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and William Kerr Higley**

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Title: Birds and Nature Vol. 11 No. 2 [February 1902]

Author: Various

Editor: William Kerr Higley

Release date: December 7, 2014 [EBook #47568]

Language: English

Credits: Produced by Chris Curnow, Joseph Cooper, Stephen Hutcheson,
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BIRDS AND NATURE.

ILLUSTRATED BY COLOR PHOTOGRAPHY.

Vol. XI.

FEBRUARY, 1902.

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FEBRUARY.

But Winter has yet brighter scenes—he boasts
Splendors beyond what gorgeous summer knows;
Or Autumn with his many fruits, and woods
All flushed with many hues. Come when the rains
Have glazed the snow and clothed the trees with ice,
While the slant sun of February pours
Into the bowers a flood of light. Approach!
The incrustated surface shall upbear thy steps,
And the broad arching portals of the grove
Welcome thy entering. Look! the massy trunks
Are cased in the pure crystal; each light spray,
Nodding and tinkling in the breath of heaven,
Is studded with its trembling water-drops,
That glimmer with an amethystine light.
But round the parent-stem the long low boughs
Bend, in a glittering ring, and arbors hide
The glassy floor. Oh! you might deem the spot
The spacious cavern of some virgin mine,
Deep in the womb of earth—where the gems grow,
And diamonds put forth radiant rods and bud
While amethyst and topaz—and the place
Lit up, most royally, with the pure beam
That dwells in them. * * * *

—William Cullen Bryant, "A Winter Piece."

The Blue-headed Vireo, or its varieties, of which there are several, frequent nearly the whole of North America. The typical form of the species, that of our illustration, has a range covering Eastern North America and extending westward to the great plains. It breeds from Southern New England and the lake states northward to Hudson Bay and southward in the higher altitudes of the Alleghenies. It passes the winter in Cuba, Mexico and Central America. The Blue-headed Vireo is frequently called the Solitary Vireo, or Greenlet, because of its retiring habits. It is a bird of the forest and stays very close in these quiet retreats. Yet it is, as a rule, easy of approach, seeming to possess both curiosity and confidence. Mr. Bradford Torrey writes with enthusiasm regarding the pretty habits of this bird. He says: "Its most winning trait is its tameness. Wood bird as it is, it will sometimes permit the greatest familiarities. Two birds I have seen which allowed themselves to be stroked in the freest manner while sitting on the eggs, and which ate from my hand as readily as any pet canary; but I have seen others that complained loudly whenever I approached their tree. Perhaps they had had sad experiences."

Possessing a happy and cheerful disposition, this species, like the other vireos, sings while working. Listening to them, we are reminded of the lines in "The Vision of Sir Launfal"—

"The little birds sang as if it were
The one day of summer in all the year,
And the very leaves seemed to sing on the trees."

Fortunate, indeed, is he who has the pleasure of watching this Vireo working upon its home and uttering "inexpressibly sweet and tender love notes."

Mr. Thomas M. Brewer says that the Blue-headed Vireo "usually makes a nest of coarse materials somewhat loosely put together, covering it with lichens, thus assimilating it to the moss-covered limb from which it is suspended." The materials used, however, are not always the same. One nest, of which Mr. Brewer speaks, was "covered over, as if cemented, with bits of newspaper." The external portion of another was "composed of the silky cover of cocoons, woven into a homogeneous and clothlike fabric, by some process quite inexplicable." The nests are frequently constructed of fine bark fibers, withered grass and pine needles woven together with moss and lined with plant down, fine grass and small, fibrous roots.

Much has been written regarding the song of this handsome bird of the woods. The words of Mr. Torrey perhaps best describe it. He says: "The Solitary's song is matchless for the tenderness of its cadence, while in peculiarly happy moments the bird indulges in a continuous warble that is really enchanting." It has, too, a musical chatter and a pretty trilled whistle.

In Mr. Keyser's experience "the song was varied and lively, sometimes running high in the scale, and had not that absent-minded air which marks the roundelay of the warbling vireo. It is much more intense and expressive."

Mr. Brewer describes the song as a "prolonged and very peculiar ditty, repeated at frequent intervals and always identical. It begins with a lively and pleasant warble, of a gradually ascending scale, which at a certain pitch suddenly breaks down into a falsetto note. The song then rises again in a single note and ceases."

The notes of the female suggest to Mr. Burroughs "the bleating of a tiny lambkin." To Mr. Nuttall "its song seems to be intermediate between that of the red-eyed and the yellow-breasted species, having the 'preai, preai,' of the latter and the fine variety of the former in its tones." To all "the music of the Solitary Vireo is delicious."



BLUE-HEADED VIREO
(*Vireo solitarius*.)
 $\frac{3}{8}$ Life-size.
FROM COL. CHI. ACAD. SCIENCES.

BOOK AND MRS. OYSTER

At the death of his dear mother little Willis went from his western farm home to stay for a few years with his Aunt Jennie in an eastern seaport town.

One day she had oysters in the shell for dinner. As his parents had wisely tried to keep his eyes and ears keen in regard to common things, he was full of questions.

His aunt told him that the next time she bought live oysters she would give him some to watch and study. Only a few weeks later she was expecting company to dinner and had a chance to keep her word.

"Fill this with water," said she, giving him a plain glass fruit dish, "and put your oyster in it."

"But," said Willis, "oysters live in sea water, which is salty."

"Yes; they do live in sea water. In order to grow and thrive they must have vegetable and mineral substances found in sea water. But they can live in fresh water. Oystermen make a practice of moving them from their banks to spots near the mouth of a river where the water is not nearly so salty or even quite fresh. Here they get washed out and freshened. They look plumper and some of the strong, salty taste being taken away, they have a more delicate flavor. All the largest oysters in the market are fattened in that way."

Willis did as directed.

"Do you notice how the oyster is covered?" asked his aunt.

"Yes, it has two shells which are joined like a hinge at the smaller end."

"Do you notice that they are different?"

"One shell is larger and deeper near the hinge. The outside of it is white and pretty. The shelly matter is laid in rings, some of which seem full, making me think of a tucked and ruffled skirt. The other shell is smaller, darker and nearly flat."

"Ask Bridget if she has some small crackers to give you one. Powder it and throw it on top of the water. If she has none a spoonful of corn meal will do for food. Animals which are deprived of natural ways of getting a living must be supplied with suitable food."

When he had done that she handed him a pair of shells, in one of which lay an oyster. "Here is another one which I had opened for you. I am very busy to-day. While the company is here you can amuse yourself by watching what happens. Examine the dead oyster and find out what you can about it."

Willis was delighted with his odd pet. He watched the live creature for some time. At first its two shells were tightly closed. After being quiet for some time it cautiously opened its shell a little way as though it was peeping at him. He was so pleased that he grabbed his hat and ran to fetch his neighbor schoolmate, Joseph. Once in a while a bit of cracker would be drawn between the shells and, in time, disappear. The two boys were very much interested.

"Let us look at the dead oyster, Willis."

"All right."

Taking a toothpick in his hand he tried to turn over the oyster in the shell. He found that a thickened muscle near the middle part was fastened to the half shell. Tearing it loose he saw at this place a dark, purplish spot just like one on the other half shell.

"I wonder what makes that hard spot?"

"Oh, see, Joseph! Its body has two sides. The side lying in the deeper piece of shell is larger. Down the middle is a division and the edges come together something like the cover of a book. Over all is a white covering with such pretty frilled edges. See, I can roll it back quite a little way."

"That is so. How pretty it is. It has no head. Does it eat? I wonder if it has a mouth."

Willis searched carefully for an opening. At last he found one near the hinge.

"What is this?" asked Willis, handing his playmate a little doubled-up thing about as large as a pea.

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After examining it carefully for a moment Joseph exclaimed: "You must have found its mouth. This is surely a baby crab which has been swallowed. See its little legs drawn up to its body."

Both agreed that they had found a crab. They again turned their attention to the oyster's mouth.

"What a large mouth for such a little animal! See how far I can put the point of my knife into it. It must have some bowels. I wonder if its bowels are here at the larger end. It looks puffy and dark inside. The thing is so slippery that I can scarcely handle it."

"Can it see, Willis?"

"I can find no eyes."

The boys took the oyster out of the water several times that they might see how it looked tucked so snugly between its shells. Every time they touched it the opening was closed tight. Thus the boys spent the afternoon.

When Joseph went home Willis said: "Come over to-morrow and we will get auntie to tell us more about the oyster."

After dinner Willis went to his room and watched his oyster again until his eyes drooped.

Presently there was a thump-thump-thumping across the floor behind him. What was Willis's surprise to see a big library book come near and with one leap place himself on the table. He was again surprised to see the oyster reach a long arm out of the water and the book another long arm from between its leaves. They two then shook hands. Both raised themselves to a vertical position and made a bow to Willis.

"We will try to tell you what you wish to know. Then you can surprise Aunt Jennie by telling her some things." As he spoke Mrs. Oyster swelled herself up so large that the soft white matter protruded from the shell; for she had never before had the high honor of talking to a real boy.

Willis was so pleased that he clapped his hands.

Mrs. Oyster crawled up and nicely balanced herself on the edge of the dish. Willis was speechless with surprise.

Book spoke: "This is Mrs. Oyster. She belongs to the subkingdom of shellfish called Mollusca. All of her folks have soft bodies. As she is protected by a shell of two parts, she is said to be a bi-valve. Her relative, Snail," said he, motioning with his hand, "having a single shell is called a uni-valve."

Looking in the direction of the movement of Book's hand, what was his surprise to see a snail with a shell on his back crawling across the table. Where he came from, Willis could not tell.

"When looking at that oyster this afternoon you noticed a thickened portion fastened to a dark spot on the valve," said Book.

"I remember," said Willis.

"There is a muscle," continued Book, "fastened at the dark spot on each valve. It becomes very strong by use. An oyster knows how to let it stretch, thus opening the valves to allow water to enter his chamber. It also knows how to draw it up so as to close them to keep out intruders. The white covering over the body is called the 'mantle'. If you notice the inside of an oyster valve, you can see a mark showing how near to the edge the mantle came. That is called the pallial line.

"If you will keep on looking you will succeed in finding that besides a mouth an oyster has a stomach, liver and intestines, a nervous system, and a heart that pumps blood, though it is not red but white blood.

"When you breathe, you take in your lungs from air what is called oxygen. Without oxygen there can be no life. Anything that can not in some way take in oxygen can not have life. Water as well as air contains it. Oysters have no lungs, but they have leaf-like gills on each side of the body. By means of these they get oxygen."

"Can an oyster see?" asked Willis.

"It has organs of sight, hearing, smelling, touch."

"Where are his eyes? We could not find them."

"Hunt them again," laughed Book. "I think that I will not tell you that. Since an oyster has no head you must not be surprised to find them in an odd place. The dark part which you noticed this afternoon and which shows so plainly in a cooked oyster is its great liver."

"To-morrow I will again try to find eyes. Perhaps auntie will let me take her glass."

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Stepping near and pointing as he talked, Book continued:

"To protect her soft body, friend Mrs. Oyster's mantle produces a shell of lime which grows by being enlarged around the edge. The high point on the left valve is called the beak. If you will scrub her shell with a brush to-morrow you will see lines running around the beak in the same direction as the margin. These are called 'lines of growth.' By them oystermen can tell the age of the shellfish."

"How strange!" said Willis thoughtfully. "Tree trunks also show lines of growth."

"Where did you come from?" asked Willis of Mrs. Oyster.

"As I have lived most of my life within this narrow shell," she answered with a cast-down air, "I have no idea where I came from nor where I now am. Shall I tell you the story of my life?"

"Yes, do, please. It must be interesting. You are such an odd creature."

"The first thing I remember," said Mrs. Oyster after she had drawn a full breath, "is that I was a tiny bit of white mucus, or egg, as people say, swimming gayly around with my brothers and sisters in my mother's shell. It was worse than in the case of the old woman who lived in a shoe. There were two or three thousand of us—maybe more. At any rate there were so many of us that our poor mother never had time to count us. But she was one who never worried. To keep us from getting lost she kept us in by closing her shell tight. That let her get no food. With a true mother's spirit she fed us on the substance of her own body until she became very poor."

"Beg pardon," said Book. "Let me explain to our friend. At that time the mucus within the shell in which the young oysters swim looks milky. The old oyster, who is said to be in the milk, is then unfit to eat."

"By the time two weeks had rolled around," went on Mrs. Oyster, "things in our house began to turn very dark in color and our mother received a prompt message from Dame Nature saying that she must turn us out of her house and home. Poor mother! She knew that Dame Nature's orders must be obeyed or death to the whole family would come. So she bade us good-bye, gave us a bit of advice, and opened the door. Knowing nothing of the size of the world and the things which happen outside of a shell, and thinking that we were going out only for a little romp, we in one voice assured her that we would not go very far.

"Eagerly we rushed out, to find that thousands of mothers on that same oyster bank were also just expelling their little ones. I became lost from my brothers and sisters. The water was so full of myriads of babies like myself that it took all of my attention to simply keep out of the way of the crowd. The oyster babies all looked so much alike that I lost hope of ever knowing one of my brothers again. Indeed, I could scarcely tell which was myself. Our mothers were down deep, but we rose near the surface where we could see the beautiful blue sky."

"Did you find anything to eat?" asked Willis with great concern.

"Oh, yes. We found plenty of tiny animals and specks of vegetables that eased our hunger and helped us to grow. After swimming freely for a few days our shells began to form and we found ourselves unable to swim long distances. They soon weighted us down and we began to sink. I heard a mother oyster pitifully calling, 'Baby, baby, come to mamma.' I wondered if it were my mamma, but I could not get to her. I came along by a piece of tile. Being tired and worn out, as that was the first clean thing I had seen I clutched to it, thinking that after I had rested a few moments I could go on. But I found that I could not loosen myself. Looking around, I could see tile after tile looking like they had just been scrubbed. Just like my piece, every one was soon thickly covered with

'spat,' as the oystermen called us. As fretting has no part in an oyster's life we contented ourselves thinking that we might in some way again get loose.

"'Perhaps,' said one, 'some of those big things we saw may come along and brush some of us off.' 'Perhaps,' said another, 'the owner may take up his tile and clean it off for other use some day; it certainly is of no use with us crowding on it.' So we lived in hope."

"How large were you?" asked Willis.

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"I can not tell how fast I grew."

Book again made himself useful. "Men who have watched and measured their growth claim that at two weeks of age a young oyster is as large as a pinhead; at that of three months as large as a pea. Its shell grows about an inch in diameter each year for the first three years. After that its size does not increase so fast."

Mrs. Oyster again resumed her story. "At last one day they said that we would soon be large enough for 'seed.' A few days later we found ourselves broken off from our clutching places and shut up in some dark place. The next thing we knew we were being lowered on a sandy bottom not so deep down as our old home. Now, when we catch and grow on something we like a vertical position. At first our two valves are alike, but in time the left one becomes more convex. If the shell of one of us becomes so heavy that it breaks off, the convex side, in dropping, goes to the bottom. When they planted us the men were kind enough to lay us in that position.

"When I was about a year old I began to spawn. It is needless to say that I lived over again the sad experiences of my poor mother. Some of the spat attached themselves to my shell and I gladly adopted them. For a while we were very happy. Then one day, those great iron tongs again disturbed us. The 'seed' were broken off and I was replaced childless. Next time I spawned I understood what it all meant. I begged my second set of adopted children if one of them ever had a chance to do so to send me a message. I lived with the great hope that I might be allowed to remain there until I had heard from some of them."

"Did you ever hear from any of them?"

"From only two of my great family, but other oyster mothers have not had even that much good luck. One day a diving bird came along hunting me. He said that another bird with great strong wings had a message for me from one of my children.

"How excited I became! One of my stolen children had been seen at the New York harbor.

"About two years later," continued Mrs. Oyster, "a fish brought me a letter." Taking a crumpled paper from out of her pocket and wiping her watery eyes on her mantle frill she read:

Dear Mamma:

I have begged one of the students to write this. When he goes fishing again he will try to find a fish who will promise to take it to you.

Since I was torn away from you I have been in several places. I am now a fine oyster—a "beauty," I heard some one say. I am at present in a great building called a college. Another of those wise men who look at you through glasses and whom they call "professor" is making plans to analyze several of us raised in different places. People want to know, it is said, of what value we are as food. It breaks my heart to think of what we must come to.

Farewell,

YOUR CHILD.

While Mrs. Oyster again wiped her eyes Book said, "It is too late for me to tell you much about this Prof. Atwater. I will only tell that he says that one quart of oysters contains about as much nutriment as one quart of milk. As food, oysters form flesh and make heat and force in the human body. You can at any time consult the books farther."

"Finally," said Mrs. Oyster, "I was taken away from my sea home and lived in a place where the water was nearly fresh for a little while. After 'floating' here for a couple of days I was sent to the market and sold as an extra fine oyster. They called me a 'blue point.'"

Just then Aunt Jennie shook Willis and asked him why he had not gone to bed. He rubbed his eyes and looked around, surprised to see his oyster lying quietly in its dish, with no snail nor book in sight.

The next morning he told Joseph and his aunt about his dream. "After this," said he, "when I wish to know things which I cannot notice and understand, I will ask the books. They know so much. Mrs. Oyster did not get to tell me about her cousins who make pearls. I mean to consult some books about them this very day."

LOVEDAY ALMIRA NELSON.



CALIFORNIAN THRASHER.
(*Harporhynchus redivivus*.)
 $\frac{3}{5}$ Life-size.
FROM COL. CHI. ACAD. SCIENCES.

THE CALIFORNIAN THRASHER. (*Harporhynchus redivivus*.)

One of the finest songsters among birds is the California Thrasher. Though confined to the coast regions of California, it is quite abundant and seems to bear to that locality the same relation that the brown thrush, or thrasher, does to the thickets further east. The song of this Western Thrasher is exquisitely sweet, and by some it is considered far superior to that of any of the numerous songsters that frequent the woods and brush of the Pacific coast. These lines, written by Mr. Wasson regarding the song of the brown thrasher, apply equally well to the bird of our illustration:

O, hark to the brown thrush! Hear how he sings!
Now he pours the dear pain of his gladness!
What a gush! And from out what golden springs!
What a rage of how sweet madness!

It is in the morning and in the evening that this Thrasher pours forth its song from some prominent and exposed perch. Then, as it were, with all care dismissed from its mind, all the energy of its being is thrown into a hymn of nature. By some this song is considered richer than that of the mockingbirds, though the Thrasher has but one air.

As a rule the California Thrasher frequents wooded thickets, though it is often found in shrubby fields and hedges, and the dense thickets bordering streams are especially attractive, for here it finds the quiet that its nature seems to crave. Unusually shy and distrustful of man, it generally avoids his habitations, and, like the brown thrasher, resents intrusion with a peculiar and complaining note. Yet the female is inclined to remain on her nest and allow close inspection.

Because of its short wings the movements of this Thrasher are rather heavy. Its flights are short and usually from bush to bush, while constantly opening and shutting its tail. Its life is not confined to trees and shrubs, for it moves easily on the ground, hopping rapidly with accompanying jerks of its tail. It is said that it will scratch in the layer of old leaves under trees, like a domestic fowl when hunting for its food. It prefers insect food and seldom eats fruit of any kind, except when food of its choice is scarce.

Its favorite haunts seem to be the regions of scrubby oak and greasewood brush of the deep mountain gorges. Here it builds its home, which "is a coarse, widely constructed platform of sticks, coarse grass and mosses, with but a very slight depression. Occasionally, however, nests of this bird are more carefully and elaborately made. It is always well hid in the low scrub bushes."

Both the sexes assist in the care of the eggs, though the male, as befits the father of a family, usually stands guard over the nest, giving a quiet note of warning on the approach of danger. Both sexes are said to be adepts at misleading an intruder, for they will fly away from the nest to the ground or to some thicket at a distance from

their home, and there by plaintive notes soon attract the intruder, especially if he is a nest hunter. In this, as well as in all its habits, it so resembles the brown thrasher that it may be considered its representative on the Pacific Coast.

WINTER'S SECRET.

This beautiful day when the sun so bright
Is giving my garment most beautiful hues,
I'll just look over the birds in sight—
The living gems on my cloak of white—
And the most precious I will choose.

I'll sit in my tent of brilliant blue
And look through its lacings of willow gold,
That shows a flashing of cardinal hue.
Yes, that's my redbird—I see him. Don't you?
He's here if my breath is cold.

There's darker spots close by redbird's flash;
They look like shadows compared to him.
Now they dip in the brook where its waters plash
O'er the willow's roots with a rippling clash,
And drink from my ice cups so thin.

I think they are snowbirds. Hello, little mutes!
Just answer me now till I'm sure it is you.
You look with your rusty brownish suits,
As you flirt and dance o'er the frozen roots,
Like the tasseled cords of my shoe.

Haw! haw! from the treetop laughs out crow.
"Don't you know I am out with the very best?
I love the sun, and I flap to and fro,
The one black-wing not afraid of the snow,
Though you sometimes call me a pest."

And Mr. Field Finch with chestnut hood,
As he swings and sways on his weed perch brown,
Calls in tones that you will not use when you're good,
"Can't you see a body? See! I'm here near the wood
Where the berries and seeds rattle down."

I'll now call Robin. Where are you, dear?
I know I saw you this early morn,
A crimson breast in the pine tree here.
Come, Robin, come! I'm sure you are near;
Yes, yonder you sit in that thorn.

Oh my cloak is so gay and its gems never rest,
But flutter and shine, 'neath the rays of the sun;
So I'll draw it close to my rugged breast,
And never will say which one I love best—
For I love them all—every one.

—Mary Noland.

A QUEER PARTNERSHIP.

A fine afternoon of that lovely spring month, May, found me ready for an afternoon collecting among the birds. Leaving home, I made my way to the river bank, and slowly strolled along its banks, finding much to amuse and interest me among the birds and flowers, seeing many old friends and a few new ones. After going about half a mile, I came to a well wooded place on one of the banks where the tall pines found safe homes for the crows, and a few families were raised here every year. A little way back, partly up the hill, was a dead basswood stump or tree, which contained the home of a golden-winged woodpecker or flicker, which I had found a few days before by seeing the bird leaving the nesting hole. As the hole was between 30 and 40 feet from the ground, I put on my climbers and was soon in a position to investigate; so, seating myself on a large limb that branched out just below the nest, I inserted my hand, and got quite a start on catching hold of some soft, downy creature, which I thought must be a squirrel, but imagine my surprise to find that I had secured an adult screech owl from out of the woodpecker's nest. The owl, which had lain quietly enough in my hands, put an end to my thoughts by suddenly coming to life, and very active life at that, and putting its claws into my hand, prepared to give itself a good

startoff. But I had hold of its legs, and as I did not like the way it was holding on, I put it back into the hole, from which in the meantime I had taken an egg, which on examining proved to be the woodpecker's and not an owl egg. Though the eggs are both white, the woodpecker's is larger than it is broad and more of a glossy texture, while the owl's is nearly round and also much larger.

Now was the puzzle, what was the owl doing in the woodpecker's nest, which was claimed by the latter, as it had deposited an egg in it, and also was seen leaving the nest a day or two before. The only conclusion that I could arrive at was that the owl had taken possession for the day and so turned the woodpecker out.

So far I had not been able to find an owl's nest, but as I could see by the loss of feathers that the owl had been setting I proceeded to try and find the nest, and decided to try the tree further up; so, leaving the owl in the flicker's home, I continued my climb to the top of the stub, and found the top rotted away, leaving quite a hollow eighteen inches deep with a small hole through a rotten place in the bark, through which I could see something white, so, carefully putting in my hands, I was delighted to find four young owls which were about ten days old, ugly little things, covered with a dirty white down, with the feathers just commencing to show and with their yellow beaks and large eyes. They did not look a very interesting pet, but still I secured two and left two for the mother owl. I descended the tree and put my treasure safely away in my collecting bag.

I would like to know how the owl and flicker arranged the boarding matter, for I did not get time to go back for a week, when from the woodpecker's nest I took six eggs and found the two owlets nearly ready to fly, but I saw neither of the old birds. So whether the owl continued to stay with the flicker or not, or whether it had just gone for the day, I shall never know; but still it was interesting to find the two nests on the one tree within three feet of each other, one containing eggs and the other young birds.

The owls that I had taken were safely reared and prove both amusing and interesting pets, but their life while in my keeping we will leave for another time.

D. WELBY.

62

THE BROAD-TAILED HUMMINGBIRD. (*Selasphorus platycercus.*)

When morning dawns * * * *
The flower-fed hummingbird his round pursues;
Sips with inserted tube the honied blooms,
And chirps his gratitude as round he roams;
While richest roses, though in crimson drest,
Shrink from the splendor of his gorgeous breast.
What heavenly tints in mingling radiance fly!
Each rapid movement gives a different dye;
Like scales of burnished gold they dazzling show—
Now sink to shade, now like a furnace glow!

—ALEXANDER WILSON.

If we desire to study the Broad-tailed Hummingbird in the regions that it frequents, we must journey to the mountainous district of Western North America. Here it may be found in large numbers, for it is the most common of all the species that frequent the mountains. It seeks its food of insects and honey from the flowers of a prolific flora extending from Wyoming and Idaho southward through Colorado, New Mexico, Arizona, Texas and over the table lands of Mexico into Guatemala. It is pretty generally distributed throughout the various mountain systems between the eastern slopes of the Rocky Mountains and the Sierra Nevadas.

Dr. Merriam found the Broad-tails very abundant in the balsam and pine belts of the San Francisco Mountains of Arizona, where their principal food plants were the scarlet trumpet flower and the large blue larkspur. Of their habits he says, "They wake up very early in the morning and go to water at daylight, no matter how cold the weather is. During the month of August, and particularly the first half of the month, when the mornings were often frosty, hundreds of them came to the spring to drink and bathe at break of day. They were like a swarm of bees, buzzing about one's head and darting to and fro in every direction. The air was full of them. They would drop down to the water, dip their feet and bellies, and rise and shoot away as if propelled by an unseen power. They would often dart at the face of an intruder as if bent on piercing the eye with their needlelike bill, and then poise for a moment almost within reach before turning, when they were again lost in the busy throng. Whether this act was prompted by curiosity or resentment I was unable to ascertain."

It seems strange and unnatural that so delicate a bird and one so highly colored should frequent localities where periods of low temperature are common. Yet the Broad-tailed Hummingbird prefers high elevations and has been known to nest at an altitude of eleven thousand feet, and it seldom breeds at places lower than five thousand feet.

The males leave for their winter homes very early in the season. Usually this migration takes place very soon after the young birds leave their nests. Mr. Henshaw attributes this movement of the males to the fact that their favorite food plant, the Scrophularia, begins to lose its blossoms at this time. He says: "It seems evident that the moment its progeny is on the wing and its home ties severed, warned of the approach of fall alike by the frosty nights and the decreasing supply of food, off go the males to their inviting winter haunts, to be followed not long after by the females and young. The latter, probably because they have less strength, linger last, and may be seen

even after every adult bird has departed.”



BROAD-TAILED HUMMINGBIRD.
(*Selasphorus platycercus*.)
Life-size.
FROM COL. CHI. ACAD. SCIENCES.

Though the flight of all hummingbirds is rapid, that of this species is unusually so. During the breeding season, or at least while mating, the flight of the male is accompanied by a loud metallic noise. This is only heard when the bird is rapidly flying and not when it is hovering over flowers. Mr. Henshaw suggests that this sound may be “analogous to the love notes of other birds.” Though he saw “many of these birds in the fall, it was only very rarely that this whistling note was heard, and then only with greatly diminished force.” He believed that the sound was produced at the will of the bird and by means of some peculiar attenuation of the outer primary wing feather. The nesting places of many of the hummingbirds, as well as that of the Broad-tail, may frequently be located by the peculiar perpendicular flight of the male. They will frequently fly as high as one hundred feet immediately above the vicinity of the nest, repeating the performance several times before alighting on some perch. The female is a faithful mother and will often remain on her nest until an intruder is within a few inches. The nest, though sometimes placed on large branches, is usually built but a few feet from the ground in low bushes or boughs that overhang water. 65

In their migrations southward the Broad-tailed Hummingbird is frequently found in company with the rufous-backed species, for which it shows an especial animosity. Speaking of these two species, Mr. Henshaw says: “The beds of bright flowers about Willow Spring, in the White Mountains, Arizona, were alive with them in August, and as they moved swiftly to and fro, now surfeiting themselves on the sweets they here found so abundant, now fighting with each other for possession of some such tempting prize as a cluster of flowers, their rapid motions and the beauty of their colors intensified by the bright sunlight, conspired to an effect not soon to be forgotten.”

A BIRD THAT HUNG HIMSELF.

Near the gate of our garden stands a small apricot tree which is only about six feet in height. Last year a long twine string became entangled in this tree. One day when I went to the garden I noticed a blackbird hanging in this string, about two feet from the ground. On examination I found that the string was closely wrapped about his neck several times, and that he had been choked to death by it. He had evidently tried to secure the string for his nest, and probably had several times started to fly away with it, only to find that the other end of it was fast.

There are usually high winds in Kansas during the Spring months, and these may have helped to entangle the

unfortunate bird. It is certain that in some manner he had snared himself, and in attempting to fly had jerked the cord tight about his neck. There he hung, a martyr to his own energy and ambition; and somewhere his mate mourned for the partner who had gone from her never to return.

MARY McCRAE CULTER.

66

WINTER MEMORIES.

Two little twittering sparrows
Shivering under the eaves,
Watching the slanting raindrops
Pattering over the leaves.

Chilled to their poor little marrows,
Though feathered in winter array,
For cold blows the wind o'er the housetop
And bitter and bleak is the day.

"You two little balls of brown feathers!
You chattering he and she!
Of what are you thinking, my pretty ones,
As you nestle close under the lea?"

"Shall we tell you," they twitter in chorus,
"Our thoughts in this sharp winter air,
Through which the chill ice drops are falling
O'er treetops so wind-torn and bare?"

"We remember our love in the spring time—
Ah, life to us then was so dear,
As we drifted through days joy-laden,
And nights filled with moonbeams so clear.

"We remember the sunshine of summer,
When the hours floated by like a dream,
And the air was alive with bird-music
And the world was a shimmer of green.

"We remember, too, winter is fleeting,
Though now it is snow-bound and drear;
But sometime the sunshine will loosen
The ice chains and spring will be here.

"We remember"—the little heads quiver
And the voices sound drowsily deep,
As they come from 'way down among feathers;
"We remember"—a pause—"then we sleep."

—Alberta A. Field.

67

SOME OF OUR WINTER BIRDS. IN EASTERN MASSACHUSETTS.

One of our most interesting winter birds and (with the exception of the English sparrow) perhaps the commonest, is the little black-cap chickadee. He is frequently seen in one's orchard and around the door, and a stroll into the woods will reveal him at any time. He may be easily distinguished by his jet black cap, his bluish drab back and wings, and a yellow tinge on his downy breast. Cedar trees are a special delight of his and, in the winter season, he may be found in nearly every grove of these evergreens. As one walks along through the woods, he is attracted by their notes, usually the simple, cheerful "chic-a-dee-ee e e," varied with squeaks and chirps, or if it be in February or March, he may hear a beautiful whistle ("pee-a-wee-a"), and possibly catch a pretty warbling song. They are always lively and cheerful and on a gloomy winter day they cause one to forget everything but them and their pleasant notes. They feed principally on berries and seeds, such as can be found in cold weather when the ground is covered with snow. But our little friends are seldom alone; as almost constant companions they have the nuthatches, snowbirds, tree sparrows and goldfinches.

Another very common cold weather bird is the slate colored snowbird or junco. Bluish slate above and grayish below, with some white tail feathers which show as he flies, he is a pretty sight to behold when one starts a flock of them from some frozen swamp or meadow, where they feed upon seeds and berries. They utter a loud chirp when you disturb them in the winter time, and as they hop about keep up an incessant twittering, which are the only notes you will hear from them, unless you are lucky enough to hear their song which they seldom sing before

starting for their summer homes. When it is stormy or severely cold they come up to one's door and eat bread crumbs and other things which may be thrown out. They are real friendly and will come quite near to you, and a man once told me that the reason for this was blindness on the part of the birds, and even as he spoke one of the birds flew to a nearby fence and, cocking his head, looked my informer over as if to give him the lie. John B. Tabb has written a short poem, which nicely describes him:

When snow, like silence visible,
Hath hushed the summer bird,
Thy voice, a never frozen rill
Of melody, is heard.
But when from winter's lethargy
The buds begin to blow,
Thy voice is mute, and suddenly
Thou vanishest like snow.

The tree sparrow, one of our most interesting sparrows, is another bird who does not fear the winter winds and storms. Although he carries the name of tree sparrow, he is most emphatically a bird of the ground, and may be seen during the winter months in almost any remote patch of plowed ground where there are old weed stalks for him to eat. They are especially addicted to old tomato fields and seem to delight in the seeds of this plant. This sparrow looks like a large chippy, our door yard neighbor of the summer months, excepting that he has distinguishing white bars across his wings. They travel in large flocks, and where one sees a few of them scratching in the snow, a step too close will scare dozens of them away. They associate considerably with snowbirds and where there are members of one family you will most always find the others either with them or close by.

One of our prettiest winter birds is the downy woodpecker, his glossy black and white, with the bright red spot on his head, showing up strongly from some tree trunk, where he raps for insects, as he goes up, propping himself with his tail as he works. One notices him by hearing his rapping on a branch or his loud note, which he utters frequently. He delights in boring holes in trees and, especially in the spring, he drills out complete nests which he probably has no intention of ever using. The hairy woodpecker has almost precisely the same habits and colors as the downy, and differs only in size. He, also, is one of our winter residents, but not so commonly as the other. 68

The flicker or yellow hammer is another woodpecker that is with us in winter as well as summer. He varies somewhat from the rest of his family in habits, in that, he feeds considerably on the ground, consuming a large number of ants. He is quiet during the winter, but his loud and cheerful notes are one of the first bird songs of spring.

A bird which resembles the woodpecker in his method of feeding, is the brown creeper, a pretty little brown bird, with a long curved bill and long sharp claws, who spends most of his time in climbing trees. Unlike a woodpecker, he goes up the trunk by going spirally around it, thus going over the whole tree before he flies to the next one and repeats the operation. The color of his back closely resembles the bark of a tree, and when disturbed he will sometimes crouch close to the tree where it is almost impossible to see him. In the spring, before departing north to breed, they often sing their pretty tune to us, which, however, we are lucky to hear. In the coldest weather they are frequently seen on trees by the wayside, and I have seen them on Boylston street, Boston, as busy and contented as ever.

The nuthatch is another bird which climbs, and, unlike either the woodpeckers or creepers, he goes down the tree head first, instead of backing down, and for this reason has been nicknamed "Devil Downhead." There are two nuthatches which are fairly common during the winter months, the white-breasted and the red-breasted. The former more commonly frequents orchards and the roadside, while the latter prefers to frolic, with the chickadees, among the evergreens. They seldom stay with us in the summer, usually nesting farther north.

The goldfinch is also a regular winter visitor; but at this season he has none of his bright colors of the summer time; but is a plain little olive green bird, with dark wings and a gray breast. They feed considerably on thistles, but when the snow falls they take whatever berries they can find. I remember seeing four or five of them, one day two winters ago, coming up and feeding upon the berries of a honeysuckle vine near my window, and at another time I saw them eating with chickadees in some cedars.

Cedar birds, although they do not stay with us any length of time, may be seen at different periods during the winter. They are very pretty birds, being brownish drab above and sulphur yellow below, while the wings are marked by spots of bright red. They travel in very large flocks and soon have one locality completely cleared of food, when they depart elsewhere. One is first attracted by their peculiar lisping notes, which, coming from so many throats, make quite a noise, and upon looking up, he will see them perhaps in flight or more probably roosting on the branches of some elm or oak; or flitting about a cedar, stripping it of its berries. They are also great lovers of cherries, and when this fruit is ripe they may be seen in large numbers in some orchard.

A journey into the woods on a cold winter day may reveal to one a flock of small birds, which have the appearance of a lot of sparrows which had been dyed purple, the colors of the sparrow plainly showing, beneath the purple tinge or wash on their backs and heads. These are lesser redpoll linnets. Very hard working little birds, that usually delight in the arctic regions, we see them only when the severest cold drives them south. They fly in very large flocks, and Miss Blanchan says of them, "First, we see a quantity of dots, like a shake of pepper, in the cloud above, then the specks grow larger and larger, and finally the birds seem to drop from the sky upon some tall tree that they completely cover—a veritable cloudburst of birds."

The red crossbill is a similar bird to the redpoll, but is larger and has the two mandibles of his bill crossed, by the

means of which he extracts the seeds from the pine cones. We only see him in the coldest winters, but then he is very tame and may allow one to pick him up, and he has even been known to stay in a cage without a murmur.

These are all our important winter birds, but the robin and bluejay might be mentioned although they are more birds of the summer than winter.

WINTHROP SMITH.



BROAD-WINGED HAWK.
(*Buteo latissimus*.)
½ Life-size.
FROM COL. CHI. ACAD. SCIENCES.

71

THE BROAD-WINGED HAWK. (*Buteo latissimus*.)

And up through the rifled tree-tops
That signaled the wayward breeze
I saw the hulk of the hawk becalmed
Far out on the azure seas.

—JAMES WHITCOMB RILEY, "A Vision of Summer."

The Broad-winged Hawk has a wide range, including the whole of North America, east of the great plains and extending from New Brunswick and the Saskatchewan region on the north to Northern South America on the south. It nests throughout its range within the borders of the United States.

Its confidence in man is not surpassed by that of any other hawk. Dr. Fisher says that "of all our hawks this species seems to be the most unsuspecting, often allowing a person to approach within a few yards of it, and when startled flies but a short distance before it alights again." As a rule it is a very quiet bird, but during the nesting period it is fully as noisy and demonstrative as are many of the other hawks. If disturbed while on its nest its shrill call notes will soon attract its mate, when both will continue noisily complaining till the intruder retreats. Though solicitous for their eggs or young, they will never attack a person. It is said that "for days after they have been robbed these birds will utter their complaints when anyone approaches their homes." They are good parents, both sexes assisting in the care of the eggs and young.

Not infrequently this Hawk will sit for hours on the dead top of a tall tree at the edge of a forest, and with its body erect and motionless will often seem almost a part of the tree. Its food is usually procured on the ground, and it is near the ground or among the denser growths of the forest, where it may find insect larvæ, that it is more often seen.

The Broad-winged Hawk may truthfully be called a friend of the agriculturist, for it seldom feeds on bird life of any kind, but rather upon mice and other rodents, toads, frogs and insects.

Dr. Fisher, in his valuable work, "The Hawks and Owls of the United States," says: "The only act of the Broad-winged Hawk which seems injurious to agriculture is the killing of toads and small snakes, the former of which are exclusively insect eaters, the latter very largely so. In one respect its enormous value ranks above all other birds, and that is in the destruction of immense numbers of injurious larvæ of large moths, which most birds are either unable or disinclined to cope with." In the examination of stomachs of sixty-five of these Hawks Dr. Fisher obtained the following results: Two contained small birds; fifteen contained mice and thirteen other mammals; in eleven the remains of reptiles, and in thirteen batrachians were found; thirty contained the remains of insects, two earthworms, four crawfish and seven were empty. The results were surely in favor of the bird. Well may the farmer listen to the words of Alexander Wilson:

"Kill not thy friend, who thy whole harvest shields,
And sweeps ten thousand vermin from thy fields."

The poultry yard is safe from the depredations of these quiet birds, which, though sluggish and heavy in flight, can move with great rapidity and soar high in the air if they so desire. Even the small birds in the woods seem to consider them to be harmless, for they give them but little attention. When this bird does attack small birds it is either, as a rule, when they are very young or injured in some manner. 72

Its nest is usually made of sticks and twigs and lined with soft fibrous strips of bark, leaves and feathers that fall from the breasts of the setting birds. The nests are placed in either evergreen or deciduous trees, and seldom more than thirty or forty feet from the ground. They are frequently much lower and occasionally in the tops of very tall trees. They have been known to use the deserted nests of other birds, especially that of the crow, which is nearly as large as their own structure.

Dr. Fisher says that one of its notes quite closely resembles that of the wood pewee. Another writer says that "their call note is a peevish 'chee-e-e-e,' prolonged at pleasure and uttered in a high key. However, to fully appreciate their shrill note of complaint it must be heard."

THE BIRD'S COMPLAINT.

Great Nature, lend an ear while we,
The feathered fowls of air,
From mead and furrow, bush and tree,
From pool and mountain, shore and sea,
With one accord pour forth to thee
Our earnest cry and prayer.

From lime and net, from gin and snare,
And from those vile decoys
That slay their thousands unaware,
We pray thee save us, and declare
Thy wrath against what man soe'er
Such evil means employs.

Chasten, correct and scourge the boys
Who count it nobly done
To turn to grief our marriage joys,
To take our precious eggs for toys,
And bear away with mocking noise
The spoil so foully won.

But most from men that use the gun,
That engine of ill scope,
For refuge unto thee we run;
They march to slay us in the sun,
And through the dark, which others shun,
Their murderous way they grope.

Lastly, we pray thee, on the Pope
Prevail to let us be;
We would not hang him in a rope,
And have as good a right, we hope,
Unstrangled under heaven's high cope,
To live our lives as he.

—Henry Johnstone.

CALIFORNIA POPPIES.

A flower of the South and the Sun,

Sown upon limitless plains;
Fed by the death of the summer grasses,
Watered by winter rains.

When the wild spring streams are running,
She raises her head and cries,
“Blow off my emerald cap, good wind,
And the yellow hair out of my eyes!”
And a fair fine lady she stands,
And nods to the dancing sea,
O the rose you have trained is a lovely slave,
But the wild gold poppy is free!

—Camilla K. von K.

Spring in California—soft, warm, full and bounteous. Birds twittering and building nests everywhere.

In February the poppies bloom in splendor, and no season of the year is so beautiful, so radiant with glory as the poppy time. Coming after a spell of rainy weather, when the mists have lifted from the face of nature, they usher in the long summer.

In California the interest centering in the poppy is universal, and it is the most beautiful of California's flora. It is the favorite flower, being the State flower, suggestive in color, divine in inspiration and poetry, besides the precious gold and orange to be found in this land.

The naturalist Adalbert von Chamisso arrived at San Francisco in 1816 on the ship *Rurick*. Seeing the poppy for the first time, he christened it *Eschscholtzia* (esh-sholts-i-a), after Herr Eschscholtz, his friend and companion of the ocean journey. The Spanish people call it *El oro de copo* (the cup of gold).

This poppy grows in portions of Oregon, Arizona and Mexico, but in California it has a beauty such as you can find nowhere else.

They grow about one foot high. The cups of gold rest on slender, graceful stems; the foliage delicate and olive green in color. This royal poppy is rich in coloring, cool and refreshing in the midst of tropical heat. It is one of the most characteristic and beautiful features of California's scenery. Associated with it are sunny skies, beauty, sea breezes and waving palms.

Under the sun of a bright day the scene is like an Italian landscape—a blue sky without a cloud. The eye wanders here and there to the gold spread far and wide, and the question rises, Was there ever such flowers as these? Myriads of rich, gorgeous, brilliant poppies nod, lean, dance and swing their dainty cups of gold in the breeze. A mass of tossing gold, sheets of gold fire running up the valley, hill slopes and mountains. The pasture, mesa and uplands are all aglow. Poppies everywhere, found along the sea-shore in great patches, by the roadside, hid in the fence corners, in the green grass, at the edge of the woods, in the deserts and waste places. They appear like unfurled banners of a victor army, like waving billows in the breeze, like a golden sea, rippling against a blue horizon.

They are the flowers, around which the tourists linger, and they go into raptures over them. Gathered by armfuls, they are carried to hotels and pressed in books, then taken East, as souvenirs of this sunny land.

On “Poppy Day” the desks in the schools, the tables and mantels in the hotels are decorated with bouquets of the golden blossoms.

Children worship them in their delight and greet one another with “The poppies are in bloom!” then scamper off by dozens to the mesas, where they deck their hair with poppy garlands and race to and fro like butterflies, wading knee-deep in poppy dust of gold.

Above their happy voices the songs of the meadow larks can be heard, clear, mellow and thrillingly sweet.

A golden spell lingers around the scene, an influence that penetrates the soul.

CLARA HILL.

74

QUARTZ.

The crypto-crystalline (obscurely crystalline) varieties of Quartz are many. The following may be named as the most important: Chalcedony, carnelian, sard, chrysoprase, prase, plasma, bloodstone, agate, onyx, sardonyx, jasper, basanite, flint and hornstone. The distinctions between the different varieties are loose and are differently stated by different authorities. Some class agate, onyx, sardonyx, plasma and carnelian together as varieties of chalcedony, while others consider chalcedony a simple variety. The chalcedonic varieties of quartz agree in having a fibrous structure and in being somewhat softer (hardness 6½) and somewhat lighter (specific gravity 2.6) than crystallized quartz. They also break with more difficulty than quartz, being very tough. The varieties differ among themselves, chiefly in color.

Common chalcedony has a waxy luster and is usually translucent rather than transparent. The transparent forms are known as “oriental,” the translucent as “occidental” chalcedony. Common chalcedony has little color, shades

of gray and blue being the most common, although other tints occur. It usually presents rounded surfaces which have grape-like, kidney-like or stalactitic forms. It occurs coating other rocks or minerals or lines cavities or fills veins and clefts. It is never, so far as we know, deposited in any other way than by percolating waters. At Tampa Bay, Florida, the waters containing chalcedony have penetrated corals and preserved them, often giving forms showing the shape of the coral outside and a cavity within. Throughout the "Bad Lands" of the West, clefts in the hills are often filled with sheets of chalcedony varying in thickness from that of thin paper to nearly an inch. These chalcedony veins ramify in all directions and often extend for many rods without interruption.

When the chalcedony is penetrated by branching forms of manganese or iron oxide the forms known as "mocha stones" and "moss agates" are produced. These are not due to vegetation any more than the similar forms of frost on our window panes. They are purely mineral in their origin. Moss agates are found in numerous localities in the States of Utah, Wyoming, Colorado and Montana. In the opinion of Mr. George F. Kunz "no stone that is used in jewelry in the United States is cheaper, more beautiful or more plentiful than the moss agate." The best occur as rolled pebbles in the beds of streams. The name, "Mocha stone," sometimes applied to moss agates is either due to the fact that those first used came from Mocha in Arabia, or it is a corruption of the word moss agate. The finest moss agates now known come from India. A white variety of chalcedony containing minute blood red spots is known as St. Stephen's stone. Chalcedony was formerly used much more and more highly prized than at the present time. It was especially employed for seals and rings, but also for plates, cups and vases. These were often engraved in the most elaborate manner, the hardness and toughness of the stone making it well adapted for this purpose. The sentiment of the stone is: "A disperser of melancholy." The name chalcedony is from Chalcedon, a city in Asia Minor, where the original chalcedony was found. This mineral was probably not like our modern chalcedony, however, being more probably a green quartz. This chalcedony is mentioned as one of the foundation stones of the Holy City in the Book of Revelations.



QUARTZ (obscurely crystalline.)
LOANED BY FOOTE MINERAL CO.

Left column:

- Bloodstone, polished (India.)
- Tiger Eye, polished (South Africa.)

Center:

- Chrysoprase, polished (Arizona.)
- Agate and Carnelian, polished (Lake Superior.)

Right column:

- Jasper (Germany.)
- Ribbon Jasper, polished (Siberia.)

Carnelian is a red variety of chalcedony, sard a brown variety. All gradations between these shades of

course occur, those of the reddish cast being the most common. The most highly prized color for carnelian is a deep blood red, appearing darker red in reflected light. The lighter red and yellowish shades are less desirable, stones of these shades being known as "female carnelians," while those of the darker shades are known as "male" carnelians. The colors are due to oxides of iron and can sometimes be changed by heating. Thus the yellowish and brownish carnelians being colored by iron hydroxide can be changed by heating to red, the water being driven off and iron oxide left. The heating may be done in the sun or by some other slow means. Even olive green stones are changed in India to red by this process. The color may also be introduced artificially by allowing the stones to lie in a mixture of metallic iron and nitric acid, or of iron sulphate for a while. In this way the iron salt needed for the coloring matter can be absorbed by the stone and this is changed afterwards to oxide by heating. The best carnelians come from India, but good stones are also obtained in Siberia, Brazil and Queensland. Carnelians are cut usually in oval and shield-like shapes and were much employed by the ancients for intaglios. They believed them to have the power of preventing misfortune and they were much worn as charms.

Sard of typical brown color is much rarer than carnelian and possesses a high value. In other respects it is like carnelian. The sardius mentioned in the Bible as forming one of the stones of the High Priest's breastplate was undoubtedly a carnelian. The name was derived from Sardius, a city of Lydia whence fine carnelians are obtained. The name carnelian is according to some authorities derived from the Latin word caro, carnis, flesh, and refers to the color of the stone, or according to others it is from the Italian word carniola which has the same meaning.

Chrysoprase and Prase are terms applied to an apple green to bright green chalcedony or compact, jasper-like form of quartz. Some authorities, however, call the green chalcedony plasma and restrict the term chrysoprase to the green compact quartz. The terms cannot be accurately distinguished. Most chrysoprase now in use comes from localities in the province of Silesia in Germany, where it occurs in thin layers and veins in serpentine. The green color here is due to nickel oxide which is present in the stone to the amount sometimes of one per cent. The first discovery of the stone is said to have been made by a Prussian officer in 1740. The stone was especially fancied by Frederick the Great so that he had two tables made of it and used it frequently in mosaics. The color fades with light and heat, but it is said can be restored by burying the stone in moist earth for a time. Beautiful chrysoprase comes from India and there are a few localities in our own country where it is found, it being usually associated with nickeliferous deposits. The name chrysoprase comes from two Greek words meaning golden leek and refers to the color of the stone.

Plasma, as already stated, is a name applied to green chalcedony, or by some to green jasper. The name comes from the Greek for image and shows that the stone was largely used for seals and other engraved work. Most of that known at the present time comes from India and China.

Bloodstone is a variety of plasma containing spots of red jasper looking like drops of blood. Another name for bloodstone by which it was chiefly known by the ancients is heliotrope. This name is derived from two Greek words meaning "sun turning" and refers to the belief that the stone when immersed in water changes the image of the sun to blood red. The stone was often used by the ancients for carvings representing the head of Christ, and one fine specimen of such work may be seen in the Field Columbian Museum. The ancients had a tradition that the stone originated at the crucifixion of Christ from drops of blood drawn by the spear thrust in his side falling on a dark green jasper. The stone takes a beautiful polish. To be of the best quality it should have a rich dark green color and the red spots should be small and uniformly distributed. The supply is obtained almost wholly from India, especially from the Kathiawar Peninsula west of Cambay, whence agate, carnelian and chalcedony are also obtained. Fine examples have also come from Australia and a few from Brazil. In present usage 78 bloodstone is the "birth stone" of the month of March.

"Who on this world of ours their eyes
In March first open shall be wise,
In days of peril firm and brave
And wear a bloodstone to their grave."

Agate was described in the June number of this magazine.

Onyx and sardonyx are varieties of agate in which the layers are in even planes of uniform thickness. This structure enables the stone to be used for engraving cameos. As is well known, these are so made that the base is of one color and the figure of another. This art of making cameos reached a high degree of perfection among the Romans and many superb examples of it have come down to us. The word onyx means a nail (finger nail) and refers to some fancied resemblance, perhaps in luster, to the human nail. Sardonyx is a particular variety of onyx in which one of the layers has the brown color of sard. Other kinds of onyx are those known as chalcedony and carnelionyx in reference to the color of the intervening layers. So-called Mexican onyx is composed of quite a different mineral from the onyx here considered, it being made up of calcite rather than quartz. Mexican onyx can be scratched easily with a knife while quartz onyx cannot. Mexican onyx has, however, the banded structure of quartz onyx and it is in allusion to this undoubtedly that the name has been applied. A sardonyx upon which Queen Elizabeth's portrait was cut constituted the stone of the famous ring which she gave the Earl of Essex as a pledge of her friendship. It will be remembered that when the Earl was sentenced to death he sent this ring to his cousin, Lady Scroop, to deliver to Elizabeth. The messenger by mistake gave it to Lady Scroop's sister, the Countess Nottingham, who being an enemy of the Earl's did not deliver it to the Queen and the Earl was executed. On her deathbed the Countess confessed her crime to the Queen, who was so infuriated that she shook her, saying "God may forgive you, but I cannot." The onyx is the emblem of conjugal felicity and by some is made the "birth stone" of the month of July. It is one of the stones prescribed for the ephod of the Jewish High Priest.

The sardonyx was supposed by the ancients to be a different stone from the onyx. To it was ascribed the property of conferring eloquence upon its wearer. It is mentioned in Revelations as one of the stones forming the foundations of the Holy City. Onyx and sardonyx which come from the Orient are esteemed of much higher value in trade at the present time than those prepared in Germany. There seems to be no good reason for this, however,

as the latter can be so skillfully made that it is impossible to distinguish them from the Oriental stones.

Jasper is a name which includes in general nearly all varieties of impure opaque colored crypto-crystalline quartz. In color it may be red, yellow, green, brown, bluish and black. To many of the pebbles found on almost any sea or lake shore or in the beds of streams the name jasper may properly be applied. If it occurs banded, that is, in stripes of different colors, it is known as ribbon jasper. The different colors of jasper are due to the different impurities it contains. These may be clay, iron oxides or organic matter and at times reach a quantity as high as twenty per cent. The color often varies irregularly in a single stone, giving different effects and sometimes imitating paintings. Jasper which can be used in the arts is very widely distributed. Good red jasper is obtained in Breisgau and near Marburg in Germany. Much of the brown jasper comes from Egypt. What is known as "Sioux Falls jasper" from Sioux Falls, South Dakota, is chiefly of a brown color. This stone was highly prized by the Indians for its color and is the "jasper" referred to by Longfellow in Hiawatha:

"At the doorway of his wigwam
Sat the ancient Arrow-maker
In the land of the Dacotahs,
Making arrow-heads of jasper
Arrow-heads of chalcedony."

The yellow jasper used for mosaics comes chiefly from Sicily, but as good could be obtained in many places in our own country. The green jasper of the present time is obtained chiefly in the Urals and is to a considerable extent worked there into ornamental pieces. The Chinese prize green jasper highly, the seal of the Emperor being made from it. Some jasper of a bluish shade is found in Nature, but that of a deep blue tinge is always artificially colored by Prussian blue. It is then sometimes known as "false lapis," that is, false lapis lazuli. Ribbon jasper is found in Saxony, but chiefly comes from the Urals. The qualities which make jasper of use in the arts are its color, opacity and capacity for taking a polish. At the present time it is not much used except for mosaic work and for small boxes, vases and dishes. The ancients, however, prized it highly and used it extensively. It is one of the stones prescribed in the Book of Exodus to be worn in the ephod of the High Priest and also forms one of the gates of the Holy City as described by St. John in Revelations. It is probable that the jasper referred to in these instances was of a dark green color, as this was the tint most prized in early times. Green jasper was also called emerald in some instances. The banded varieties were much used for cameos, specimens of which are still extant. By taking advantage of the colors of the different layers, colored objects were made, such as one which shows the head of a warrior in red, his helmet green and breastplate yellow.

Basanite is also known as Lydian stone or touchstone on account of its use for trying the purity of metals. Its value for this purpose depends on its hardness, peculiar grain and black color. Different alloys of gold give different colors on the stone which one soon learns to recognize, and jewelers become very skillful in judging of the fineness of gold by this test. Also if an object is plated, by giving it a few strokes on the stone the different color of the gold and base will be revealed. It is simply a black variety of crypto-crystalline quartz, differing from jasper in being tougher and of finer grain and from hornstone in not being splintery.

Flint is likewise an opaque quartz of dull color. It differs from jasper in breaking with a deeply conchoidal fracture and a sharp cutting edge. It is also often slightly transparent and has a somewhat glassy luster. These properties have led to its extensive use by the Indians and by nearly all primitive peoples for the manufacture of weapons and implements. Hornstone is more brittle than flint and has a splintery rather than a conchoidal fracture. A number of other subvarieties of crypto-crystalline quartz occur, but they are not important.

OLIVER CUMMINGS FARRINGTON.

MIDWINTER.

The air is like a beryl, clean and clear,
Intensified by gleaming points of blue.
Sharp-outlined, distant sounds come ringing near
And crisply pierce the brittle silence through.

The sturdy trees that yester-eve were gray
In dim and foggy veils, and half effaced
By winter rain that compassed them, to-day
Arise like knights in crystal armor laced.

The stiff, brown-fibered weeds beside the walk
Have pinned, with each dull spike, a shivered star.
An icy chime is rung from every stalk
To wandering step that clashes them ajar.

The wood is bright as when the summer lost
Her sun-gems in the deep, soft shadow-seas—
Only the light is dagger-edged with frost,
And breaks in spangles on the ice-mailed trees.

—Hattie Whitney in *The Ladies' World*.

A CATASTROPHE IN HIGH LIFE.

Tertius, as his name signifies, was the third Maltese cat to occupy a very warm place in the hearts of a certain pet-loving family that lived on a quiet, tree-shaded street in a beautiful Eastern city.

His predecessors were both noted for their wonderful sagacity and great achievements, so he felt that he must improve all his opportunities if he was to keep up to their high standard. Just how they had obtained their reputation he did not know, and perhaps it was this ignorance that caused him to make his fatal mistake.

The beautiful house in which he lived had a large veranda on one side, over which ran a grapevine, and in this grapevine a pair of robins, most unwisely, decided to build their nest.

"It is a very beautiful spot," said Mrs. Robin.

"Yes, and that arrangement in the center there will be splendid to lay the foundation on," replied Mr. Robin.

"It is so picturesque," returned Mrs. R., in a rapture of delight.

"And there will be such a nice shade for you, my dear, when the leaves are out," added the thoughtful husband.

"It is a much finer situation than Mr. and Mrs. English Sparrow have for their nest in the eaves up above. Don't you think so, Rob?"

"Indeed I do, wifey; but we must to work, for the morning is advancing. Now, you stay here, while I fly off and get the material."

In a very few days as pretty a little nest was in the spot selected as you would want to see. Mr. Robin had brought all the material, while his helpful little wife had constructed the nest.

All this time their movements had been watched by the large, admiring, but greedy eyes of the ambitious Tertius, and one morning the chance he had so patiently waited for came. Mr. Robin started out, thinking in his kind little heart that he would get "little wifey" a particularly large and tasty worm for her breakfast, and he was so intent in scratching in the newly turned garden for it that he did not see the slyly, softly creeping Tertius. One bound, and poor little Rob was caught. He screamed, he scolded, but all to no purpose. Now was Tertius proud. He would carry his prize to his mistress, and she would surely say that his skill and prowess was far beyond that of either of his illustrious ancestors. So, thinking, with arched back and curling tail, he hastily gained the house and at once carried his prize to his mistress' room. But alas for his well-laid plans! Alas for the praise he had looked for! Instead, to his intense surprise and anger, he was greeted with a cry of pain and alarm. The mistress who should have praised rated him well, the hand that should have stroked his smooth coat wrenched his prize from him. In his anger he tried to scratch her in return, but she had been too quick for him, and Robin was saved. Tenderly he was laid in a bed of cotton and placed on an upper veranda, once more in the sweet, balmy air. Cautiously he lifted his head, and as no shining green eyes or sharp paw were to be seen, ventured to hop to the edge of the basket in which his kind preserver had placed him. One more look around and he stretched out his wings and soared away.

"Oh, my dear Rob! I heard your cry. Where have you been? Do tell me all about it!" exclaimed Mrs. Robin on Mr. Robin's return, and he, in a most graphic manner, granted her request; but, as we already know all about it, we won't stay to listen.

As to Tertius, he has decided that to win his way to fame he must confine himself in the future to a war on mice.

M. LEILA DAWSON.



DOMESTIC CAT.
(*Felis domestica*.)

THE DOMESTIC CAT.

In the old, old writings of the sacred Sanskrit language, that ancient language of the Hindoos, nearly two thousand years ago reference was made to the Domestic Cat. And so we know that Cats existed long ago and are a very ancient animal. But by means of pictures we are able trace their origin to still earlier times, for the Egyptian monuments abound in pictured Cats, and, stranger yet, in Egypt are found mummies of both the domestic and common jungle Cat. How very important it must have been considered! Think of burying the body of every forlorn, luckless Cat, and then realize the pains taken, not only to give it a burial, but to preserve it for ages to come; and this the Egyptians did, for doubtless it was to them the most sacred of all sacred animals.

Herodotus says that when one of their houses was on fire they first thought of saving the Cat, and afterward considered the matter of putting out the fire; also when a Cat died they cut off their own hair as a sign of mourning. When a person unintentionally caused the death of one of these animals he forfeited his life. We can readily imagine that small boys did not find amusement in chasing and plaguing stray Cats at that period of the world's existence.

While we really do not absolutely know where the ancestors of our modern Cat were found, it is the general opinion that the Egyptian Cat was the first to be domesticated and that it gradually spread northward and eastward and westward, although the spotted Cats of India may have had a different origin.

In the tenth century the Cat had reached Wales, as laws were recorded fixing the price of Domestic Cats, and also penalties were fixed for their ill treatment and killing. After a kitten caught its first mouse its value was doubled, and a mother Cat was expected to have perfect eyes, ears and claws, to know how to catch mice and how to bring up her kittens properly.

The Domestic Cat is so common an animal that we do not realize how very interesting the study of it may become. First of all, we must remember that our pet kittens belong to that important division of animals known as "The Cat Tribe," and which includes such ferocious and feared beasts as the lion, the tiger, the wildcat, the leopard, the panther and many others less common and less generally known.

All of these animals are most symmetrical and graceful; all have the round head set on a stout neck, the limbs of moderate length, the long tail and the soft fur which correspond in general color to its native surroundings. Because they are beasts of prey the teeth are adapted to life-destroying action; the tongue is thick and muscular, with fine, horny thorns which point toward the throat. With these the animal can most beautifully smooth and dress its hair, as well as strip the meat from off the bone when making a meal. The claws, ordinarily drawn up and out of sight, make an effective weapon when the angry animal stretches its paws. On account of its cushioned feet its step is silent and stealthy. All Cats can jump many times their own length, and most species are great climbers. The sense of hearing is most acute, and they see well at short range. The sense of touch is extremely well developed, and the most sensitive organ is the whiskers. A Cat with the whiskers cut off is indeed in a most uncomfortable position; it is at a loss to know what to do. The sense of smell is not very acute.

Our Domestic Cat shares all these qualities with the other members of the Cat tribe, but it has many valuable

qualities of its own.

It is much more intelligent than people are willing to concede. It is often compared with the dog, but they are so entirely different that it is an unfair comparison. The dog becomes very dependent upon man, while the Cat has kept a certain amount of individuality and independence through all its generations of domestic life. When a Cat is very much petted it develops an affection for its master, but otherwise it becomes more attached to the house and locality in which it lives, preferring to return to its old home and live among strangers rather than to follow its owner to a new home. 84

How remarkable is the fact that no one can cause a Cat to alight except upon its feet, no matter how short or long may be the distance from which it jumps or is thrown! A Cat can also swim, though in the main it abhors the water. Occasionally its great appetite for fish will overcome its dislike of getting wet, and it will jump into a pond and do its own fishing.

Mr. Scheitlin understandingly describes the Cat in the following language: "The Cat is an animal of a high order of intelligence. Its bodily structure alone indicates this. It is a pretty, diminutive lion, a tiger on a small scale. It shows the most complete symmetry of form, no one part of it too large or too small. That its every detail is rounded and beautiful is even shown by an examination of the skull, which is more symmetrical than that of any other animal. Its movements are undulating and graceful to the extent that it seems to have no bones. We value our Cats too slightly because we detest their thievish propensities, fear their claws and love their enemy, the dog, and we are not able to show equal friendship and admiration for those two opposite natures.

"Let us examine the Cat's qualities. We are impressed by its agility, yet its mind is as flexible as its body. Its cleanliness of habit is as much a matter of mental bias as physical choice, for it is constantly licking and cleaning itself. Every hair of its fur must be in perfect order; it never forgets as much as the tip of its tail. It has a discriminating sensibility as to both color and sound, for it knows man by his dress and by his voice. It possesses an excellent understanding of locality and practices it, for it prowls through an entire neighborhood, through basements and garrets and over roofs and haysheds without bewilderment. It is an ideally local animal, and if the family moves it either declines to accompany them, or, if carried to a new residence, returns at the first opportunity to the old homestead; and it is remarkable how unerringly it will find its way back, even when carried away in a sack for a distance of several miles."

Large families are the custom with Cats, for usually five or six kittens are born at one time. As these cunning little objects are totally blind for nine days after birth, the devoted mother Cat must work industriously to properly care for them and especially to preserve them from danger. They must be hidden away from harm, as the father Cat would be perfectly willing to devour them, and would attack them as readily as he would a rat or a mouse. The mother Cat lifts her helpless little ones very tenderly by compressing the skin of their necks between her lips and gently carries them to a place of safety.

While attending to the duties of motherhood the Cat is in a sympathetic frame of mind and will sometimes care for the young of other animals as well as for her own. Mr. Brehm tells us that, when a boy he brought a little squirrel, yet blind, to one of his Cats, which accepted the strange child among her own and tenderly cared for it, and after her own kittens had been given away she regarded it with increased affection. They became inseparable companions and understood each other perfectly, though each talked in its own language.

Cats frequently form friendships for other animals, and even dogs and Cats become friendly, in spite of the impression to the contrary.

While living in a large city where yards were small and infrequent, I was the happy owner of a beautiful tree, which stood near the rear of the house. There were many pet Cats in the neighborhood, and all delighted to visit my tree. Undoubtedly some were attracted by the English sparrows which were almost omnipresent among the upper branches, but all enjoyed clawing, stretching and scratching up the friendly trunk. One day a strange kitten appeared, and although smallest and youngest of all the Cats, by its superior intelligence it soon became king among them and ruled them all, causing many a commotion in the previously tranquil group. This young Cat gained entrance to my next door neighbor's house and made itself at home with an "I am come to stay" air. 85
In fact, it refused to be evicted, and by its determined persistence became a member of the household.

The other family pet was an old pug dog—Jack—cross and uninteresting, but tolerated because he gave some amusement to an invalid daughter of the family. Jack, jealous and annoyed, received the newcomer in the most hostile manner, and the kitten seemed to take special delight in tormenting the dog in every possible way. In fact, the lack of harmony between the pets became so annoying that it was decided to sacrifice the kitten, and it was taken to a remote place. For a number of weeks quiet prevailed in the rear yards of the neighborhood, but in time, to everyone's surprise, the Cat reappeared and refused to be turned away. Its courage and daring won recognition, and again it was received into the family circle. I wondered what Jack would do now that the kitten was restored to favor. About this time business called me from the city, and some time elapsed before my return. On reaching home again, one night I heard the dog crying and whining till nearly morning. I could not imagine the cause, but to my astonishment learned the next day that the dog and Cat had become such firm friends that the dog was perfectly inconsolable when the Cat was absent, and as his kingship had chosen to wander outside that particular night, the dog had mourned for hours. In fact, after causing the family a sleepless night, his master was obliged to rise and punish him before he would cease his cries. Such devotion put to flight all my previous theories of the inborn antagonism between Cats and dogs.

The different varieties of Domestic Cats are distinguished from one another by the difference of color, length of hair or, more rarely, length of tail.

The Cats of India are spotted, those of the Isle of Man are practically tail-less, but the European Cats are

commonly "tabby," black, white, sandy, tortoise shell, dun, gray or the so-called blue.

The most beautiful of all are the highly prized Persian or Angora Cats, with their long, silky hair and bushy tails.

JOHN AINSLIE.

"CUBBY."

Just a little fluffy ball of fur,
Fawn and brown, and smooth and soft as silk;
Just two cunning little paws of tan,
Velvet-gloved, to dabble in the milk.
Little paws to pat my tired face,
Spring and play, and help me to forget.
Little, merry, restless, tireless feet—
Just a little playful, happy pet.

Just a little yielding, graceful form,
Cuddled softly down beside my cheek;
Just two little tender, fawn-like eyes,
Looking all the love they cannot speak;
Just a little song of sweet content,
Murmured soft and low beside my ear;
Just a little kitten I have loved—
Not forgotten, and to memory dear.

—Mary Morrison.

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SOAPWORT OR BOUNCING BET.

(*Saponaria officinalis*.)

The plant commonly called Soapwort or Bouncing Bet also bears other popular names, many of which are purely local. Some of these are Hedge Pink, Bruisewort, Sheepweed, Old Maid's Pink and Fuller's Herb. It bears the name Soapwort because of a substance called saponin which is a constituent of its roots and causes a foaming that appears like soap suds when the powdered root is shaken with water.

Soapwort belongs to a large group of plants called the Caryophyllaceæ, or pink family. In this family there are about fifteen hundred species. These are widely distributed, but are most abundant in the Northern Hemisphere, extending to the Arctic regions and to the tops of very high mountains. The popular and beautiful carnations and some of the most common plants that grow abundantly in waste places also belong to the pink family. The Soapwort comes to us from Europe, where in some localities it is a common wild flower. In this country when it was first introduced it was simply a pretty cultivated garden plant. However, it lives from year to year and spreads by means of underground stems. It was not very long before it had escaped from yards to roadsides, where frequently large patches may be seen. The flowers are large and quite showy. The color of the petals is usually pinkish white. Blossoming in July, August and September, the Soapwort often beautifies waste places which other plants seem to shun. It is perhaps more generally loved than any other of our old-fashioned garden flowers. It grows luxuriantly without cultivation and seems to quite hold its own even among rank growths of weeds and grass. It is hard to tell what is the significance of the name Bouncing Bet, perhaps the most popular of all the names by which this plant is known.

Alice Lounsberry says: "It was always a mystery to Dickens that a doornail should have been considered so much more dead than any other inanimate object, and it seems also strange that this plant should have suggested the idea of bouncing more than other plants. Dear Bettie does not bounce, nor could she if she would. She sits most firmly on her stem, and her characteristics seem to be home-loving and simple. We are sure to find her peeping through the garden fence."

TURTLE-HEAD OR SNAKE-HEAD.

(*Chelone glabra*.)

The Turtle-head or Snake-head is one of three species that are natives of eastern North America. This plant is well supplied with common names, as it is also called Shell-flower, Cod-head, Bitter-herb and Balmony. The generic name of this flower of the swamps and moist banks of streams is from the Greek word which means tortoise, the name having been given to the plant because of the fancied resemblance between the flowers and the head of a turtle or snake. One may be able, by stretching his imagination, to see this resemblance in the flowers of our illustration.



SOAPWORT OR BOUNCING BET.
(*Saponaria officinalis*.)
SNAKE-HEAD OR TURTLE-HEAD
(*Chelone glabra*.)
FROM "NATURE'S GARDEN"
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The custom of giving names to plants that are suggestive of their real or fancied resemblance to various objects of nature, or are indicative of their beneficial or injurious qualities, is as old as history itself. In this way a large number of plants have become associated with good or evil spirits, Christian or pagan saints or martyrs, animate nature or some of the phenomena of nature. To the Indian the likeness of the flower of the Turtle-head to the head of a reptile not only gave it its name, but at the same time invested the plant with certain sacred associations by reason of the fact that not only among the Indians of North America, but among the uncivilized peoples in all parts of the world the tortoise has been considered sacred and highly symbolical. 89

Though commonly found in low altitudes, it is found in moist places in the Adirondacks, even at a height of three thousand feet.

This plant is not rare, and with its upright stem and its rather large and clustered white or slightly rose-colored flowers it is a dignified and beautiful feature of any floral community.

THE POCKET BIRD.

About the middle of May a gaily colored bird from his winter home in neo-tropical regions visits the United States. His body is bright scarlet, his slightly forked tail and his wings intense black and his bill sea green. The ornithologist names him the scarlet tanager—tanager being a Brazilian word applied to this class of birds. But he is also sometimes called the "pocket bird," because his jetty wings when closed upon his red sides are fancifully thought to resemble pockets. He is also known as the black-winged redbird. It takes three years for his gaudy plumage to become perfect. His mate is clad in green, so that she is easily concealed when on her nest amid the leaves of the swamp oak or some other favorite nesting tree. The nest is shallow and loosely woven, so that the eggs may be seen from beneath. But it is strong enough to hold the young birds securely until fledged. The eggs, three to five in number, are greenish-blue, spotted with brown and purple. The young birds are a clownish looking set in parti-colored robes of scarlet yellow and olive green. The song of the tanager somewhat resembles that of the robin in modulation; but the quality of the song is so soft and wavering that there are observers who call him a lazy bird, too lazy to sing. But others declare that it is worth while to take a long tramp in order to listen to his beautiful notes. Mr. Abbott calls him a "gayly colored blunder" without peculiarity of voice or manner. His song has been translated "Pshaw—wait—wait—wait for me." His call note is "Chirp-chirr."

There are some three hundred and eighty species of tanagers, and they are peculiar to America. They are perching birds and have usually conical bills, triangular at the base, with cutting edges near the tip of the upper mandible: this distinguishes them from the finches, to which they are closely allied. It is said that this genus is remarkable in having no gizzard.

The tanagers feed chiefly on ripe fruits and insects.

The organist tanager of San Domingo is purplish black, with forehead, rump and underparts yellow, and a cap of blue. Its tones are said to be extremely rich and full. But if our scarlet tanager is not so fine a musician as his cousin, if he has no such organ-like tones, yet we could ill spare the blaze of his scarlet coat and the sight of his black pockets, as he sits on the hedge very early in the morning—the rising sun emphasizing his brilliancy. Then he is an early riser I am sure, as I have seen him before four o'clock in the morning. But he has always been silent at that time as if not wide awake yet. In manners he is a most unobtrusive bird. He is rightly entitled to some of the plunder of the fruit trees. For there is no doubt that we owe all kinds of fruit to the agency of birds as seed distributors. Besides, the tanager is very destructive to larvae that injure fruit.

BELLE PAXSON DRURY.

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THE BIRDS IN THEIR WINTER HOME. II. (In the Fields.)

A half day's tramp through the pastures and fields of a Mississippi "second bottom" any sunshiny day from the first of December till the first of March will reveal some of the reasons why this is a veritable birds' paradise in winter. Fields once in cultivation, but now abandoned to sedge and Bermuda grass, cultivated fields, where giant cockle burrs wrestle with morning glory vines for the possession of the soil, tracts of palmlike palmeto and marshy jungles of willows, pampass grass and briars afford attractive feeding grounds by day and safe roosting places by night to myriads of winter visitants. In such places are found abundant supplies of the insects, berries and seeds which this humid, semi-tropical climate produces in great profusion. Good shelter and plenty to eat settle the problem of living for the present for our little feathered friends.

Walk out on these broad savannas about the first of February before a tint of white or pale green has appeared on the chिकासaw plum (*Prunus chिकासa*) and take note of the abundance and vigor of bird life before spring has begun to make serious inroads upon it. In the drier parts of these lowlands, especially where stubby plum bushes and haws abound, our old friend the field sparrow meets us with the same innocent, confiding air that we remember as characteristic of him in the region of Lake Erie and Lake Michigan. He is one of the birds that we can talk about in the indicative mood without "ifs" or apologies; the good that he does in disposing of surplus insect life is not offset by tolls levied on our ripest and juiciest fruit; he never goes over to the enemy to plunder those who trust him. Even the robin, whose praises are in everybody's mouth, becomes a pirate when our cherries and mulberries ripen, and we wish he would stay away from our premises till the berry season is over.

The pale red or horn-colored beak of this bird will help us to distinguish him from another, often mistaken for him—the chippy, or chipping sparrow, a bird of the same general appearance and size. Even with the naked eye you can detect differences enough to distinguish the two species. Both are small birds with chestnut or rufous crown caps; the chippy has a patch of black on his forehead and bill of the same color; his brother of the fields wears no black, and his bill, as before stated, is a pale red or horn color. In Central Mississippi, as in parts of Northern Ohio, field sparrows are very numerous, but chippies quite rare.

In the grass or crouched down close to the brown earth and gray weed stems we see another of our friends. With a "chip" he jumps up out of the grass and is away before you can see what particular shade of gray or brown is most conspicuous. However, he doesn't fly far, but suddenly drops into some inviting tuft, spreading out his tail like a fan as he does so, as if on purpose to show you its margin of white. This is the only one of our common sparrows that shows the white feather—the vesper sparrow, or bay-winged bunting. The field sparrow, as one authority says, had better be called the tree sparrow, because of his marked fondness for bushes and shrubs, but both of the former's names fit; he is rightly called the vesper sparrow from his delightful custom of singing his choicest hymns to the dying sun, and bay-winged bunting from the conspicuous patch of bay or rufous on the lesser wing coverts.

Sometimes in company with the vespers we see the slate-colored junco, or snow bird; at other times a gorgeous, distinguished looking sparrow, named from his partiality to these broad, low fields, the savanna sparrow. He is the dandy of this winter resort. His plaid coat and striped shirt eclipse the somber colors of all his cousins. The epaulettes of gold on his shoulders indicate his high rank; but for all that he is no dude, for he works as hard as anybody to find his own breakfast and enjoys it all the more that he eats his crickets in the sweat of his brow. A simple "chip" is the only remark he makes to us or to his companions as he runs along the cotton rows in quest of food. Ornithologists, however, tell us that up in Canada in his summer home he sings a weak, grasshopper-like song in marked contrast to the musical efforts of his neutral tinted cousin, the vesper. 91

The fields of broom sedge are the favorite haunts of one of the birds whose cheerful music and winning ways help to make June in the North "the high tide of the year, when all of life that has ebbed away comes rippling back into each inlet and creek and bay." I never see the meadow lark or hear his cheery whistle that I do not smell the blossoming clover and hear the ringing "spink, spank, spink" of the bobolink or catch the subtle suggestion of strawberries that comes floating to my nostrils on the warm June breeze. In a thirty minutes' walk through the sedge I have flushed as many as two or three hundred of these birds. They are called "field larks" by the negroes, who regard them as legitimate game. The lark's whistle—it can hardly be called a song—contains a bit of good advice habitually disregarded by the negroes. They interpret it as "laziness will kill you."

The colored people have an ornithology all their own, in which their own observations are strangely mingled with superstition. They tell us of two kinds of mockingbirds, "de real" and "de French" varieties. The real mockingbird deserves an article all to himself. His winning ways, playful disposition and ability as a singer give him a place second to none among our American birds. I am pleased to see the spirit of Americanism growing in our

literature, that conventional allusions to the skylark and the nightingale, birds few of us have ever seen or heard, are becoming rarer and rarer, while those to the robin, the mockingbird and the wood thrush are becoming more frequent. The mockingbird, like other singers, does his best during the courting and nesting seasons, but does not confine his concerts to that joyous time. On warm days in winter he loves to perch in the cedars and give his listeners a sample of what he can do, an earnest of the floods of melody that spring will bring. Balmy air, green of cedar and water oak and bird music disarrange our mental almanac. Even the nodding narcissus contributes to the illusion that it is not February, but May.

The "French mockingbird" is no mockingbird at all, but the logger-headed shrike, or butcher bird. Like some people, he tries to occupy a front seat, even if his music wins for him one of the lowest seats of the choir. A beanpole in the garden, the topmost wire of the fence and the top of a solitary shrub or tree are alike acceptable to him, for it's all one to him if he gets to see all that is going on in his little world. No doubt he does do mischief during the nesting season, when eggs or tender nestlings are easier to find or more acceptable to his fastidious palate than the mice and insects which compose his winter diet. Just now he is a most pleasing bit of decided color, black, white and blue-gray, very refreshing to the eye, amid the browns and grays of last year's vegetation.

When a cold wave comes, what a scurrying takes place! Each winter visitor packs his grip and strikes for the nearest shelter, be it canebrake or swampy jungle, where tall grass and cat-tails above, briars and water below, make a retreat impregnable to assault from the enemy flying through the air or creeping along the ground. If the cold wave continues until the ground freezes the birds suffer. At such times half-starved robins gorge themselves on the berries of the China tree (*Melia azederach*) and have a general "drunk." They never eat many of the berries unless they are the only provisions obtainable, unless driven to it by stress of the weather, an excuse for drunks that cannot always be truthfully given by the lords of creation. While the silly birds are sitting around trying to throw off the effects of their debauch an enemy comes upon the scene. The negroes take advantage of the robin's disability to manage his own affairs and feast high on roast robin, fried robin, stewed robin, etc., much to the detriment of next spring's music in Northern fields and orchards. 92

The warm breath of the Gulf steals in upon our little world and a change comes. The birds remember that they are due in a few days in an Ohio orchard or on an Illinois prairie, so they pack and go. The allurements of a Southern spring, with all its fragrance and charm, do not hold them. Without a goodbye they are gone, not to return till once more

"Frosts and shortening days portend
The aged year is near his end."

JAMES STEPHEN COMPTON.

MUSIC-LOVING FELINES.

According to observation, music has power, not only to soothe the savage or the troubled breast of civilized man, but its potency extends to the brute world as well. Among those animals which appear to be charmed by musical sounds, it would seem difficult to find any manifesting a keener delight than the ordinary domestic cat.

The London Spectator some months ago referred to an instance where a cat showed marked pleasure in a whistled tune. This recalled to memory the circumstance of a certain cat, a beautiful creature with black and ecru stripes, whose appreciation of the musician's art awakened in him inordinate emotion. Were he within hearing distance of the piano the eliciting of a few chords was sufficient to beguile him into the parlor. When permitted to walk across the keys he always appeared pleased with his performance. But he was discriminating and exhibited decided preferment for vocal renditions over instrumental. The "Miserere" from "Il Trovatore" affected him more deeply than anything else, and might appear to confirm the theory held by some that the possession of a soul is not limited to the human creation.

Settling himself in front of the singer, he would listen with bated breath and eyes widely dilated. Never would he move a muscle, unless after a prolonged interval in the music, when he would softly approach the vocalist to caress her face and neck with his paw or to smooth her cheek with his own. His coaxings always had the sought for effect, when he would once more seat himself with becoming decorum to imbibe the harmony which seemed to ravish his being.

This is by no means an isolated instance of fondness for musical discourse on the part of cats, though this particular case affords an extravagant illustration of that æsthetic sensitiveness which characterizes probably the whole feline tribe.

S. VIRGINIA LEVIS.

FIRE-FLIES.

The Day, disrobing for her rest,
Delayed to lift the twilight bars;
And o'er them, from the golden West,



SUGAR CANE.
(*Saccharum officinarum*.)
FROM KÖHLER'S MEDICINAL-PFLANZEN.

Description of plate: A, plant much reduced; B, stem portion with leaf; C, inflorescence; 1-6, parts of flower.

SUGAR-CANE.
(*Saccharum officinarum* Lin.)

Has God then given its sweetness to the cane,
Unless His laws be trampled on—in vain?

—COWPER: Charity, 190.

This highly important plant belongs to the grass family. It is perennial, with thick, succulent, jointed rhizomes, having root tufts at the joints. The stems are numerous, erect, cylindrical, growing to a height of six to twelve feet. Like the rhizome, the stem is jointed, the internodes being, however, much shorter toward the base. The leaves are numerous toward the apex, being deciduous toward the base. The apical tuftlike inflorescence is quite characteristic. The individual flowers are small and unattractive in appearance. One of the remarkable things about the plant is that the fruit never matures. It must be remembered that the plant referred to is entirely distinct from the so-called sugar-cane of the Central States from which sorghum molasses is made.

It is very doubtful whether sugar-cane occurs anywhere in the wild state, at present. Authorities are quite unanimous in expressing it as their opinion that its original home was India. It is a plant that has been under cultivation for many centuries. Alexander the Great, in his invasions of India, found that the inhabitants of that country cultivated and used it extensively as a food article. Theophrastus mentions a "sweet salt" (sugar) which he obtained by evaporating the juice of an Indian reedlike plant, which was perhaps sugar-cane, though there is no conclusive evidence that the earlier Greeks and Romans were familiar with sugar; they employed honey quite universally. The "sweet cane" of Scripture is probably *Andropogon calamus aromaticus*, or sweet calamus, which was a native of India. It is presumed by some that the cane grown in China was originally native there. The cultivation of sugar-cane seems to have spread very rapidly. It early found its way to Persia and Arabia, and then from Arabia as a center has spread to the Mediterranean districts, Sicily, Cyprus, Spain and Italy. It found its way

to Santo Domingo as early as 1494 and to Brazil early in the sixteenth century. At the present time cane is grown in nearly all tropical and sub-tropical countries, the Southern United States producing more than any other country.

There are many varieties recognized by cultivators, differing in color, texture and other minor characteristics.

Since cane does not ripen fruit, it is propagated by transplanting the rhizomes and top portions of stem, and after a field is once planted new crops are permitted to spring up from the old rhizomes, and this accounts for the awful tangle of the famous Southern canebrakes, which figured so extensively in the slave days, when these fields served as hiding places for the fugitive slaves. The ripe cane is cut close to the ground, the leaves stripped off and the tassel cut off. It is then carted to the cane mill and passed between large rollers, which express the juice, which is then clarified by means of lime, animal charcoal and blood. Heat further aids the purifying process by coagulating the albuminous matter, which, mixed with other impurities, rises to the surface as a scum and is removed by means of a special ladle. The lime combines with the free acid present and settles to the bottom. The juice is boiled until it acquires a proper tenacity, when it is passed into a cooler and allowed to crystallize. This sugar is then placed in large perforated casks and allowed to drain for two or three weeks, when it is packed into hogsheads and exported under the name of raw sugar or muscovado sugar. The drainings form molasses. Raw sugar is taken to the sugar refinery and purified by heating with water and bullocks' blood, filtered through canvas bags and finally allowed to percolate very slowly through large cylinders containing freshly prepared, coarse-grained animal charcoal. The filtered liquor is then boiled by the aid of steam. When sufficiently 96 tenacious it is poured into conical molds, and when solidified the stoppers are removed to allow the treacle to drain off. The loaves from the molds are then sugared, as it is called, by pouring over them a saturated sugar solution, which, by slowly percolating through them, carries with it coloring matter and other impurities without dissolving the sugar crystals. When a saturated aqueous solution of sugar is allowed to cool slowly it forms large, beautiful crystals known as sugar or rock candy. Caramel is burnt sugar; it has a peculiar odor and loses its sweet taste, becoming bitter. It is used largely as a coloring agent for coloring liquids.

Sugar has innumerable uses. As an article of food it is not surpassed, though it cannot support life alone, because it contains no nitrogen. It is the important ingredient in candies, pastries, sweetened drinks, etc. Molasses and treacle are much used and must not be confounded with the sorghum molasses made from the sugarcane of the Central States. Molasses and treacle sometimes have a peculiar and to many a very objectionable flavor, due to impurities present.

Molasses, as well as treacle, when fermented, gives rise to rum. The popular notion that sugar is injurious to teeth is without foundation. It has no action on teeth whatever. If anything it has anti-septic properties and preserves the teeth. It is, however, undoubtedly true that the excessive consumption of sweets, pastries in particular, is bad for the digestion, as externally manifested by a dirty complexion and skin eruptions. As a whole sugar by itself is not injurious; it is an excellent food, a heat producer and easily assimilated. Americans, especially the American youth, are the great sugar consumers of the world.

In medicine sugar is employed to disguise the taste of disagreeable remedies and to coat pills. It has no direct curative properties in disease.

ALBERT SCHNEIDER.

DEATH OF THE FOREST MONARCH.

Hark! heard you that wailing cry, sad and low?
A nation mourning for their chief?
Stricken and dead he lies, and blow by blow
Is being stripp'd of limb and leaf;
Now from his corse is ta'en the wreath,
His just reward for battling many a year
'Gainst elements; mourn him! your grief,
Ye trees, becomes the time; the world should hear
Your requiem, and for him drop a tear.
Each year the wild bird built its nest
High in his crown, and would its young uprear:
Centuries supreme the Forest
Monarch ruled; but to Earth's broad breast
That nourished him, the ax brought his return.
The Forest Monarch is at rest;
All nature, save the human, seems to mourn.

—George W. H. Phillips, Jr.

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