing rock of South Africa, and is the stone known in trade as “Cape ruby.” These garnets afford many excellent gems. The home of the pyrope, however, is and has been for many centuries, Bohemia. Here it is found in many localities, but chiefly in the northwestern part, near Teplitz and Berlin. The garnets are found in a gravel or conglomerate of Cretaceous age, resulting from the decomposition of a serpentine. Sometimes, however, they are found in the matrix and often associated with a brown opal. They are found by digging and separated by washing. Though of good quality the scones are small, those as large as a hazel nut being found but rarely. Although the Bohemian garnets have been known for many centuries, the industry of mining and cutting them on a large scale is said not to have assumed any special proportions until the advent of foreigners to Karlsbad. In this way a knowledge of the stones went out to other countries, and a demand sprang up which has led to the establishment of a great industry and made Bohemia the garnet center of the world. There are over three thousand men employed at the present time simply in cutting the stones, and if to these be added the number of miners and gold and silver smiths occupied in the mining and mounting of the garnets, it is estimated that a total of 10,000 persons are engaged in the Bohemian garnet industry. The stones are used not alone for jewelry and for ornamenting gold and silver plate, but also extensively for watch jewels and for polishing. Excellent pyropes are found in Arizona, New Mexico and Southern Colorado in our own country. They occur in the beds of streams as rolled pebbles, and often associated with the green chrysolite or peridot of the eruptive rock from which they came. They are especially abundant about anthills, being removed by the ants because their size stands in the way of the excavations of the busy insects. The name pyrope comes from the Greek word for fire, and is applied on account of the color of the stone. 174

Of quite similar origin is the name carbuncle, a term applied to nearly all fiery red stones in Roman times, but now used to designate garnets cut in the oval form known as cabochon. The word carbuncle comes from the Latin word carbo, coal, and refers to the internal fire-like color and reflection of garnets.

The calcium-aluminum variety of garnet, grossularite, cinnamon stone or essonite, is less used in jewelry than those above mentioned. It is usually yellow to brown in color, but may be rose red or pink, as in the specimen from Mexico shown in the accompanying plate. The yellow grossularites resemble in color the gem known as hyacinth and are sometimes sold in place of the latter, but true hyacinth is much heavier and doubly refracting. About the only essonites or cinnamon stones available for gems come from Ceylon. These are of good size and color. Those from Italy, shown in the accompanying plate, are too small to cut into gems, but surrounded as they are by light green chlorite and pyroxene, they make very pretty mineral specimens. Grossularite is almost always found in crystalline limestone.

Green garnets are of two kinds, the calcium-iron garnet, known as demantoid, and the calcium-chromium garnet known as uvarovite. The demantoid garnets come only from the Urals. They have a rich green color and make beautiful gems when good ones can be found. The name demantoid refers to the diamond-like luster which they possess. The stone is also known as “Uralian emerald.” Uvarovite, named for Count Uvarov of Russia, also makes valuable gems if found in pieces of sufficient size and luster. It is found in Russia, in Pennsylvania and in Canada. Garnet has long been the birthstone of the month of January.

“By her who in this month is born
No gems save garnets should be worn.
They will insure her constancy,
True friendship and fidelity.”

Such are the virtues ascribed to the garnet. That the stone has been known and used from the earliest times I have already remarked. Under the name of carbuncle mention is made of it in the literature of all ages, its impressive feature being usually the brilliant, fiery light which it gives forth. According to the Talmud, the only light which Noah had in the ark was afforded by a carbuncle, and there are many Oriental tales regarding the size and brilliancy of carbuncles owned by the potentates of the East. Occasionally carbuncles were engraved, and some fine garnet intaglios are still known. The greater abundance of the stone in modern times has led to its being less highly prized than formerly, and to its being put to other uses than mere adornment, but it perhaps contributes more largely to the comfort and happiness of the world as it is now used than could ever have been the case when it was the property only of kings.

Oliver Cummings Farrington.

ANIMAL EMOTIONS.

Through the emotions we are apt to judge ourselves somewhat superior to the animal creation, though perhaps a more thorough study and interest in the “smiles and tears” of the so-called creatures of lesser intelligence would teach us that the emotions play almost as important and distinctive a part in their organism as in our own oversensitive nerve force. I am not speaking of the emotion of fear and anger that is instinctive in all animals, but of the more subtle emotions of joy and grief as visibly expressed. The older epic writers made much of the grief expressed by horses, and their sorrows have formed many an heroic verse. Merrick, in his “Tryphiodorus,” says:

He stands, and careless of his golden grain,
Weeps his associates and his master slain.

Says Moschus:

Nothing is heard upon the mountains now
But pensive herds that for their master low,
Struggling and comfortless about they rove,
Unmindful of their pasture and their love.

Virgil, who was probably more conversant with the horse and his interests than almost any other writer of that faraway period, thus writes of the sorrow of Pallas’ steed:

To close the pomp, Aethon, the steed of state,
Is led, the funeral of his lord to wait;
Stripp’d of his trappings, with a sullen pace
He walks, and the big tears run rolling down his face.

In the Iliad, Homer thus renders the emotion of Patroclus’ war horses evinced for that hero:

Restive they stood, and obstinate in woe:
Still as a tombstone, never to be moved
On some good man or woman unreproved
Lays its eternal weight; or fix’d, as stands
A marble courser by the sculptor’s hands.
Placed on the hero’s grave. Along their face
The big round drops coursed down with silent pace,
Conglobing with the dust. Their manes, that late
Circled their arched necks, and waved in state,
Trail’d on the dust beneath the yoke were spread,
And prone to earth was hung their languid head.

Shakespeare, in “As You Like It,” tells of the tears shed by a wounded stag:

The wretched animal heav’d forth such groans,
That their discharge did stretch his leathern coat
Almost to bursting; and the big round tears
Cours’d one another down his innocent nose
In piteous chase.

All, or nearly all, animals are sensitive to music, which affects them in various ways, and again it is Shakespeare who refers to this sensitiveness in even untrained horses, proving its effect to be instinctive:

For do but note a wild and wanton herd
Or race of youthful and unhandled colts,
Fetching mad? bounds, bellowing, and neighing loud,
Which is the hot condition of their blood

If they but hear perchance a trumpet sound,
Or any air of music touch their ears,
You shall perceive them make a mutual stand,
Their savage eye turned to a modest gaze
By the sweet power of music.

There is an ancient account of the Libyan mares to whom it was necessary to discourse sweet music in order to tame them sufficiently to be milked, and the horses of the Sybarites, who have been taught to dance to certain strains of music, inopportunely heard the same strains of music on their way to battle and very much chagrined their masters by stopping to dance instead of going forward to fight, such was the influence of the familiar tune. De Vere gives an account of a certain Lord Holland who was very eccentric, and used during the time of William III to give his horses weekly concerts in a covered gallery specially erected for the purpose. He maintained that it cheered their hearts and improved their temper, and an eye witness says that they seemed to be greatly delighted with the performance. Not at all a bad suggestion for owners of those horses who do not "come up to time" at the present day. A few years ago, according to the "American Naturalist," experiments were made in Lincoln Park, Chicago, to determine with scientific accuracy the effect of violin playing on different animals. It says:

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

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

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

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

Many of us are familiar with the story of the man who was chased by wolves and who climbed to the rafters of an old cabin out of reach of the vicious fangs, but who fortunately carried with him an old violin, and through its means he was able to hold the wolves in thrall the night through by his music until the last string of the violin snapped and the brutes prepared to make an onslaught, but at that moment the first gleams of the coming day appeared and the wolves forsook their prey and disappeared.

Much has been written of the effect of music upon elephants and their tempers. Gentle strains have moved them to caresses, and martial music arouses them to a sort of fury. It has been written that the Arab, than whom there is no truer lover of the animal creation, entertains his camel with music, songs and fairy tales. When the animal lags in its long swinging trot, the Bedouin draws his reed-pipe from the folds of his turban and sharp and shrill its notes are heard far across the dusky sands, and the weary camel, encouraged by its notes, moves on again with enlivened motion.

It has often been noticed how quickly a cow will distinguish a new bell, and how great a disturbance is created in the whole herd, who will often take it upon themselves to chastise the unwary wearer. De Vere is an authority for the fact that the leader of a herd of cows when deprived of her beloved bell will weep bitter tears, and says that there are many instances of cows that have died when deprived of their harmonious ornament.

That mice have a musical ear and taste is a well known fact, but the lowest type of animal that is visibly affected by a strain of music is the turtle. Readers of that sensational tale, "The Household of Bouverie," will remember the history of the small tortoise "Merodach" whom his master could summon at will by playing a certain air on an old lyre, a tale that was said to be founded on fact.

ALBERTA A. FIELD.

DOMESTIC COW.
(Bos taurus.)
ADAPTED FROM A PAINTING BY JAMES M. HART.

DOMESTIC CATTLE.

In the beautiful Swiss Alps, in the early springtime, one hears the ringing of a large bell. This is rung in the villages and is the signal for the departure of the herds to the alps above. The cows, lowing and jumping with delight, collect eager for departure. The finest cow of all has the largest bell hung from her neck with a bright ribbon, and between her horns is placed a large nosegay of flowers.

She is the leader and has the place of honor, and to deprive her of this pleasure would be cruelty indeed. The herdsmen begin their songs, the yodling sounds through the valley, the milk stools are set between the horns of the cattle, the cheese kettles and provisions are packed upon the beasts of burden, and the procession gaily wends its way up the mountainside.

Even if poorly protected from storms which may be encountered above, we cannot wonder that the cattle thoroughly enjoy this calm, beautiful life in the alps, and we are told that cows left in the valley below will often escape and follow their companions to the distant mountains.

In the United States there are also cattle that live an outdoor life, which have the freedom of the range, and are shelterless the year around. These are the half-wild herds which roam over Texas, Colorado and other western states. Although the great cattle owners often inclose immense pastures, thousands of acres in extent, so that the herds are in a measure restricted, the smaller owners turn their cattle out and allow them to wander at will.

This occasions the necessity for the yearly “round-up.” At a given time the cattle of each county are driven to a common center, confined within an inclosure or “corral,” and the calves running with the cow mother are branded with the mark of the owners. The “round-up” is the great event of the cowboy’s life, and an interesting occasion it certainly is. The time of the “round-up” may consume a number of days. The cowboys take their places on the outer limit of the tract belonging to their division, and with a skill acquired by long experience they are able to find every cow and calf and slowly to draw the circle smaller and smaller, until all the cattle are congregated in one herd. Then follows a time of work by day and merrymaking by night. The camp is maintained until all the cattle are branded with the brands which are registered with the county clerk, thus making the ownership plain to all. The cowboys, with their broad hats frequently ornamented with the various brands of the cattle owners, with their picturesque attire, mounted on their bronchos, or scraggy, wiry mountain ponies, are interesting individually and collectively. Among them at the time of the “round-up” are often men of education and refinement, as well as others who know no life besides that of the plains and the open. They ride like the wind, and when one rode to his ranch neighbor’s thirteen miles away to execute a little commission before breakfast and returned before the coffee was spoiled, my eastern ideas received a shock which made it necessary for me to readjust my conception of western life and living.

Mr. Brehm tells us that the manner of life of the domestic cattle of various countries is instructive as well as fascinating. He tells us that there are “herds which lead the same manner of existence as did those belonging to the patriarchs. The wandering tribes of Eastern Soudan are herdsmen, who attend to their duties in exactly the same way as their ancestors did thousands of years ago. Herds of cattle constitute their only riches. Their wealth

is estimated by the number of their sheep and cattle, as that of the Laplander is estimated by the number of his reindeer. 180

The greatest of European landowners and cattle breeders, including those of Holland and Switzerland, can hardly realize the vast numbers contained in the herds of those nomads. Near the village of Melbess the plain shows a deep depression, at the bottom of which a number of wells have been dug, one beside the other, for the sole purpose of watering the herds congregating there during the noon hours. Beginning in the afternoon and during the whole night, far on toward noon next day, nearly a hundred people are busy hauling water from the wells and pouring it into pools, to which a little salty earth is added. From all sides innumerable herds of sheep, goats and cattle draw near, first the sheep and goats, then the cows. In a few minutes the valley is filled with them. One sees nothing but an unbroken herd of animals passing back and forth, a dark human form looming up between them at intervals. Thousands of sheep and goats keep arriving, while as many are departing satisfied. I believe it impossible to count the number of cattle, yet I do not exaggerate if I put down the number of the animals daily congregating at the spot as sixty thousand.

In the south of Africa the oxen are of great importance, as without them the extended trip necessary for purposes of trading and hunting through the vast wastes in parts entirely devoid of water and grass would be impossible.

In Southern Russia, Tartary and probably also a great portion of Central Asia considerable herds of cattle are kept." In fact, at the present time there seems to be no country in the world where domestic cattle are not found. They are common from Norway and Lapland in the north to Southern Africa and South America in the south. Columbus first brought them to the New World, and the Spaniards transported them to South America, where they multiplied with great rapidity.

In a general way domestic cattle may be divided into two classes—the straight backed cattle of Europe and the New World and the humped cattle of India. Humped cattle may also be found in China, Africa and Madagascar. They not only vary from other cattle by having the hump on the withers, but they have a different coloration, voice and habits. They have a convex forehead, long, drooping ears and a dew-lap, which hangs in folds the entire length of the neck. They vary much in size, as the largest "may stand as high as a buffalo, while the smallest may be little larger than a calf a month old." They are gentle in disposition and the larger ones are used for drawing native carriages. Unlike the European cattle, they seldom seek the shade, and never stand knee-deep in water. These cattle are often called zebus, and in the northern provinces of India, where they are used for riding, they will carry "a man at the rate of six miles an hour for fifteen hours."

"White bulls are held peculiarly sacred by the Hindus, and when they have been dedicated to Siva by the branding of his image upon them, they are thenceforth relieved from all labor. They go without molestation wherever they choose, and may be seen about eastern bazars helping themselves to whatever dainties they prefer from the stalls of the faithful."

In Central Africa the humped cattle are represented by the Galla, or Sanga. This is regarded by some as the finest breed of the humped variety. It is large, slender and vigorous, long legged and rather long tailed. The general color is a chestnut-brown. The horns are very strong and are fully forty inches in length.

The straight backed cattle are those of Europe, America, Australia and the smaller islands, and of some parts of Africa. They may be long-horned, short-horned or hornless. Among them are very many breeds, many well known being common almost everywhere.

One is the ox of Freiburg, or the Swiss ox. This variety yields both excellent beef and extremely rich milk.

The Dutch ox is marked by stately proportions, uniform coloring, a long, tapering head and a long and thin neck. The color is pied, a white or grayish ground showing red, brown or black spots of varying size and shape. "It has been bred in Holland for centuries. It is easily fattened and has an abundant yield of milk." 181

The Durham or short-horned breed of England is an animal with little symmetry of proportion, with a small head, a straight back and short legs. It is not a good milker, but surpasses all in the production of beef.

The beautiful Jersey cow is a great favorite in America and Great Britain on account of the rich cream and butter obtained from the milk. The Alderneys and Guernseys are classed with the Jerseys and are also of "elegant appearance." Other breeds are the hornless Galloways, the Devons, the Herefords, the Holsteins and many others.

Like the sheep, the cat and other domestic animals, the origin of domestic cattle seems surrounded with mystery and uncertainty. We know that in earliest times domestic cattle were common, as the earliest writings mention them and the ancient monuments picture them. It is, however, probable that all the straight backed varieties, directly or indirectly, may be traced back to the aurochs, or urus, a most interesting wild ox of Europe. This is extinct now, as well as some other species which may form the connecting link.

The aurochs was an animal of great size, nearly as large as an elephant, but with the form and color of a bull. Skulls and bones, both in England and on the Continent, show their characteristics, and skulls pierced by flint hatchets show that they were hunted by prehistoric hunters. We do not know when they finally disappeared, but in Julius Cæsar's time they seem to have been common in the Black Forest of Germany. Old chronicles prove that they were found in the middle of the sixth century, and in the ninth century Charlemagne hunted the aurochs in the forests near Aix-la-Chapelle. The Nibelungen-Lied mentions the slaughter of four in the twelfth century. In classic literature there are accounts of contests with gigantic wild oxen, indicating that the animal's range extended as far south as Greece. Bones have been found in a number of European countries, and it is certain that it roamed over Russia, but how far to the eastward and northward it wandered we cannot tell.

There still exist in England wild cattle known as the “park oxen.” Though much smaller in size, they seem to be more like a direct descendant of the aurochs than any other species, although probably they descended from domesticated early breeds. These herds are confined in private parks, and the best known at the present time is the Chillingham herd. This park was probably inclosed about the thirteenth century. The cattle are small, with moderately rough, curly hair. The insides of the ears and muzzles are red, while the animals are white. They have the characteristics of animals in a wild state. “They hide their young, feed in the night, basking or sleeping during the day. They are fierce when pressed, but generally speaking are very timorous, moving off on the appearance of anyone, even at a great distance.”

JOHN AINSLIE.

Mightiest of all the beasts of chase
That roam in woody Caledon,
Crashing the forest in his race,
The mountain bull comes thundering on.

—Sir Walter Scott.

THE ARROW HEAD.

(*Sagittaria latifolia.*)

In all places then, and in all seasons,
Flowers expand their light and soul-like wings,
Teaching us, by most persuasive reasons,
How akin they are to human things.

—Henry Wadsworth Longfellow.

The Arrow Head is one of our most familiar plants, quite as well known because of its beautiful arrow-shaped leaves as for its showy white flowers. It is interesting and conspicuous among the rushes and sedges that abound in the sluggish waters that border lakes and streams. It must have sunshine and well illustrates the words of Thoreau: “Rivers and lakes are the great protectors of plants against the aggressions of the forest, by their annual rise and fall, keeping open a narrow strip where these more delicate plants have light and space in which to grow.”

There are about twenty-five species of the genus Sagittaria, to which the plant of our illustration belongs. These inhabit both temperate and tropical regions. The generic name is from the Latin word sagitta, meaning an arrow, and referring, as does the common name, to the shape of the leaf. When the Arrow Head grows in water leaves are produced under water that do not have the arrow shape. These are not produced on those plants that grow on wet, muddy banks.

Two kinds of flowers are produced by this plant—the male and the female. The male flowers are the large white ones with a golden center formed by the group of yellow stamens. The female flowers are lower on the flower stalk and are dull green and unattractive. This arrangement of the flowers is nature’s provision for preventing self-fertilization. The insects that visit these flowers naturally first alight on the more brilliant staminate flowers, and the pollen, adhering to their bodies, is later transferred to the seed producing flowers when the insects visit them. Though the two flowers are usually upon the same plant, they are sometimes developed on distinct plants. The Arrow Head beautifies the swampy regions of North America from Mexico northward.

THE BLACK COHOSH.

(*Cimicifuga racemosa.*)

The Black Cohosh, or Black Snakeroot, grows in rich woods from Canada nearly to the Gulf of Mexico. It is a conspicuous plant, with its long stem, which sometimes grows to a height of eight feet, and its large compound leaves, as well as with its long raceme of numerous small white flowers. This raceme during the ripening of the fruit often acquires a length of two to three feet.

This plant is sometimes called Bugbane. The name Cimicifuga is from the Latin words cimex, a bug, and fugo, to drive away. Both the technical name and the name Bugbane allude to the offensive odor of the flowers, which was supposed to drive away insects. In fact, the Black Cohosh is held in high repute by some Indians as a cure for the bite of poisonous snakes, as well as a powerful aid in driving away insects. Were it not for the strong, disagreeable odor of the flowers, which are only frequented by those flies which enjoy the odor of carrion, with its “tall white rockets shooting upward from a mass of large, handsome leaves,” it would be a striking ornament for the flower garden.

BLACK COHOSH.
(Cimicifuga racemosa.)
ARROW HEAD.
(Sagittaria latifolia.)

Someone has said that the Black Cohosh "may truly be classed among those objects which, from the standpoint of frail humanity, distance lends enchantment." Though this be true, may we not say with Wordsworth,

To me the meanest flower that blows can give
Thoughts that do often lie too deep for tears.

THE VEERIE.

Darkness descends in shadowy folds
Over the distant hills; the breeze
Shivers and stirs in the leafy trees,
And a single star beholds.

The brook murmurs low in the tangled copse,
The jewel-weed stands with its feet in the stream,
By my lantern light the dew-drops gleam
On the leaves like diamond drops.

And lo! like the shuddering wind-stirred leaves,
Like the trembling weed where the waters glide,
A voice from the depths where the wood-birds hide
Its thrilling melody weaves.

What shakes the harp-strings in thy throat?
Is it joy or woe? Is it love or fear?
The mystery of the woods I hear
In the passion of your note.

Do you cry, Woe! Woe! Do you cry, Rejoice!
Joy and sorrow no longer twain,
Hope and despair in one wild strain,
And the night has found a voice.

—Isabella T. M. Blake.

THE SPRING MIGRATION.
II. IN CENTRAL MISSISSIPPI.

In the former article under this title attention was paid to the warblers only. In the present one I will try to give you some idea of the other birds that in spring take part in this general movement northward. A few birds that cannot properly be classed among the winter residents visit us now and then on warm summery days in January and February; they may be called the advance guard of the great army of migration. Conspicuous among these are the bluebird and the hermit thrush, two birds closely related, but very different both in coloring and disposition.

The bluebird is one of the first birds to be learned by the country children; his bright colors, cheerful music and affectionate, trusting disposition make him a general favorite. Right here permit me to digress enough to say that too little encouragement is given the children of our public schools, especially in the country, to learn the names and habits of our common birds. A little time and effort judiciously expended by the teacher in guiding the pupils to an understanding and love of the bird life about them would be an investment paying large dividends in quickened perceptions and increased interest in the too often dull and distasteful round of school work.

The hermit thrush is a lover of the deep, dark shades where he can sit on a twig and watch the stirring life about him without being a part of it—a kind of chimney corner philosopher, if you please. The rufous tail in sharp contrast to the olive brown head and back will tell you his name every time, for he is the only member of the thrush family found in these regions in which the color of the tail differs materially from that of the back. I remember one afternoon in February seeing one in the shade of a thick-topped holly; here he remained quite unconscious while we peered at him through the opera glass, discussed his coloring and consulted the pocket manual to see what Chapman said about him, an occasional jerk of the tail or a slight movement of the head being the only indication of life in the graceful figure before us.

Late in March or early in April come the purple martin, the bank swallow and chimney swift, all cheerful birds whose only apparent aim in life is to sail about through the air in pursuit of gnats and flies. The noisy chatter of the martins as they wheel and turn about near the house is one of the most agreeable sounds in all the gamut of bird voices. They are very numerous in parts of Mississippi, but the only place in the North where I have ever seen them in any considerable numbers is on the Maumee, not far from the little town of Waterville, Ohio. The bank swallow and chimney swift are smaller and less conspicuous than the martin, less noisy but quite as useful.

Soon after the swallows appear the flycatchers, the tyrant wood pewee, phœbe bird, Acadian and great crested. What figure is more familiar on hot summer days than the kingbird or tyrant flycatcher perched on a mullein stalk, now and then darting down from his perch to capture some straying gnat? The Acadian stops for only a very short stay; you will find him in the deepest shades, where the gloom and dampness suit his somber fancy. The wood pewee is also a gloomy soul, possessing no gift of color or song to attract the eye or hold the fancy; his long drawn out monotonous note always reminds me of hot August afternoons when all other bird voices are silent as the grave and summer reigns with undisputed sway. The prince of woodland flycatchers, both from point of coloring and attractive personality, is the great crested; his olive brown back, whitish breast and sulphur-yellow belly give him a more brilliant appearance than the others just mentioned. His character, too, is better, for he is neither as belligerent as the kingbird or as gloomy as the Acadian and wood pewee. His call is not unmelodious, though it would be misleading to call it a song.

April brings the orioles to play their not insignificant part in the great color scheme of Nature at this resurrection season. I always associate the coming of the orchard oriole with the opening of the Chickasaw roses, and the arrival of the Baltimore with the blooming of the yellow poplar (Liriodendron tulipifera). For several seasons I caught my first glimpse of the Baltimore's flame and black in the top of a tall poplar, and heard his cheery whistle as he dodged in and out among the great cups, making a breakfast on the insects whose hum made the whole woods drowsy. A few brief days of rest and pleasure in this land of flowers and the orioles are gone, except a few pairs that stay to rear their families in these solitudes.

A long, slim, brown body, a stealthy way of sliding in and out among the vines and limbs, and a shy, suspicious air mark the black billed cuckoo or raincrow. He, too, stays but a few days. When you see the raincrow it is time to look for the Wilson's thrush; but it was never my privilege to hear him sing in these forests. Perhaps he is tired out with the long journey from the land of eternal summer and wishes to be seen, not heard. Writers tell us that this thrush is very plentiful in certain localities, but in this section of the South I saw only two specimens in four years.

The musician of the thrush family, of the whole woods for that matter, in some points a successful rival of the mocking bird, is the wood thrush. Dark cinnamon brown, of quite a uniform tint above and white breast spotted with round, black, or dark brown enable one to pick him out easily from the rest of the thrush family. I remember hearing one sing at a negro "baptizing" just at sunset of an April day. After the immersion had taken place, as the officiating "elder" led the candidate to the bank of the pond, clear negro voices raised one of the good old hymns. As the words of the last verse died away on the evening air and the elder raised his hand to pronounce the benediction, a wood thrush in the nearby forest began his vespers. Sweet, clear as a silver bell, the notes arose, tinkling, reverberating, tender but dignified, voicing in a half-unconscious way the solemn emotions of the hour. What is there in the singing of even the best of trained choirs to compare with this simple voice of Nature, without affectation or conceit, arousing the feelings and appealing to the noblest instincts of our common nature.

Birds crowd in upon us, bull bat, chuck-wills-widow, turtle dove, gray-cheeked thrush and titlark come to see us, some to stop and add their own individual element to the local coloring, others after a few hours of rest to continue their way northward. Multitudes of sparrows, jays, thrashers, nuthatches, titmice, woodpeckers, etc., that have enjoyed our hospitality during the winter and part of the spring pack up their effects and leave, for

summer is almost here.

The bird that to my mind is distinctly the advance agent of summer has well been called the summer tanager. He delays his coming until straw hats and linen suits appear; then what a dash of warm color he brings. Seated on the topmost bough of a tall oak, where the sun's rays fall full upon him, he gives such intense, palpitating color that one's eyes are almost blinded looking at him. Rich as is the red of the cardinal it appears soiled and tarnished beside the summer tanager.

With a sigh we realize that the spring migration is over for this year; but there is one consolation, only a part of its music is hushed—the soul of Southern bird life, the mocking bird, is left. Inconspicuous by reason of his Quaker-gray suit, he makes up in attractive manners and variety of musical gifts what he lacks in other respects. It is quite impossible to do justice to this bird either in describing his bubbling, effervescent life during the nesting season or in giving an adequate idea of the effect produced upon the senses by his exquisitely beautiful nocturnes. One March night some noise just outside my window awakened me. I arose and raising the window listened. The full moon, almost in the zenith, was flooding the landscape with a weird, soft light; the shadows of the cedar hedge a few yards away lay black as ink; the very air was heavy with the perfume of the jessamine abloom in a neighboring forest. In the cedars a mocking bird sang to himself a sweet, dreamy song, giving more complete expression to the mystery, the romance, the passion, the rapturous content of a Southern moonlit night than any poem that poet's hand has ever written.

James Stephen Compton.

ANTICS OF A HUMMINGBIRD.

As the writer was standing one May morning near a clump of bushes in the suburbs of a city in Maine he witnessed, for the first time in a long experience of bird study, the courting antics of a male hummingbird. Two of the tiny creatures appeared, apparently evolved from mid-air, and one alighted in the bush. She was the female. The male immediately began to disport himself in the air in the following remarkable manner:

He dashed back and forth over the head of the female in long, curving swoops such as one describes in a swing, all the time giving utterance to a low, pleasing twitter. He thus swept back and forth ten times, rising at the ends of the curve to a height of perhaps fifteen feet, sustaining himself there a moment, with his ruby throat flashing in the sun, and then darting down the double toboggan slide and up to the other end. Though he flew very swiftly, yet his speed was not the usual flash and his movements could be plainly seen. I had never before seen a hummingbird fly so slowly nor heard from one of them such a prolonged vocal sound. Indeed, it is very rare that one hears the hummingbird's voice, even if one is on the alert for it. After the tenth swoop there was a buzz of wings and both birds had vanished. A minute after I found the male in a cherry tree sipping honey from the blossoms.

There is evidently a rivalry between the bees and the hummingbirds in their quest for honey. This bird, with an angry dash, expressed its disapproval of the presence of a big bumblebee in the same tree. The usually pugnacious bee incontinently fled, but he did not leave the tree. He dashed back and forth among the branches and white blossoms, the hummingbird in close pursuit. Where will you find another pair that could dodge and turn and dart equal to these? They were like flashes of light, yet the pursuer followed in the track of the pursued, turning when the bee turned. There was no cutting across, for there was no time for that. In short, the bird and the bee controlled the movement of their bodies more quickly and more accurately than the writer could control the movement of his eyes. The chase was all over in half the time that it has taken to tell it, but the excitement of a pack of hounds after a fox is as nothing, in comparison. The bee escaped, the bird giving up the chase and alighting on a twig. It couldn't have been chasing the bee for food, and there is no possible explanation of its unprovoked attack except that it wished to have all the honey itself. So even as little a body as a hummingbird can show selfishness in a marked degree. However, Mr. Bee continued to take his share of Nature's bounty, though doubtless he had his weather eye open against another attack. Both scenes afforded me a delightful study and were a rare privilege.

George Bancroft Griffith.

SWEET FLAG.
(Acorus calamus.)
FROM KŒHLER'S MEDICINAL-PFLANZEN.

Description of plate: *A*, rhizome and basal portion of leaves; *B*, upper end of leaf with inflorescence (spike); 1, 2, 3, 5, flowers; 4, stigma; 6, section of fruit; 7, stamens; 8, pollen grains.

CALAMUS.
(*Acorus calamus* L.)

Another goblet! quick! and stir
Pomegranate juice and drops of myrrh
And calamus therein.

—Longfellow: Golden Legend, III.

Acorus calamus, commonly known as Calamus, sweet flag and cinnamon sedge, is a reed-like plant common in Europe and Northern United States. It grows in swamps, marshes and very moist places. It is a herbaceous perennial growing from spreading fleshy rhizomes. The long, sword-like, deep green, pointed leaves grow up from the rhizomes.

The history of this plant dates back to remote antiquity, yet there is considerable uncertainty as regards the identity of the various plants which have at various periods been supposed to be sweet flag. There is no doubt that some reedlike plant in many respects similar if not identical with calamus was used by the ancient Egyptians in the preparation of incense as recorded in the papyri of Ebers. These Egyptian records date back to the eighteenth dynasty, or from 1800 to 2000 years B. C. Vague references to a similar plant are to be found in the ancient sacred writings of the Hindoos. It is likely that the plant referred to and that which is mentioned in the Bible is a species of Andropogon, and not Acorus. In Exodus, 30:23, we find: "Take thou also unto thee principal spices of pure myrrh, of sweet cinnamon, and of sweet Calamus."

Our first reliable information of Calamus is from Plinius, who received specimens from the country about the Black Sea and who described it under the name of Acorus calamus. Acorus, derived from the Greek a for, and corus, the eye, because the plant was highly recommended in the treatment of diseases of the eye. Calamus, also derived from the Greek, means a reed or reed-like plant. Dioscorides and Theophrastus also describe the plant with special reference to the rhizome and its uses.

The rhizomes should be collected late in the autumn, carefully cleaned of dirt, leaf remnants, leaf scales and roots and dried in the sun or in an oven at a moderate temperature. The aromatic odor increases greatly on drying.

Calamus has ever been a favorite popular remedy. Its principal use seems to have been that of a tonic and blood purifier, for which purpose bits of the dried rhizomes are masticated and the saliva swallowed. It undoubtedly is a tonic and it also has a beneficial, stimulating and antiseptic effect upon gums and teeth. Chewing the rhizomes is also said to clear the voice. Calamus is, or has been, used in flavoring beer and gin. Country, people add it to whisky, wine and brandy to make a tonic bitters for the weak and dyspeptic. It is said that the Turks employ it as a preventive against contagious diseases. In India it is used to destroy vermin, especially fleas. In England it is employed in the treatment of malaria.

At the present time Calamus is no longer extensively employed in medicine. It is considered as a stimulating, aromatic and bitter tonic. It is perhaps true that its value as a tonic is at present somewhat underestimated by the medical profession. It is also serviceable in flatulent colic, and in what is designated as atonic dyspepsia. It is added to other medicines, either as a corrective, or adjuvant.

ALBERT SCHNEIDER.

THE BIRDS.

They are swaying in the marshes,
  They are swinging in the glen,
Where the cat-tails air their brushes
  In the zephyrs of the fen;
In the swamp's deserted tangle,
  Where the reed-grass whets its scythes;
In the dismal, creepy quagmire,
  Where the snake-gourd twists and writhes.

They are singing in arroyos,
  Where the cactus mails its breast,
Where the Spanish bayonet glistens
  On the steep bank's rocky crest;
In the cañon, where the cascade
  Sets its pearls in maiden-hair,
Where the hay and holly beckon
  Valley sun and mountain air.

They are nesting in the elbow
  Of the scrub-oak's knotty arm,
In the gray mesh of the sage-brush,
  In the wheat-fields of the farm;
In the banks along the sea beach,
  In the vine above my door,
In the outstretched clumsy fingers
  Of the mottled sycamore.

While the church-bell rings its discourse
  They are sitting on the spires;
Song and anthem, psalm and carol
  Quaver as from mystic lyres.
Everywhere they flirt and flutter,
  Mate and nest in shrub and tree.
Charmed, I wander yon and hither,
  While their beauties ravish me,

Till my musings sing like thrushes,
  And my heart is like a nest,
Softly lined with tender fancies
  Plucked from Nature's mother-breast.

—Elizabeth Grinnell, in "Birds of Song and Story."

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