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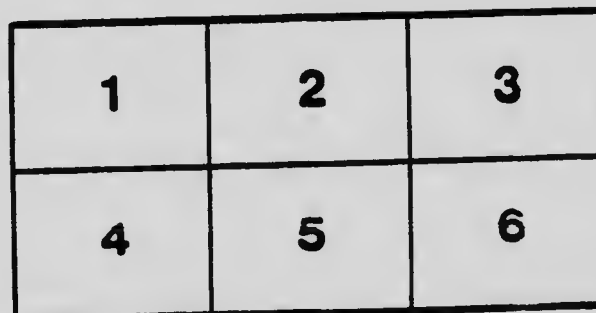
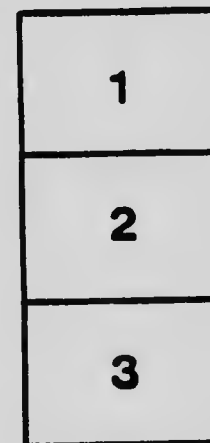
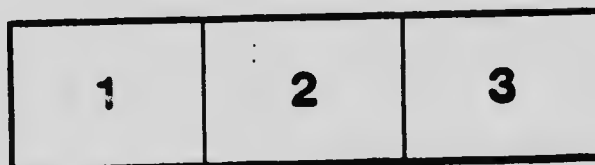
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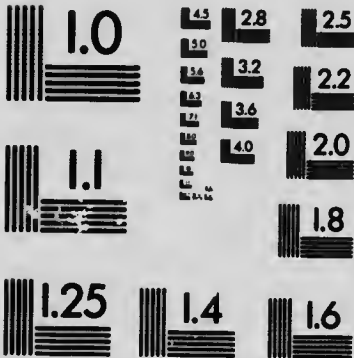
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CANADIAN BIRDS

AND

HOW TO KNOW THEM

TWO BOOKS IN ONE VOLUME

THE NEW CANADIAN BIRD BOOK

BY

W. T. MacCLEMENT, M.A., D. Sc.

*Professor of Botany, and Lecturer in Systematic Zoology,
Queen's University, Kingston, Ont.*

NATURE STUDY LESSONS

BY

G. A. CORNISH, B. A.

Lecturer in Science, Faculty of Education, University of Toronto

DOMINION BOOK COMPANY
TORONTO, CANADA

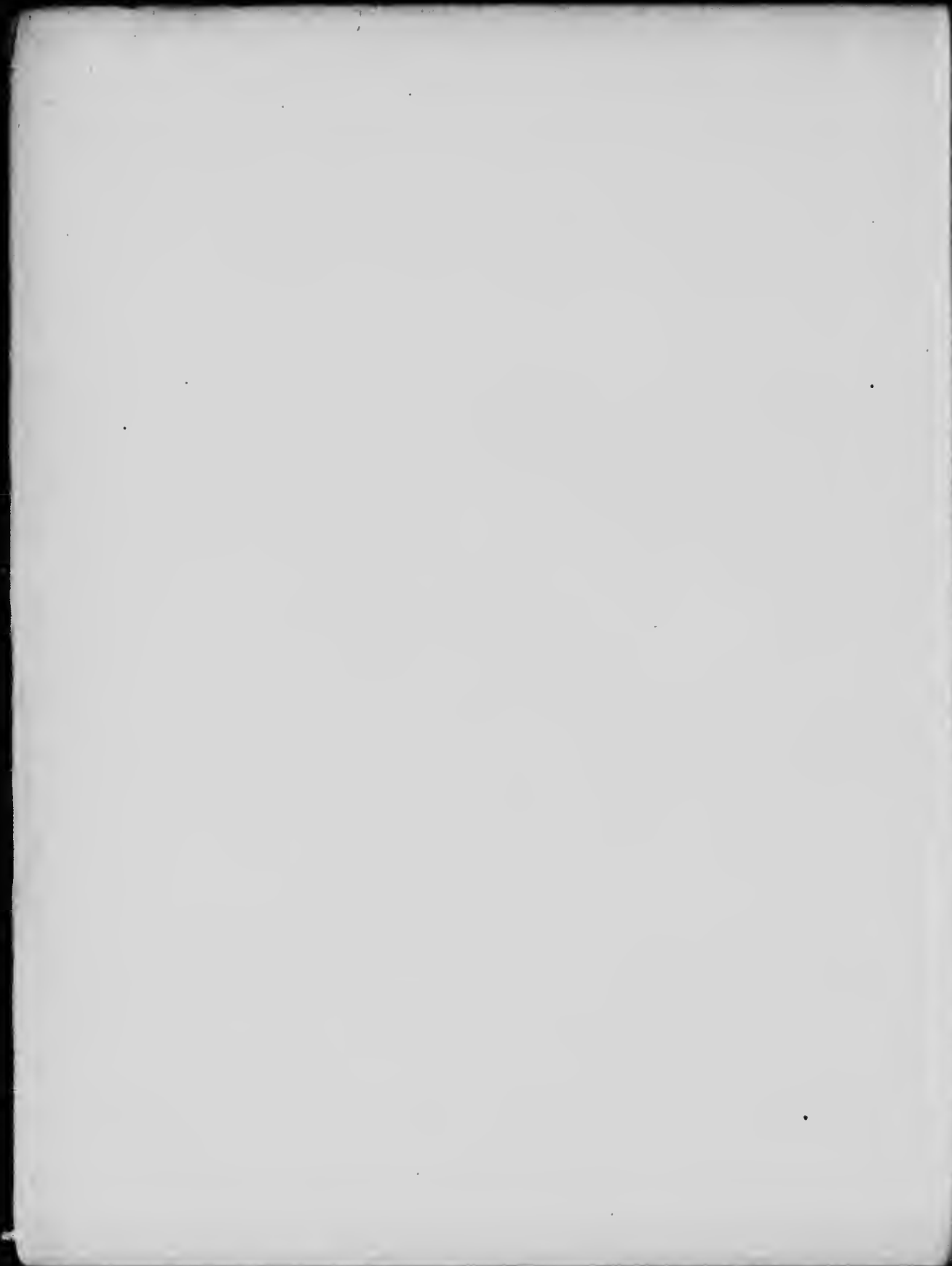
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**NATURE
STUDY
LESSONS**





NATURE STUDY LESSONS

FOR

TEACHERS and STUDENTS

BY

G. A. CORNISH, B.A.

Lecturer in Science, Faculty of Education, University of Toronto.

BIRD STUDIES

Based on the class-room work of the author

EMBRACING

**Birds, Bird-Food, Beaks, Claws, Eggs
and Migration**

Illustrated

Dominion Book Company

Toronto, Canada

1914

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By
W. O. McIndoo

P R E F A C E

Birds have always been the favorite topics for nature study work in the public schools. The methods used have not always been above criticism. The chief aim in teaching the pupils these lessons, is to develop an interest in bird life. The only way to develop this real and vital interest is by getting the pupils to observe the common birds in their natural habitat. The purpose of this little book is to assist the teacher in this useful work. Thirty-one topics have been selected which cover all departments of bird study. The birds chosen for treatment are those that are easy to find, and suitable for observations by school children. Not only have individual birds been dealt with, but other topics, such as bird food, the beaks, the eggs and migration have been covered. Each bird selected is typical of a large number. I have felt that it is much better to treat a small number fully, than to give a smattering of a larger number.

One of the most irritating things that a teacher meets in a book is a series of questions where he looks for information. I have tried in every case to ask no question for which an answer will not be found in the text. Each lesson is divided into two parts; first a series of observations to be made by the pupils, in which questions are asked; secondly directions to the teacher. In this last part, complete statements of the facts to be observed by the pupils are placed, so when the teacher gives the direction to the pupils, the answer to each direction is to be found in the text, so that the teacher can at once state whether the pupils' observations are correct or not.

It is not expected that each pupil will succeed in making all the observations indicated, but the work of the combined members of the class should supply a fairly complete answer to all the observations asked.

Toronto, Feb. 28, 1914.

GEORGE A. CORNISH.

NATURE STUDY LESSONS



BIRDS.

The old bob white, and chipbird ;
The flicker and the chee-wink,
The little hopty-skip bird,
Along the river brink.

The blackbird and the snowbird,
The chicken hawk and the crane ;
The glossy old crow-bird,
The buzzard, down the lane.

The yellowbird and redbird,
The tom-tit and the cat ;
The thrush and that redhead bird,
The rest's all pickin' at!

—*James Whitcomb Riley.*



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NATURE STUDY LESSONS



THE CALL OF THE WILD

The call of the wild hath charm for me
'Mid green woods, bright flowers alone and free,
Over the hills across the green lea,
I wander in dream as it used to be.

The call of the wild comes back to me
In the office or shop, where ere I be,
Through the mist of years the past I see
As real in dream as it used to be.

The call of the wild, my boyhood free,
The song of the bird, the hum of the bee,
My dog and gun, sweet mem'ries to me,
A dream I love of the used to be.

REFRAIN.

The song of the bird, the hum of the bee,
Flowers are shedding their beauty for me;
Scenes of the wildwood, a life ever free,
My heart in its dream is longing for thee.

J. E. WALL.

JOHN JAMES AUDUBON

1780—1851.

John James Audubon, one of the world's eminent ornithologists, was born near New Orleans, Louisiana, more than a century and a quarter ago; that is to say, on May 4th, 1780. His magnificent work, "The Birds of America," in ten volumes, was completed nearly four score years ago. That work has been an inspiration to those who, in these later years, have seen the birds Audubon knew and loved so well, disappearing not only as to number, but as to species. It has made his name a rally-cry for bird-lovers under the auspices of a society that has done good work in the past and that promises to do a better work in the future for the protection and preservation of native and migratory birds the world over.

Less than twenty-five years ago the Audubon movement was regarded by the thoughtless and careless majority as a sentimental fad. As it grew it was antagonized by every selfish interest affected, or likely to be affected, by the restrictions for which it stood and pleaded. The hunter was no less bitter in his opposition to it than the trader in plumage. Sympathies of those who should have been with it were set against it. The worst enemy it had to contend with was public indifference; next to this was public contempt. There was a time, strange to say, when to be a pronounced friend of the bird was to incur ridicule and the abuse of people who thought such a cause beneath the dignity of manliness and womanliness.

A great awakening was necessary in order that the mass of the people might see the practical side of the question. And it came. It came with the rapid disappearance of forest birds, prairie birds, field birds, shore birds, sea birds, birds of plumage, native and foreign. Within the seventy-odd years since Audubon's volumes were given to the world, not only have myriads of birds been ruthlessly destroyed, but numerous species have been annihilated.

There is no cause for discouragement, however. The fact that the question of bird protection has at length forced its way into the legislative halls is not to be underrated. It carries with it the weighty assurance that the country is becoming aroused to a realization of the situation. It also carries with it the satisfying assurance that the question is now touching the business interests of those who have been proof through all these years against moral argument. Doubtless the movement had to take this course, and doubtless, that it has taken it, the steps at which the law-making power have long hesitated will soon be taken.

NATURE STUDY LESSONS



UNPAID HELPERS

You call them thieves and pillagers; but know
They are the winged wardens of your farms,
Who from the cornfields drive the insidious foe,
And from your harvest keep a hundred harms;
Even the blackest of them all,—the crow,—
Renders good service as your man-at-arms,
Crushing the beetle in his coat of mail,
And crying havoc on the slug and snail.

—*Longfellow.*

THE USES OF BIRDS

The two greatest enemies of the agriculturist are insects and weeds. There is no part of a plant that the former will not attack. They burrow in the roots and sap the vitality of this food-absorbing organ; they pierce even the hardest, driest bark of a tree and fatten on the pulpy, succulent tissues beneath; the leaves are their favorite fare, while the seeds and fruit, with their abundant supply of concentrated food laid up for the use of the growing seedling, is as nutritious to baby insects as to baby plants. As a result, no matter whether the plant is raised for its root, stem, leaves, seeds or fruit, it is continually attacked by these greedy eaters. At the very smallest estimate, 10 per cent. of crops are destroyed by this source. Where a farmer now gets 10 bushels of grain or picks 10 barrels of fruit, if the insect pests could be banished he could increase this output by 1 bushel or 1 barrel, as the case may be.

Weeds are almost as harmful. The seeds that are carried in various ways to the land grow up with the crop, compete with it for food, and diminish materially the number and vigor of the plants.

Lime sulphur, Paris green, Bordeaux mixture will do much, but the farmer has a really more potent far, than all of these combined, which he is altogether too slow to recognize—the birds. Through indiscriminate slaughter, unkind treatment, and disturbance of natural conditions they have been so greatly diminished that they are no longer able to keep the insects and weeds successfully in check. There is not a shadow of doubt that if our insectivorous birds were more numerous in species and individuals the vegetable crops would be greatly increased.

Few realize the great numbers of insects and grubs that are eaten by a single bird. A wren will feed its young several thousand times each day; a nestling robin will devour almost its own weight of insects each day; the number of eggs, larvae and adult insects that a chickadee will pick from bark and leaves, or a woodpecker will chisel out from under the bark, is beyond belief. The numbers of weed-seeds destroyed by sparrows and finches is pro-

NATURE STUDY LESSONS

digious, and must greatly lessen the number of seeds that are left to grow in the tilled soil; and if these birds became still more numerous their benefit in this direction would be much more marked.

The great concern of our people should be, not the destruction of our feathered friends, but the undertaking of methods of enticing them back to populated regions. How can this be done? In a variety of ways: every citizen should feel it a duty to the state to see that the laws for bird protection are rigidly enforced; the cat and the English sparrow are the two chief enemies of birds, particularly in towns and cities, and a ceaseless war should be waged on these two pests of our civilization; nesting places for wrens, flickers, swallows and martins can be set up in the trees, and they are likely soon to be occupied; our wild shrubs and trees having berries on them should be protected so as to supply fruits for robins and other useful birds to eat, so that there will not be the same inducement to do some thieving in the farmer's orchard; a little uncleared land, a creek wooded along the banks, and a scattered tree here and there are bound to attract the birds, as well as to add to the beauty of the landscape, and the land given to such a purpose is bound to yield rich rewards; a drink-trough in the yard will help to slake the thirst of many a little bird, and serve its turn in attracting them to repay you by destroying their quota of injurious insects.



Lesson 1.

THE WISE OLD CROW

1. INTRODUCTION.

The crow is probably the best known bird in Canada in respect to both its appearance and its call. It is well adapted for nature study work as it is accessible and easy to observe. Almost any season, except the middle of winter, is a good time to begin. It is probable that some member of the class has or has had a tame crow and can provide some interesting information about its habits. A crow's nest can be provided for the school museum by some of the boys and it should be no difficult task to develop much interest in this most intelligent member of the feathered family.

2. FORM, SIZE AND COLOR.

(a) Observations to be made by pupils.

How many times as long as a robin is a crow?

The robin is 10 inches long—estimate in inches the length of the crow.

What is the color of the crow?

Is there any part of it—beak, eyes or feet—that is a different color?

Notice any metallic reflections.

Look out for birds similar to the crow and mingling with them but much larger.

Is the beak strong or weak?

Describe the feet.

(b) To the teacher.

The crow is about 19 inches long—twice as long as a robin. The whole body is a proverbial black even to the beak and feet. The eyes themselves are black. The upper parts have metallic reflections of a steel blue color. The under surface is duller than the back. The beak is so strong that the crow has no successful enemies. The feet are also strong, with four toes—three in front and one behind. The northern raven, very much larger than the crow, is often seen amongst his smaller cousins.

NATURE STUDY LESSONS

3. LOCOMOTION AND SONG.

(a) Observations to be made by pupils.

Observe how the crow moves on the ground—does it walk or hop?

Does it fly smoothly or jerkily?

Where does it usually light?

What is its usual call?

Does it give this call when flying or at rest?

Has it any other sound?

Study carefully flocks of crows in a field and decide if you think they have a language.

Try to understand their language.

If any have pet crows, let them report on the different calls stating when each is given.

If a nest can be found, notice if the young crows are noisy.

(b) To the teacher.

The call of the crow is so well known that it needs no mention. Its "caw, caw" is given either while flying or at rest in a tree. Anybody who studies crows carefully will soon be struck by the various sounds they can make and will be convinced that they have a language of their own; but very few have studied the crow patiently enough to interpret that language. He flies strongly and steadily and is capable of moving with great speed. He walks over the ground with his strong feet, looking for food; he can also hop like a robin. The young are very noisy.

4. FOOD AND ECONOMIC IMPORTANCE.

(a) Observations to be made by pupils.

What food do crows seek on the ground?

Do they search the ground when no farmer's seed is there to be eaten?

What complaint has the farmer against them?

How are they injurious to other birds?

What harm do they do to poultry?

At what seasons do they injure the crops?

What is their food at other seasons?

THE CROW

Find from reading what they visit the Atlantic coast in Autumn for.

Write out a list of ways they are injurious and the ways they are beneficial.

From your observation, would you decide that, on the whole, crows are injurious or beneficial?

Consult some intelligent farmer as to how he can protect his seed corn from the crows.

(b) To the teacher.

The farmer is a sworn enemy of the crow; he considers him a thief and a villain. He is an Ishmael amongst birds, his hand is against every bird and every bird's hand is against him. But he does not worry over his evil reputation, he seems to enjoy it. He eats a good deal of the germinating corn when it becomes soft, and the farmer occasionally has to replant his crop. He also attacks the milky corn when in the ear. Much more villainous than either of these is his habit of eating birds' eggs and nestlings, and what makes him still more hateful to the agriculturist is his appetite for young chickens. This is a formidable indictment against his black knightship. But the dark cloud has a silver lining. For nine-tenths of the season he is searching the meadows for insects and eats prodigious numbers of them. Of course he is not an economic entomologist and does not distinguish the beneficial from the harmful ones. He also eats field mice and other rodents which is to his credit, but he also devours toads and frogs the former of which are the farmers' friends, though not always recognized as such. He also can scent a dead animal from afar and plays the part of a scavenger. On the whole then, the balances are weighed pretty evenly, so let us give such a shrewd old chap the benefit of the doubt. Of course he does not need our good opinion as he is quite able to look after himself as every farmer knows who has endeavored to seek revenge on him with a shotgun. The farmer can make his seed corn distasteful by tarring it. In autumn, when food becomes scarce, crows seek the Atlantic coast to gorge upon the delicate shell fish found on the beach at low tide.

NATURE STUDY LESSONS

THE CROW

The wise old crow is a wily old crow,—
And the blackest of all bird creation!
No light speck or streak, marks coat, feet, or beak,—
Black eyes—and a black reputation!

'Though sombre his gown, and of shady renown,
Yet, the crow seems never dejected,
With his caw, caw, caw, he says that by law
The crows should be fully protected.

He thinks that to eat of young corn so sweet
Should not be so sadly lamented;
Since he gorges on bugs, field mice, and slugs,
The farmers should be quite contented!

—W. O. M.





NEST OF THE AMERICAN CROW.
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Lesson 2.

The Crow—

His Nest and His Winter Home

1. NESTING HABITS.

(a) Observations to be made by pupils.

At what season are you able to find the nests?

Where is the nest usually built?

How high from the ground is it?

In the autumn get a nest and bring it to school and describe its structure.

Describe the number and color of the eggs.

How long does incubation last?

Try to find out the food of the young.

Is the same nest used more than once?

(b) To the teacher.

The crows begin to construct their nests in April or May. The nest is a large but well constructed home. It looks a little rough exteriorly but forms a quite comfortable abode for young crows. The main structure is of interwoven sticks, but the interior is lined with the soft bark of the grape vine, grass and moss. It is found well up in a tree, usually located in a woods, but never in the deep forest. Most boys know that it is not easy to approach from below. Both parents help in the tedious work of incubation. Four to six ovate eggs are laid. These eggs are usually bluish green, marked with shades of brown, but the colors vary to a great extent. After eighteen days hatching, four blind and naked crow babies make their appearance, but in three weeks of steady eating, the well feathered fledglings, with eyes wide open, are ready to leave the nest. Like most young birds, a meat diet is largely used; insects, alternating with frogs and mice, make a very good variety for a crow. The wise old crow shows her wisdom by utilizing the same nest for several seasons. There is no divorce in the kingdom of crowdom for when they are mated it lasts for life.

NEST OF THE AMERICAN CROW.
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NATURE STUDY LESSONS

2. MIGRATION AND GENERAL HABITS.

(a) Observations to be made by pupils.

- Do any crows remain throughout the winter?
- At what period in the spring do crows appear?
- Do they come in flocks?
- At what season are they seen in the largest flocks?
- When do they depart?
- What kind of perches do they light on?
- Do they migrate during the day or night?
- State ways in which they show their superior intelligence.
- Inquire from old settlers if the crows have increased or diminished in numbers.

(b) To the teacher.

The crows remain in small numbers throughout the winter. They pick up what food they can find, but the majority are giving our farmers a rest and are worrying the southern agriculturist by rooting up his peanuts or cropping the rice. They return early in April to survey the most likely corn fields. They are usually found in flocks of from fifty to one hundred. During the autumn they collect in the evening in immense flocks to roost and each morning scatter over a large area to forage for food. The bird is defiant in its fearlessness. Though no laws protect him, and the farmer is ever on his trail with a shotgun, he perches in the most conspicuous places, swarms the open fields and migrates in broad daylight. He depends on his wariness to outwit the farmer, and the story of how he detects a shotgun and avoids it, more than establishes his reputation. Though an outlaw, and attacked with guns, traps and poison, he thrives in well-settled districts and the universal testimony is that he is becoming more numerous with the settling up of the country. Really the best thing to do is to treat him philosophically, consider him a necessary evil (if evil he is) and settle down and enjoy him. For after all he is a most intelligent and entertaining gentleman and, if he recognizes you as a friend, will condescend to treat you with respect and allow the inquisitive naturalist to inquire into all his ways at close range.

THE CROW

3. THE CROW'S RELATIONS.

The grackles and orioles are the nearest relations of the crows. The pupils should observe their habits and compare them with those of the crow. The sets of questions on the crow will, to a large extent, fit these other members of a nearly related family.

STARLING FAMILY.

Audubon's oriole.
Baltimore oriole.
Blue-jay.
Bobolink.
Bronzed grackle.
Canada jay.
Clarke's nutcracker.
Cow-bird.
Crow.
Long-crested jay.
Meadow-lark.
Orchard oriole.
Raven.
Red-winged blackbird.
Rusty blackbird or grackle.
Starling.
Yellow-headed blackbird.

Note.—For a complete list and description of the members of the Crow Family, see The New Canadian Bird Book, by W. T. MacClement, M.A., D.Sc.

NATURE STUDY LESSONS

OUR GOOD NEIGHBORS

Grudge not the wheat
Which hunger forces birds to eat;
Your blinded eyes, worst foes to you,
Can't see the good which our birds do.
Did not poor birds with watching rounds
Pick up the insects from your grounds;
Did they not tend your rising grain,
You then might sow to reap in vain.

—*John Clare.*



THE ROBIN

Robin, Sir Robin, gay-vested knight,
Now you have come to us, summer's in sight;
You never dream of the wonders you bring—
Visions that follow the flash of your wing.
How all the beautiful by and by
Around you and after you seems to fly;
Sing on, or eat on, as pleases your mind,
Well have you earned every morsel you find.
“Aye! ha! ha! ha!” whistles Robin. “My dear,
Let us all take our own choice of good cheer.”

—*Lucy Larcom.*

Lesson 3

THE ROBIN—ITS COLOR AND SONG

1. INTRODUCTION.

The robin is more endeared to the people of Canada than any other bird. It lives amongst us and is so trustful that it builds its nest right on our window or at least in the nearest shrub or tree. Every boy and girl should study its habits, for to learn its ways, is the first step toward a warm attachment. For nature study work no bird is better adapted for observations. The smallest pupils in the school can find out some simple facts, and many can find the whole secret of its nesting and feeding habits. In spite of its tameness, familiarity and amiability, our knowledge of its songs and habits has many gaps. The observations given below are quite extensive and may be distributed amongst different classes according to their difficulty. It is worth while for pupils to keep a record book in which to note the facts they find about the bird and its habits. At the end of the season let each one incorporate these in an essay.

NATURE STUDY LESSONS

2. GENERAL APPEARANCE OF THE BIRD.

(a) Observations to be made by pupils.

How many inches long is it from the tip of the beak to the end of the longest tail feather? (Pupils will make some very bad estimations and it is well to put a rule at the distance the bird was seen and compare the length of the bird with the length of the inch marks on the rule.)

Describe the shape and appearance of the beak.

Notice the number of toes and their position.

Are the legs well developed or small?

What is the color of the top and sides of the head?

Find white on three places on the robin.

What is the general color of the back?

What is the color of the ring around the eye?

Notice a spot just above the eye.

What is the ground color of the throat and what are the colors of the stripes on this ground color?

Notice the extent of the red on the breast.

What other birds have similarly colored breasts?

When it flies what color is seen on the tips of the outer tailfeathers?

What is the color of the beak?

In the spring notice a difference in brightness in the colors of different individuals.

In what respects do the duller females differ in color from the brighter males?

How do the autumn birds differ in color from those of the spring?

How do the young after leaving the nest differ in color from their parents?

(b) To the teacher.

It is well that pupils should know the exact length of the robin, so that the length of other birds can be estimated by comparing them with it. It is about ten inches long. The beak is of moderate length, and straight. It is yellow in the spring, but becomes horn-colored towards autumn. In the male the top and back of the

THE ROBIN

head are black and the whole back is grayish slate. The tail is black with white spots near the tips of the outer feathers, conspicuous during flight. A white spot is situated above the eye and a whitish ring around the eye. The throat is white, striped with black. The breast and sides are rufous, the belly is white. The female is duller particularly on the back, which is lighter, and the top of the head, which is more gray than black. The breast is duller. There is no difficulty in distinguishing the sexes in the spring. The young is dull colored like the female, but has conspicuous black marks on the breast. The bluebird and the towhee have breasts colored like that of the robin.

3. ITS NOTES AND SONGS.

(a) Observations to be made by pupils.

Endeavor to find how many notes the bird has.

Distinguish its song from its call.

At what period of the day does it sing?

Can you hear it before you are up in the morning?

Describe its call to express fear or alarm, as when the young are in danger.

What other emotion does it express by its calls?

At what season of the year does it sing?

In what kind of weather does it sing most ardently?

(b) To the teacher.

It is generally impossible to describe a bird's song in words, and the attempt will not be made here. The song of the robin is quite melodious and has some variation; it can be heard just after dawn and also until late in the evening. In its call notes it has a greater vocabulary than almost any other bird. It seems to express all the emotions from the tenderest yearning and love through interrogation, suspicion to the most frantic rage and fear. The meaning of its different notes are not at all well known and careful and patient observation is required by many observers to make the speech of this attractive bird better understood. Its song is most hilarious just before rain, as if it knew that the wet would drive the worms to the surface.

NATURE STUDY LESSONS

REMORSE

I killed a robin. The little thing
With scarlet breast and a glossy wing
That comes on the apple tree to sing.

I flung a stone as he twittered there,
I only meant to give him a scare—
But off it went—and hit him square.

A little flutter—a little cry—
Then on the ground I saw him lie,
I didn't think he was going to die.

But as I watched him, I soon could see
He never would sing for you and me
Any more in the apple tree.

Never more in the morning light,
Never more in the sunshine bright,
Trolling his song in gay delight.

And I'll think every summer day,
How never, never can I repay
The little life I took away.

—*Sydney Dayre.*

THE SECRET

We have a secret, just we three,
The robin, and I, and the sweet cherry tree;
The bird told the tree, and the tree told me,
And nobody knows it but just we three.

But of course the robin knows it best,
Because he built it—I shan't tell the rest;
And laid the four little—something in it—
I'm afraid I shall tell it every minute.

But if the tree and the robin don't peep,
I'll try my best the secret to keep;
Though I know when the little birds fly about,
Then the whole secret will be out.

—Anon.

Lesson 4

OUR MOST FAMILIAR BIRD'S NEST—THE ROBIN'S

1. NESTING HABITS.

(a) Observations to be made by pupils.

At what date is the robin's nest built?

Find all the different kinds of locations for nests.

What is the greatest height at which you find a nest and also the lowest?

Do they commonly build in the woods?

Do they always build near houses?

Examine an old nest and notice the material of which it is made.

Try to find a bird constructing a nest and observe how the straws are brought.

How does the bird construct the nest?

How is the mud carried?

Do both parents help in the construction?

How many eggs are usually laid?

NATURE STUDY LESSONS

Describe the eggs as to shape, size and color.

How many days does incubation last?

Which does the incubating?

Describe the appearance of the young in the nest.

How long do the young remain in the nest?

Count how frequently food is carried to the young.

What kind of food is brought to them?

How is the nest kept clean?

Which parent procures the food for the nestlings?

When is the first brood reared each summer?

Is the same nest occupied for the different broods of a summer?

(b) To the teacher.

The robins are usually busy with their nests by May. They usually select a tree in an orchard or near a house, but are not fond of nesting in the woods. Both parents assist in building the nest, carrying all the coarse grass, leaves and rootlets first. When a sufficient supply of this material has been accumulated they visit the nearest mud puddle, get their beaks full of mud and squirt it amongst the straw. This is repeated until the straw is impregnated with mud. Then the bird squats in the straw and rounds it into shape. It is then lined with finer grass. Usually four greenish blue eggs are laid and incubation continues for from eleven to fourteen days. The young in the nest have long beaks which, when wide open—as they usually are—have a yellow color. The parents are most diligent in feeding them. Each eats almost its own weight of food in a day. The parents are thus kept very busy, seeking for worms and larvae in the ground, as these are their chief food supply. In eleven days they are usually ready to leave the nest. This event takes place before the end of June. In July the female is incubating a second brood, while the male fathers the first family, which have a regular roosting place in some low, well wooded thicket. The first nest is never used for the second brood but a new one is constructed. The nests are sometimes very dirty, though the filth from the young is carried away by the parent and deposited on the ground, from its beak.

Lesson 5

IS THE ROBIN A USEFUL BIRD ?

1. ITS FOOD.

(a) Observations to be made by pupils.

What kinds of food are available for the robin when it arrives first in the spring?

Observe what it actually eats at this period.

When the ground has thawed, find what it searches the lawns for.

Notice its method of pulling the worms out without breaking them in two.

Watch carefully if it gets any grubs or cut worms from the ground.

During what kind of weather are they most successful in procuring earthworms?

Do they secure all their animal food from the ground?

What change takes place in the character of their food during the summer?

What fruits do they chiefly attack?

Do they prefer tame or wild fruit, where both are available?

Suggest a method by which the fruit farmer might protect his fruit against the robin.

What kind of fruit do the young eat?

Do the parents bring them any fruit?

Give an estimate of the number of feedings each young one receives during a day, and of the total food consumed during this period.

If any robins remain during the winter, try to find what kind of food they consume.

(b) To the teacher.

When the robins first arrive in the spring the ground is still frozen and they are unable to get their favorite food. At this time they live chiefly on the berries still to be found on the shrubs and bushes. Those that remain over during the winter are largely

NATURE STUDY LESSONS

dependent on the same food. As soon as the frost is out, the worms come to the surface and the robins hold high carnival. Particularly after a good, warm rain when the ground is steaming and the earthworms are driven to the surface, our little friends batten on these delicate morsels. But they do not confine their attention to these, but a long list of fly larvae, cut-worms, slugs, ground-beetles, etc., appear on their menu cards. There is no doubt that at this season they are great friends of the farmers. As spring passes into summer and the farmer's small fruits become mature, his affections for the robin begins to wax weaker, as the latter must plead guilty to developing a marked appetite for raspberries, currants and particularly cherries, but even during these months, when the fruit diet is most strongly developed, over forty per cent. is still insectivorous. The robins prefer the wild fruits to the tame, if the latter are available, and it is the complete destruction of these shrubs and underwood which teemed with berries, that has driven our friend to the farmer's garden. It seems to be the young robins, that have recently left the nest, that are the chief offenders. It must also be remembered that even during July and August these same robins, that are feasting on the small fruits, are pouring an endless stream of injurious cut-worms, grubs and caterpillars into four gaping mouths belonging to four nestlings with insatiable appetites; so the robin in taking a few cherries is simply accepting a small payment for the immense benefit he does to the farmer. I confess it takes a good deal of argument to make the fruit grower see it in that light. A nestling robin will probably eat a good deal more than its parents, and its food is entirely of insects and their larvae, worms and grass.

2. ITS MIGRATION.

(a) Observations to be made by pupils.

Note the first appearance of the robin.

Compare records of first appearance for several years.

Note when they arrive in considerable numbers.

Which appear first, the males or females?

Do they come in flocks?

Do the same robins come back to the same districts each year?

THE ROBIN

During the summer has each pair of robins a district of their own to search for food?

Do the robins collect in flocks in the autumn?

At what time do they depart?

Where and how do they spend the winter?

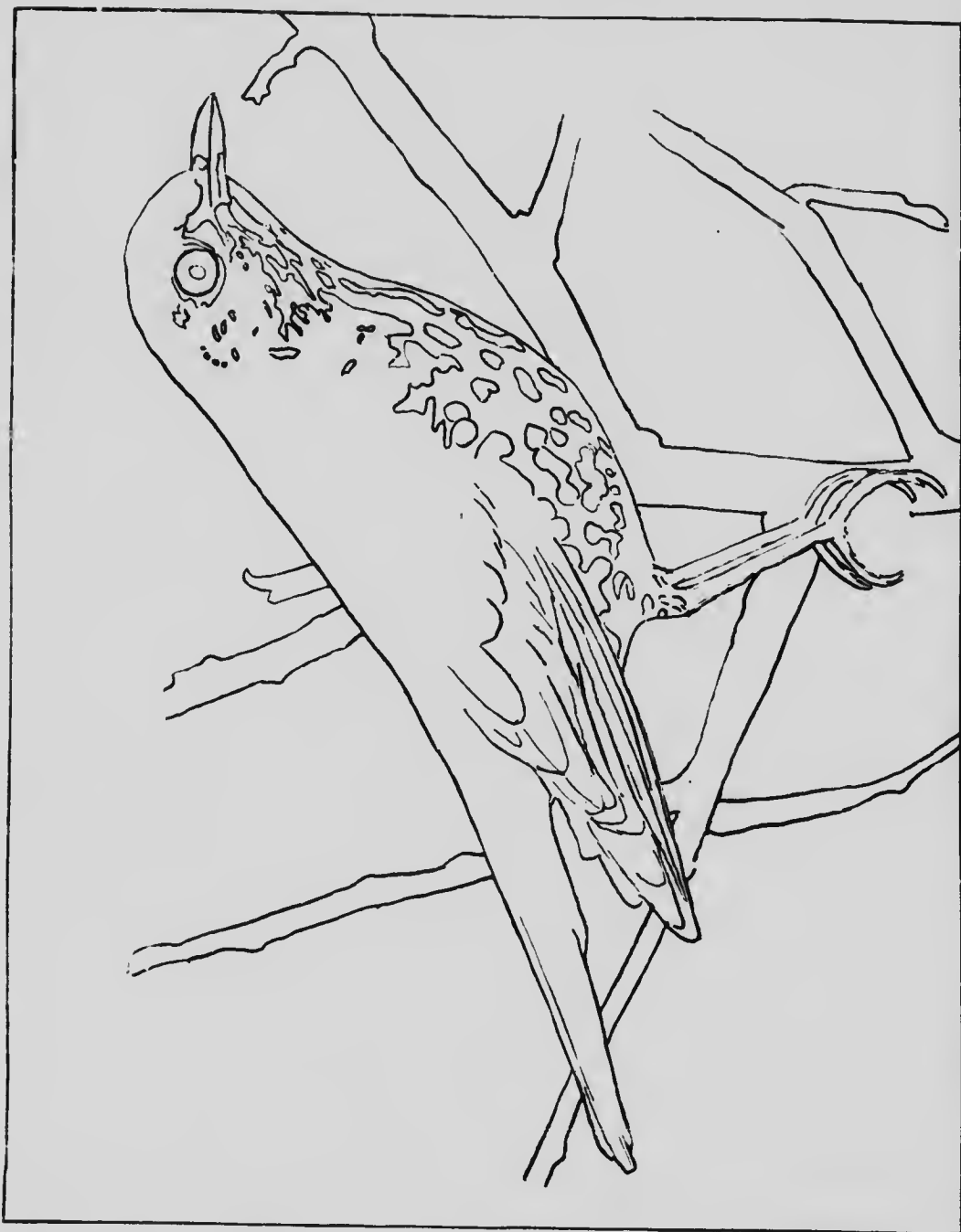
(b) To the teacher.

The robins appear in numbers in southern Canada some time in March. A few individuals remain throughout the winter living on berries, and the number that do this appears to depend upon the abundance of these berries. Such birds are liable to be seen almost any time during the winter, and their presence accounts for the early records that appear in the spring. The birds arrive in flocks and the males usually precede the females by a few days. The flocks rapidly break up as each seeks his mate. The birds come back to the same locality from year to year. Mrs. Comstock speaks of one female that nested for eight years in the same garden. Each pair appears to have their own region, which they search for food, and no trespassers are allowed. In the autumn they gather again in flocks and in November move to the South in immense numbers; they spend the winter in Florida and other southern states. Here, while their stray brothers who have remained are shivering in protected swamps, they hold high carnival in the sunshine. They remain in flocks and live chiefly on the wild fruits found on the shrubs and bushes of the district.

3. THE OTHER THRUSHES.

The robin is really a thrush and has many features in common with the other thrushes. Our most common members of the family are the bluebird, Wilson's thrush, hermit thrush and olive-backed thrush. These live largely in the woods (except the bluebird), come frequently to the ground and have beaks similar to the robin. They are all good songsters and all migrate and live in flocks at some seasons of the year.

NATURE STUDY LESSONS



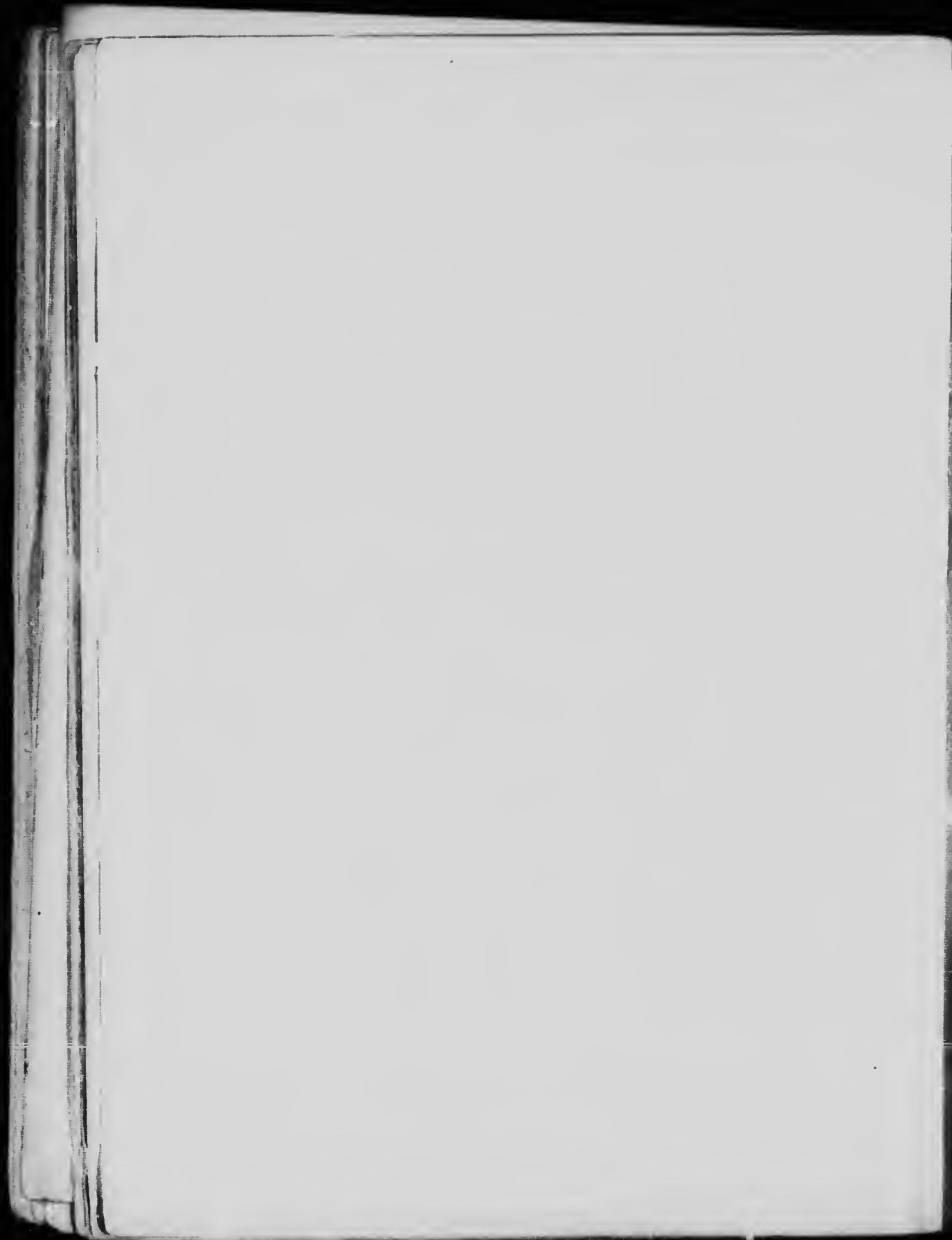
WOOD THRUSH—(Life Size)

WOOD THRUSH—(Life Size)



WOOD THRUSH.
Life-size.

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THE WOODPECKERS— HOW TO DISTINGUISH THEM

A good time to begin the study of this group is about April or May as all of them are to be found at this season. The teacher should inform the pupils that they are to observe closely birds found moving on the trunks of trees, as these are chiefly woodpeckers, particularly if they have some bright red about the head. The following table should be written on the black-board, by which the different species can be distinguished, and when they have decided on the right name let them read the description and examine the colored illustration in this volume.

1. TABLE BY WHICH THE COMMON WOODPECKERS ARE IDENTIFIED.

- (a) Longer than the robin.
 - (b) Almost as long as the crow, not mottled
(Pileated Woodpecker.)
 - (bb) Shorter than the pigeon, banded and mottled
(Northern Flicker.)
- (aa) About the length of the robin or slightly smaller.
 - (b) The whole neck and throat scarlet
(Red-headed Woodpecker.)
 - (bb) The whole neck and throat not entirely scarlet.
 - (c) Back black, wings white and black.
(Arctic Three-toed Woodpecker.)
 - (cc) Back black and white.
 - (d) Throat, crest and belly white.
(Hairy Woodpecker.)
 - (dd) Belly yellowish, breast with a black patch.
(Yellow-bellied Sap-Sucker.)
 - (aaa) About the length of the sparrow.
(Downy Woodpecker.)

NOTE.—The pupils should be asked to make the following observations. These should not all be given at once, nor should any one pupil be expected to get records of them all, but by the combined work of the class many of the details can be filled in during the summer.

NATURE STUDY LESSONS

2. APPEARANCE OF BIRD.

(a) Observations to be made by pupils.

Describe the color of each woodpecker you see, as follows: top of head, sides of head, back of the neck, the back and upper part of the tail, the throat, the breast and belly, the wings.

If two are seen together see in what respect they differ. Notice particularly what parts are red. Study the shape of the beak, the number of toes, the position of each when hanging to the tree. Also notice the curvature and sharpness of the claws. When climbing a tree, is the end of the tail rounded, straight or concave? If there is a specimen in the museum or a dead one is found by any pupil let these points be studied more carefully.

(b) To the teacher.

The facts regarding the colors of each species can be found in The New Canadian Bird Book.

3. THE CLIMBING HABITS.

(a) Observations to be made by pupils.

What is the position of the tail, and of the toes as it climbs a tree?

Does it usually go straight up, spirally, or irregularly?

Does it ever back down? Does it ever slip?

Does it always have the head up?

Is any noise produced as it moves?

What seems to be its purpose in moving up a tree trunk?

(b) To the teacher.

In moving, the tail is held firmly against the tree as a prop and the outer and inner toes are backward, the two middle ones being forward, the four with their sharp claws seizing the foothold with great force. They usually light near the bottom of a trunk and move gradually up in a somewhat irregular manner. They seldom back down as the stiff spines of the tail, held firmly to the wood, prevent it. They never slip as they move forward with steady foot, and are as much at home with head down as up. As they move gaily in searching for food, they give a joyous grunt with every advance.

THE WOODPECKER

SOMEBODY'S KNOCKING

There's somebody knocking;
Hark! who can it be?
It's not at the door! no, it's in the elm tree.
I hear it again; it goes rat-a-tat-tat!
Now, what in the world is the meaning of that?

I think I can tell you. Ah, Yes! it is he;
It's young Master Woodpecker, gallant and free.
He's dressed very handsomely (rat-a-tat-tat),
Just like a young dandy, so comely and fat.

He's making his visits this morning, you see;
Some friends of his live in that elm tree;
And, as trees have no doorbells (rat-a-tat-tat),
Of course he must knock; what is plainer than that?

Now old Madam Bug hears him rap at her door;
Why doesn't she come? Does she think him a bore—
She stays in her chamber, and keeps very still.
I guess she's afraid that he's bringing a bill!

"I've seen you before, my good master," says she;
"Altho I'm a bug, sir, you can't humbug me.
Rap on, if you please! at your rapping I laugh,
I'm too old a bug to be caught with your chaff."

—Anon.

THE REDHEADED WOODPECKER

Ho! little red-capped soldier,
With coat of black and white,
With your merry martial music
All the day you bring delight.
Rat-a-tat! rat-a-tat!
And you rattle your drum in glee,
Rat-a-tat! rat-a-tat!
On the stump of the maple tree.

Ah! grotesque little soldier,
When out in dress parade,
You fill each gay beholder
With mirth, I am afraid.
With your bright cap doffed
And your coat-tail limp
You're awkward as you can be;
Go back and drum your tum-tum-tum
On the trunk of the maple tree.

Ah! little red-capped drummer,
There are prisoners hid from me,
'Way up there, all the summer,
In the hole of the old dead tree.
But I now can hear their bugle calls,
And I hope that soon there'll be
From out the gloomy prison walls,
More drummer boys gay and free,
Rat-a-tat! rat-a-tat!
All drumming the old dead tree.

—Mrs. W. L. Meadows.

Lesson 7

WHAT WOODPECKERS DO ON THE TREE TRUNKS

1. FEEDING HABITS.

(a) Observations to be made by pupils.

What do they search the tree-trunks for?

Which woodpeckers search the trunks most diligently?

Which bore holes in bark?

Do they return to these holes, and for what purpose?

Do any dart at insects on the wing or in the grass?

Which one often lights on the ground?

Watch what he is after, examine the ground where he has been.

Do they ever eat fruit or berries?

Find which stores beech-nuts in autumn.

(b) To the teacher.

Their food consists of larvae and small insects, found in crevices of bark and in holes drilled into wood; these they get out with their protrusible tongue. This tongue can be extended several inches, and is hard at the end. The tip is sharp and has barbs directed backward. The sap-sucker lives largely on sap which trickles into the holes he drills into the bark. He also eats the soft outer wood. His tongue is quite short. The red-head and the hairy woodpecker, besides digging insects out of bark, seize them on the wing like the fly-catchers. All of the woodpeckers in the autumn eat nuts, seeds and berries, to a greater or less extent. The flicker gets much of its food on the ground and is particularly fond of ants. It sticks its long tongue, covered with a glutinous saliva, down into the ant-hill like a regular ant-eater and the ants which attack it are held firmly. The red-head also comes to the ground occasionally. This bird also stores up beech-nuts in crevices and knot-holes for the winter, and if there are large supplies he frequently does not migrate in the autumn.

2. FLYING HABITS.

(a) Observations to be made by pupils.

Do the woodpeckers fly in a straight line?

Are their flights long or short?

NATURE STUDY LESSONS

Are the wings large or small relatively to the size of the body?

What colors are conspicuous in flight, that are not so, while at rest?

Does it make any noise as it flies?

(b) To the teacher.

The wings of the woodpeckers are relatively small, corresponding to the short flights they make. They usually fly only from a tree to an adjoining one, though they can move far during migrations. The method of flight is very characteristic; it is a sort of series of jumps, making an undulating course like some of the sparrows. They are usually silent while flying, though they often start off on a flight with a chuckle. The red-headed woodpecker during flight shows the ends of the wings black, the parts next to the body white. The large white spot on the base of the tail is a sure mark by which the flicker is identified.

3. SONG OF WOODPECKERS

(a) Observations to be made by pupils.

At what season are they most noisy?

How many songs or calls have they?

At what season do they drum?

Do they drum on the same branch each day?

Do both males and females drum?

How is the drumming noise made?

(b) To the teacher.

The woodpeckers make short calls as they go about searching the trunks for food. All of them have a number of such calls, but none have such a variety of notes as the flicker. They are all noisy during the breeding season, when they drum on logs. Each selects a rotten branch and by a series of rapid pecks brings out the loud resonant drumming tattoo. They go to the same log day after day. Occasionally they will choose the metal eaves-trough of a house. Usually only the male drums, but both sexes of the downy and sap-sucker produce this sound.

Lesson 8

A NEST IN A TREE TRUNK

1. NESTING HABITS.

(a) Observations to be made by pupils.

- Where are the woodpeckers' nests found?
- What is the shape of the opening?
- At what season is the nest built?
- Are the trees living or dead?
- What kind of trees are used?
- At what height in the tree is the opening made?
- Do both sexes take part in the excavation?
- How long are they in excavating?
- Do they bring straw, hair or leaves with which to line it?
- What is done with the chips removed from the excavation?
- What is the shape of the excavation?
- Is it dug straight down the tree?
- Is it wider at the top or the bottom?
- Are the walls smooth?
- What do the eggs rest on?
- What is the color of the eggs?
- What use is this color?
- How many eggs are laid?
- How long does it take the eggs to hatch?
- Do both parents take part in incubation?
- How are the young fed?

Note.—In the autumn have a pupil cut off the piece of the trunk of a tree containing the nest. Have the top cut just above the opening and it is better to make the second cut two feet below this. Then cut out a slab about six inches wide and half through the trunk just above the nest so that the bottom of the latter can be seen through it. This makes an excellent specimen for the museum and the whole structure of the nest can be seen at a glance.

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(b) To the teacher.

All the woodpeckers build their nests in trees. A hole is made inside of a rotten trunk usually, but rarely a living tree with a decayed centre is chosen. They select a great variety of trees for the purpose. The hole is as round as if made by an auger, and is just large enough to admit the bird. After passing into the centre, the cavity passes down, and as it does so it widens so as to form a bottle-shaped cavity. The chips are either scratched out or removed by the beak, and in the case of the downy woodpecker are removed to some distance so as not to reveal the nest. The walls of the cavity are very smooth. Both male and female take part in the excavation and in incubation. It takes from 5 to 10 days to complete excavation. From 4 to 7 pure white eggs are laid on a few chips that are left in the bottom. The white color is useful for revealing their position to the parent in such a dark place, otherwise in entering they might easily be broken. One is laid almost every day. If the eggs are removed as rapidly as laid, the bird will continue laying for weeks or months. Incubation last from 12 days in the smaller species to 14 in the larger. While the red-headed woodpecker brings the insect food in its bill to the nestlings, the flicker and the hairy woodpecker regurgitate the food from the crops into the mouths of the young. In from three to four weeks the young are ready to leave the nest. The male often drills a second hole into the same or an adjoining tree so that at night he can remain near his mate. Nesting usually takes place during May.

2. GENERAL HABITS AND ECONOMIC IMPORTANCE.

(a) Observations to be made by pupils.

Which of the woodpeckers remain all winter and which migrate?

When do the migrants arrive?

When do they go south again?

In what kind of habitat are the woodpeckers found?

Of what use are they to man?

Are any harmful and in what way?

How should man act toward them?

THE WOODPECKER

(b) To the teacher.

The hairy and downy woodpecker remain all winter, the sap-sucker arrives about the middle of April; the flicker appears about the same time; the red-headed woodpecker is usually a migrant, but if the food supply is favorable, it may remain for the winter. They all inhabit the vicinity of trees but some are found in the trees close to houses, particularly the little hairy woodpecker. All these are very useful in destroying insects and larvae injurious to trees, and should be protected.

The sap-sucker, however, does much injury to trees by girdling them with holes and causing their death.

It is probable, that without the aid of the woodpeckers in destroying insects, the trees quite frequently would succumb to their attacks, hence man, in his own interests, should at all times act as their protector.

PROMINENT MEMBERS OF THE WOODPECKER FAMILY

American three-toed.
Arctic three-toed.
Downy.
Flicker, Yellow-hammer, Highholder.
Hairy.
Lewis'.
Northwestern flicker.
Pileated.
Red-bellied.
Red-headed.
Red-shafted flicker.
White-headed.
Yellow-bellied sap-sucker.

Note.—For full description of the above Woodpeckers, see The New Canadian Bird Book, by W. T. MacClement, M.A., D.Sc.



Lesson 9.

SCHOOL RECORDS OF BIRD MIGRATION

1. INTRODUCTION.

The act of migration is one of the most striking habits of most birds, and every boy and girl has observed the most obvious facts connected with it. They know that the robin and the gold-finch disappear in the autumn and do not return again until the following spring. Many useful and interesting observations can be made by the pupils regarding these phenomena. Records should be kept by the pupils of all classes, of the times of arrival and departure of the different species; and, after the facts have been observed, a discussion of birds should be conducted in the class, so that the main facts and theories regarding this most mysterious habit may be presented to the pupils.

2. RECORDS.

For kindergarten and junior public school classes a black-board record for the whole school will be sufficient. The teacher asks pupils to watch and report the first appearance of half a dozen of the most common migrants, such as the robin, grackle, crow,

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bluebird, song sparrow, etc. The name is placed on the blackboard, and the date and the name of the pupil observing it, will also be recorded. Some little discussion of each bird will be taken at suitable times. The records can be kept merely in columns or they can be done much more elaborately. An excellent plan, but one which involves considerable work for the teacher, is to draw a tree for each of the spring months, and when a bird has been seen by one of the pupils, a colored drawing of it is placed in an appropriate attitude in the tree. A band is placed in its mouth, with the name of the pupil who first saw it, also such other data as are worth recording, such as the date when first observed and the number seen.

In the senior classes in the public schools and in the lower forms of the high schools a different method will be pursued. It is best to begin during the early spring, and each pupil will keep his own record. Each records the different species as he observes them. A number of pages, ruled in columns for the name, date, number seen, exact location, etc., will be kept in the work book, and the records are there tabulated. Once a week the lists are compared, and assistance in identification given. There will be great rivalry to obtain the most complete lists, and some of the best should succeed in indentifying over one hundred birds during the spring term. Besides the individual lists a general record should be kept posted on the bulletin board. In this entries should be made once a week, and it will contain all the species seen by all the pupils. After each bird is placed the name of the pupil who observed it earliest in the season and also the date on which it was first seen. There will be a very friendly competition to see who will have his name entered most frequently on this list. These lists are to be kept from year to year and the dates of the arrival of the different species observed. The pupils will also use the old lists to see what species they should be on the lookout for. The bird lists should be reviewed from time to time, to see which birds have disappeared and which still remain. Thus a complete record of the movements of the species can be obtained.

Lesson 10.

CLASSIFICATION OF MIGRATING BIRDS

1. CLASSES OF MIGRANTS.

(a) Observations to be made by pupils.

Name birds that remain here throughout the summer.

Name some birds that only remain for a few days or weeks.

Name some birds that reside here during the winter.

Name birds that dwell here permanently.

What birds pass overhead northward in the spring and southward in the autumn?

Do any move in the reverse direction?

Are any birds liable to appear erratically at any season of the year?

(b) To the teacher.

Almost all birds spend the winter and summer in different regions, and they always spend the summer further to the north than they do the winter. The distance between the region of summer and winter residence may be only a few hundred miles, or it may be several thousand. The golden plover spends its short summer far beyond the Arctic circle, while the winter is spent well past the equator in South America. The horned lark, which hatches its young in Labrador, will winter with us in southern Canada. Thus we have different birds travelling very different distances during migration, and we have those spending their summer in all latitudes, from the most northern lands down to the equator. Suppose a species spends the summer in Labrador and the winter in Ohio and New York, then it would be called a summer resident in Labrador, a winter resident in Ohio and New York, and a bird of passage in the intermediate regions. Sometimes the summer and winter homes overlap in an intermediate region. For instance, our ruby-throated hummingbird breeds in the summer from Labrador to Florida and spends the winter from Florida to Central America. From Labrador to Florida it would be a summer resident, from Florida to Central America it would be a winter resident, while in Florida it would be a permanent

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resident. Though a permanent resident in Florida, the same individuals do not reside there throughout the year. The ones living there in summer would be found much further south during the winter, while the birds that reared their broods in Labrador would probably occupy Florida during the winter. Not all permanent residents are of this character. The common sparrow is not a migrant at all, but the same individuals remain in southern Canada throughout the year. The same thing is true of the ruffed grouse, the bob-white, and probably the chickadee and several others. On the other hand the junco, the robin, and the crow are found in the extreme southern parts of Ontario throughout the season, but it is extremely doubtful if the winter and summer individuals are the same. Our summer residents are very numerous, but are different in different latitudes, some that are birds of passage in the south are summer residents in the north. We have a good number of winter residents, such as the horned lark, snowflake, pine grosbeck, and redpoll, which, on the appearance of the spring, gradually leave us to pass to the north to rear their young. There are also birds that are very erratic in their habits. Most birds settle down for the season in one locality, and even come back to this same region year after year. Others have no settled place of abode, but are vagabonds amongst birds; such are the cedar waxwings, which may appear in eastern Canada in small flocks at almost any season, but particularly during the summer; after remaining for a week or more the whole flock may disappear. The pine grosbeak acts similarly during the winter.



THE BIRDS ON THE MARCH

1. METHODS OF MIGRATION.

(a) Observations to be made by pupils.

Do all the birds of one species (say the robin) arrive at about the same time or do they gradually increase in numbers?

Taking some birds in which the males and females can be easily distinguished, observe which sex appears earliest.

Looking up previous migration records in the school, find if the different species appear at the same time each spring.

Does the weather affect the time of appearance?

Do the birds return when food is abundant? Take for example the robin, song-sparrow, and crow.

What duties do the most of them undertake shortly after their return?

Are they congregated in flocks when they appear in the spring?

Do they leave as soon as food becomes scarce?

Do any leave when there is still an abundance of food such as they like?

Which congregate in flocks before they migrate?

Do they all disappear suddenly or do they gradually become less numerous?

(b) To the teacher.

The method of migration varies greatly in different species. Usually a few appear first and they gradually become more numerous until they have arrived in full numbers. All know that only an old robin or so is seen at first and later the numbers increase. Probably the most vigorous and strongest fliers appear first. This may be the explanation why the males usually arrive a few days before their somewhat less vigorous wives. The time of arrival each season varies slightly with most species, but never by many days; it is quite possible that the weather may have something to

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do with it. With some of the ducks, it is quite certain that weather is an important factor, as they only migrate north as the ponds and streams, in which they feed, become free of ice. The food supply alone does not appear to determine the date. Frequently some robins arrive while the ground is still covered with snow and there is no more food than throughout the winter. Several warblers appear quite early, before any of the insect larvae are stirring. The crow returns while the ground is still frozen. The same is true of the retreat in the autumn. Many insect-eating warblers go south in August when their favorite food swarms the woods amongst which they roam. The birds frequently arrive in flocks but they rapidly disperse, become mated and begin the arduous task of building a house and preparing for nidification. Many of the birds congregate in flocks in the autumn and may roam about for days or weeks, before finally departing for the south. The large flocks of grackles, blackbirds and robins are familiar to every body. Some leak out gradually and imperceptibly diminish; others are in conspicuous numbers till the last, when some morning all have vanished.



Lesson 12.

THE HOW AND WHY OF BIRD MIGRATION

1. MIGRATION ROUTES.

(a) To the teacher.

This is a subject on which no observation of value can be made by the pupils, and yet it is of such interest and importance, that some of the main facts should be presented to the class by the teacher. When migration begins it usually takes place along the whole width of the territory occupied by the species; as the movement south proceeds, it diminishes in width, and becomes concentrated along good food areas. The movement may be very rapid or it may take place quite leisurely. The routes from the southern States to Mexico, Central and South America are remarkable. It might be thought that most birds would avoid the flight across the Gulf of Mexico by passing round the border into Mexico, but such is not the case. Far more birds fly across this stretch of water than follow its borders; even our smallest birds do not hesitate to take the more direct route. Many of our summer residents only move a few hundred miles south into the United States in the autumn. This is the case with the robin, junco, and some of the sparrows. On the other hand the bob-o-link, the king-bird, the cuckoos and many of the warblers winter in South and Central America. The route back in the spring is frequently different from that of the autumn. The golden plover goes south along the Atlantic Coast to Nova Scotia when in one flight it passes to the West Indies, on the return it follows Mexico and the interior plain to the Arctic regions.

Most birds fly at night; on a moon-light night it is possible to see them passing across the face of the moon. Their calls above can frequently be heard by the practised ear. Great mystery surrounds many points regarding these migrations. How do they find their way for thousands of miles and return to the old nesting place in the same tree? It was suggested that the old ones lead the way and no doubt in some cases that is correct. Frequently the old and young of a species migrate at different times and, under such condition, the young must travel through totally new

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territory. We are driven to the desperate dilemma of hiding our ignorance by saying, that instinct, or a sixth sense of direction, leads them. There is no doubt that they usually follow the best food routes, and this keeps them generally along rivers and streams. High mountains form barriers which they seldom surmount.

2. PURPOSES OF MIGRATION.

(a) Observations to be made by pupils.

Do you find any indications that it is the cold weather that drives birds to the south?

Are the birds that remain during the winter better protected against the cold than those that migrate?

Do the spring migrants sometimes arrive while it is still the cold?

Do many birds, that remain during the winter, die from the cold?

What classes of food supply for birds are seriously diminished during the winter?

Do the birds that live on these, disappear when their food becomes scarce?

Do the birds that migrate rear young in the south?

(let the pupils find the answer to this from reading some reference book.)

Which is their northern or southern place of residence their real home?

(b) To the teacher.

It is quite certain that birds do not migrate because they are unable to stand the rigors of our climate. Several like the cuckoos, and some warblers go south in August while it is at its warmest in Canada. Some that migrate regularly, occasionally spend the winter in the north with no apparent hardship. This is the case with the red-headed woodpecker and an occasional robin. There is no more complete covering of feathers in the chickadee or the English sparrow, than in the other sparrows or warblers. The feet and eyes are the parts of birds most likely to be injured by frost and these are no better protected in the birds that remain than those that migrate.

MIGRATION.

The food supply has a much closer relation to this instinct than has temperature. There is no doubt that the summer with its teeming vegetable and animal life can support a more numerous bird population than can the winter with everything dormant. All birds living on flying insects, as the flycatcher, many of the warblers, swallows and vireos must migrate. As most of the plants become covered by snow, the seed eaters also must for the most part migrate or starve. The ducks that get their food from the ponds and streams must go farther south as these freeze over. We can infer that there is a close relation between the food supply and the migratory instinct. Yet even here we meet most contradictory facts. The insect-eaters, that leave us in August, migrate, when their food appears most abundant. Many insectivorous birds return in the spring long before there is much stir in the insect world. Our earliest robins, when they arrive, find material suitable for food just as scarce as during the winter. The outstanding fact regarding migration is that all birds, that go north during the spring, almost at once set about the duties of nidification and this they do at the most northerly point of their range. On the other hand, when they have returned south in the autumn, they never rear their young there. Perhaps, in considering the food supply, we should consider that of the nestlings rather than the adults, and that, while the food conditions may not be favorable for the adults when they first arrive at the nesting place, these conditions will have become more perfect for the nestlings by the time incubation is complete. How the habit arose, and when it began is hidden behind the dim veil of the far distant past. While more complete observations may assist they will probably never entirely reveal all the mysteries of the development of this most interesting instinct.



NATURE STUDY LESSONS.

TO A WATER-FOWL

Whither, midst falling dew,
While glow the heavens with the last steps of day,
Far, through their rosy depths, dost thou pursue
Thy solitary way?

Vainly the fowler's eye
Might mark thy distant flight to do thee wrong,
As darkly painted on the crimson sky,
Thy figure floats along.

Seek'st thou the plashy brink
Of weedy lake, or marsh or river wide,
Or where the rocking billows rise and sink
On the chafed ocean-side?

There is a Power whose care
Teaches thy way along that pathless coast—
The desert and illimitable air—
Lone wandering, but not lost.

All day thy wings have fanned,
At that far height, the cold, thin atmosphere,
Yet stoop not, weary, to the welcome land,
Though the dark night is near.

And soon that toil shall end;
Soon shalt thou find a summer home, and rest,
And scream among thy fellows; reeds shall bend,
Soon, o'er thy sheltered nest.

Thou'rt gone, the abyss of heaven
Hath swallowed up thy form; yet, on my heart
Deeply hath sunk the lesson thou hast given,
And shall not soon depart.

He who, from zone to zone,
Guides through the boundless sky thy certain flight,
In the long way that I must tread alone,
Will lead my steps aright.

WM. CULLEN BRYANT.

OUR SMALLEST BIRD—THE RUBY-THROAT

The ruby-throated hummingbird is such a well-known bird that almost every boy and girl knows it at least by name, so that in announcing observations to be made upon it, it is scarcely necessary to give distinguishing marks by which it may be identified. It is the only one of our birds which enters flowers, and it is at this occupation that it is generally observed. It is frequently confused with a moth of about equal size, which visits the flower-garden in the evening, but a careful observation will easily lead to a distinction as there is an utter lack of the sparkling, iridescent colors in the moth, which flash in the sunshine from the throat and back of the bird. The study of this bird should be begun in May.

1. GENERAL APPEARANCE AND COLORATION.

(a) Observations to be made by pupils.

What is the length of the bird? (Remember that a sparrow is six inches long).

Do you know any birds shorter than this one?

What is the length of the beak?

Do you know any other bird in which the beak is proportionally so long?

What is the color of the back?

What is the color of the throat? Is the bird appropriately named?

What is the color of the breast and belly?

What is the color of the wings and tail?

Notice the shape of the tail.

Are the brilliant colors lacking in any of the individuals you observe? How would you account for this?

(b) To the teacher.

The ruby-throated hummingbird is our smallest species, it is less than four inches long being little over half as long as the English sparrow. What it lacks in size it makes up for in unique character of beak, tail, and plumage. The beak is very long and

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narrow, almost like a blunt needle; in very few birds is the relative length so great. The tail in the male is markedly forked, but is only slightly so in the female. In the male the whole of the upper parts are bright, shining green, the wings and tail are dull; on the throat is the beautiful metallic ruby-red lustre that appropriately gives it the name. Behind the ruby throat it is whitish. The beautiful colors of the back and throat are absent in the more sombre female.

2. METHOD OF LOCOMOTION.

(a) Observations to be made by pupils.

What kind of motion has it while flying?

What is the position while visiting flowers?

Does it ever light on the flowers?

How is it able to remain in front of the flower?

What is the cause of the humming noise that can be heard?

Does it ever light on fences or twigs of trees?

(b) To the teacher.

The bird is a darter in the method of flight; it dashes from point to point like a flash of lightning. As it extends its long beak into a flower, it holds its body vertical, poising itself by its wings moving so rapidly that they appear like gauzy streaks. It never lights on the flower. Sometimes, as it flies, its wings move so rapidly that their vibration reaches almost the rate to produce a musical sound. This the cause of the humming, that has given it the name. Most people see it only on the wing, though it spends only a small part of the time flying. The careful observer will see it resting on the fences, and in the branches of the garden trees quite near the nest.



Lesson 14

The Hummingbird's Habits

1. FOOD AND ECONOMIC IMPORTANCE.

(a) Observations to be made by pupils.

What is the purpose of visiting flowers?

Examine carefully the interior of flowers it visits, for small insects.

What flowers does it prefer to visit in the garden?

Does it seem to prefer flowers of any particular color?

At what periods of the day does it visit flowers?

Does it ever run over foliage with its beak?

Does it catch insects in mid-air?

If you ever find a dead bird examine carefully its tongue.

Does it seem frightened of people when entering flowers?

(b) To the teacher.

An erroneous but very general opinion exists regarding the purpose of the ruby-throat in visiting flowers. It was considered that its chief or only food was nectar extracted from the flowers. In reality its chief purpose in visiting flowers is to extract the small insects which are down pilfering the nectar, and in sucking them in it also extracts a certain amount of nectar. The ruby-throat also picks the aphids and other small insects off the under-surface of the foliage and even is capable at times of catching insects in mid-air. It also can be seen sipping the sweet sap from the holes made in trees by the sap-sucker. Its favorite flowers are those that are brilliantly red, such as salvia and the trumpet vine. It also visits the flowers of the honeysuckle, clematis, larkspur, narcissus, roses, phlox, and horse chestnut. The tongue is a remarkable organ. Each side is rolled up and thus it is made into two tubes, the tips of which are frayed. This tongue can be protruded to a great length as in the woodpeckers, and by means of it, it sucks in its food. They are utterly fearless in visiting flowers and it is not an uncommon thing for them to enter flowers held in a person's hand.

From what has been stated it will be seen at once that they do absolutely no harm, but that they are very useful in destroying

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many noxious insects. They are also useful in a way not true of any other Canadian bird. They, in their visit from flower to flower, transfer pollen and thus bring about fertilization and a vigorous production of seed.

2. NESTING HABITS.

(a) Observations to be made by pupils.

During the autumn pupils should look in the trees, in gardens visited by hummingbirds, for their nests. It is quite possible that some would find a nest still building or, at least, occupied by the birds, and the following observations should be made.

Of what substances is the nest composed?

Where is it located and what is its relation to its support?

Why is it difficult to distinguish it from a knot on a branch?

At what date does it build the nest?

Describe the number, color and shape of eggs.

Do both sexes feed the young?

Is the same nest occupied more than a single season?

(b) To the teacher.

The nest of this bird is a marvel of neatness and inconspicuousness. It is composed of plant-down and is covered externally with lichens just like a moss-covered branch. The lichens are bound in place by almost invisible plantfibres and cobwebs. It is not built on a fork usually, but saddled on the upper surface of a horizontal limb. The construction takes place about the middle of June, and requires ten days for its completion. The two little white eggs, elliptical in shape, are frequently deposited before the nest is completed. The young are fed by both parents, and the disgusting process of feeding by regurgitation takes place. The parent thrusts the long beak deep down the throat of the nestling and then vomits the partially digested insects. Two broods are reared during a season. The same nest may be occupied for several years.

THE HUMMINGBIRD.

3. MIGRATION AND GENERAL HABITS.

(a) Observations to be made by pupils.

At what season do the hummingbirds arrive?

Notice which you see first, male or female.

At what season do they depart?

Do they ever go about in flocks?

Is it found in the woods or open country?

Have you ever seen evidence of its pugnacity?

(b) To the teacher.

They arrive about the middle of May when the flowers are well opened; the males appear a few days before the females. They remain until October and then start on their long flight to southern Florida or Central America. They prefer gardens and open places to the woods. No bird is more fearless of man or of other animals. They are most pugnacious, and will drive off birds many times their size. By putting brandy and sugar in the flowers which it visits, it is possible to intoxicate it and it can then be taken by the hand.

The hummingbirds are to be found only in the Western Hemisphere. There are more than 450 species of these minute birds, of which only the following five reach Canada, viz.—

Allen,
Black-chinned,
Calliope,
Ruby-throat,
Rufous.

(For full description of the above see
The New Canadian Bird Book.—Dominion
Book Co.)

NATURE STUDY LESSONS



THE SWALLOW

The lilacs are in blossom, the cherry trees are white,—
I hear a sound above me, a twitter of delight;
It is my friend, the swallow, as sure as I'm alive!
“Now pray, how did you get here, and when did you arrive?”

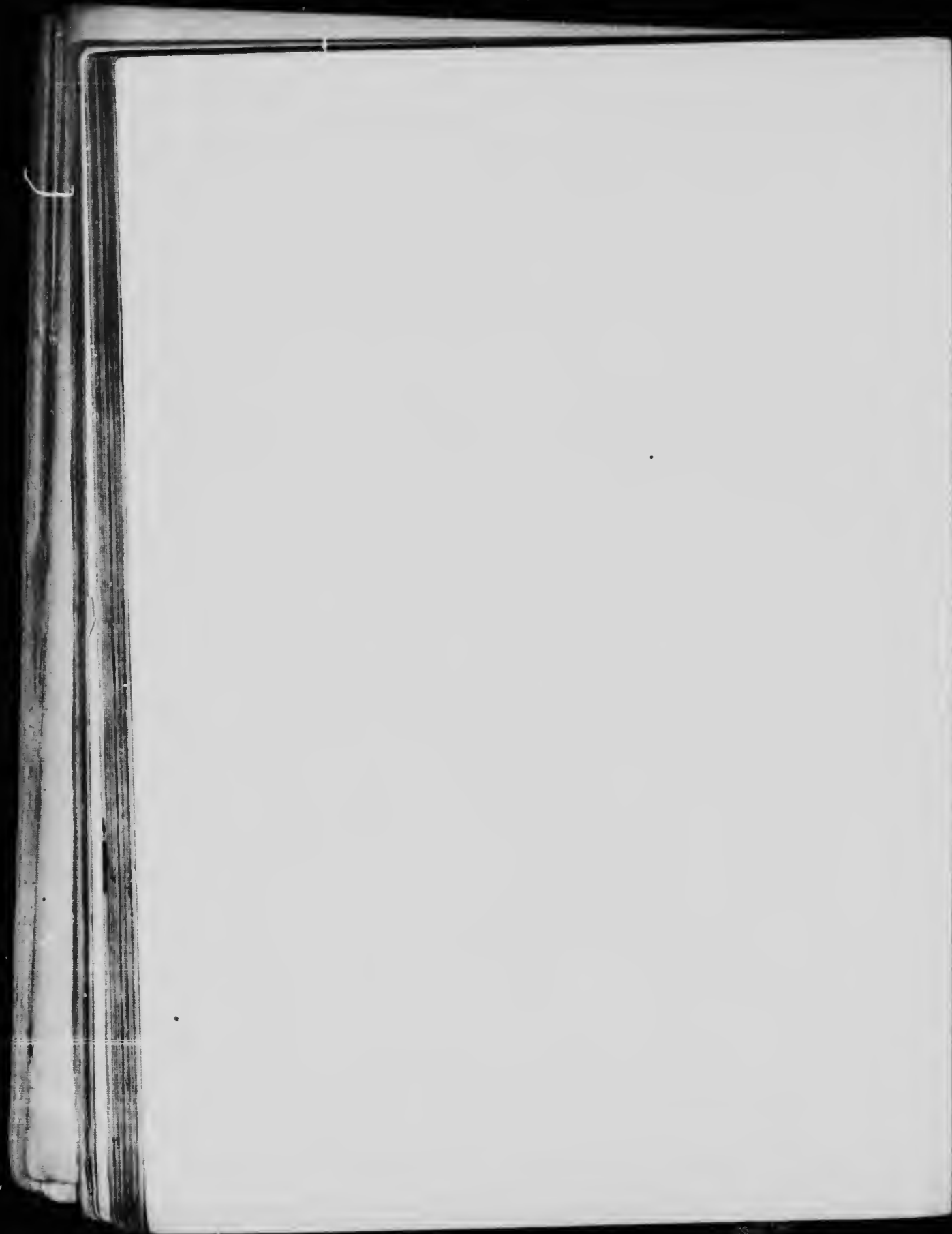
“I flew from the sunny south, two thousand miles and more,
And only this morning reached here, to rest above your door.”
“The South! How do you like it?” “I like its sunny skies;
And 'round the orange blossoms I caught the nicest flies,—

But when the Spring had opened, I wanted to come 'back.”
“You are just the same old swallow, your wings are just
as black!

We love to hear your twitter, and see your graceful flight,
Which seem to never tire you, from early morn till night.”

—Anon.





Lesson 15

THE SWALLOWS AND THEIR GRACEFUL FLIGHT

1. INTRODUCTION.

The swallows are easily distinguished at sight from any other birds. Their familiar manner of flight, sailing through the air in graceful circles quartering after insects, will mark them off for the most careless observer. The only bird that is likely to be confused with them is the chimney swift. A table is given below by which the different species may be readily distinguished. The features chosen in the table are so obvious and easily seen, even while the birds are flying, that no difficulty should be experienced in sorting out the swallow. In the spring, this table may be written on the blackboard or copied by the pupils into their field note-books.

Table to Distinguish the Swallows, Including the Chimney Swift.

- (a) Beneath with some conspicuous brown or chestnut.
 - (b) Whole back, right to the tail, steel blue—*Barn Swallow*.
 - (bb) Lower part of back distinctly brown or buff—*Cliff Swallow*.
- (aa) No chestnut or brown above or below.
 - (b) Pure white below—*Tree Swallow*.
 - (bb) White below with a gray band on the chest, dull above—*Bank Swallow*.
 - (bbb) Black or dark beneath.
 - (c) Shining blue black above—*Purple Martin*.
 - (cc) Dull fuscous above—*Chimney Swift*.

2. GENERAL APPEARANCE OF BANK SWALLOW.

- (a) Observations to be made by pupils.

What is the color of the upper surface?

What color is the under surface?

Is there a band across the breast?

What shape is the tail—forked, square or rounded?

What is the shape of the wings?

Notice the size of the beak and the width of the gape.

How does the bird compare in size with an English sparrow?

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(b) To the teacher.

Although we have chosen the most modestly dressed of all the swallows for the lesson, it makes up, in grace of form and movement, for what it lacks in metallic tinting. The upper parts are brownish gray, the under surface is white, but this whiteness lacks the purity of that of the tree swallow and has a dull band across the breast separating the white of the throat and chest. This bird is deceptive as to its size. It is really a smaller bird than the English sparrow, but its long pointed wings, projecting well beyond the end of the tail, give it an appearance much larger. The tail as in the other swallows is forked but much less so than in some of its relations. The male and female are much alike and the young closely resemble the adults. The beak is very short and weak but the gape of the mouth extends back quite to the eyes. The feet and legs are short and weak.

3. LOCOMOTION AND FOOD.

(a) Observations to be made by pupils.

- What are the characteristics of its flight?
- When it glides, does it move its wings?
- In gliding, can it go from a lower to a higher level?
- How long can it glide without moving the wings?
- What characteristics of the wing make it suitable for powerful flight?
- Can it stay long on the wing?
- Is its flight steady or flickering?
- Where does it go to rest?
- Notice the heights at which it flies in bright and in dull weather.
- Can you give a reason for these different heights?
- What does the swallow eat?
- Notice it skimming over a pool and try to see how it catches the flying insects.
- Does it ever touch the water as it skims its surface?
- Examine carefully the beak of a mounted specimen (if possible) and see how the beak is adapted to its manner of feeding.
- Did you ever see it eat vegetable food?
- Of what economic importance are the swallows?

SWALLOWS.

(b) To the teacher.

The flight of the swallows gives them an interest and a unique position in our landscapes. Nobody can resist the pleasure of watching a flock skimming in graceful gyrations over the surface of a still lake, when the air is humid and signs of rain are evident. With its long pointed wings extended, it glides placidly along, now careering forward like an arrow, now in a wide sweep to the right or left, again rising in the air as if defiant of the law of gravity; and all this with scarcely a motion of the wings. The swallow can go through all these motions without the aid of any wind. It remains on the wing for long periods and apparently without the slightest effort or fatigue. When its hunger is satiated or it needs a rest, it usually glides into its tunnel in the vertical side of the sand bank or gravel pit. We could understand a swallow practising these aerial evolutions from the pure sensation of the motions, but while we humans might interpret these graceful glidings aesthetically, the swallow is the strictest of utilitarians. That diminutive beak, almost too short to be seen, and with a weakness proportional to its size, seems too delicate to peck a seed or even to crush an insect. Examine more carefully and you will notice the angles of the mouth project backward well beyond the eyes. When that mouth is opened it forms an aperture so wide, that even the frog would have to distend its jaws to equal it. Such a funnel, gliding through the air, forms a trap that engulfs countless flying insects—mosquitoes, beetles and flying ants—most of them too small to be noticed by the fly-catchers, but none too small to give man and beast considerable annoyance. The number of these insects entrapped by the swallows is simply incalculable. Occasionally in skimming for the insects they may pick them from the water or from blades of grass but usually they catch the insect while in flight. When insects are scarce through prolonged periods of unfavorable weather some of the swallows are driven to eat berries, though their beaks seem quite unsuited to such a purpose.

Lesson 16.

A Cosmopolitan Bird With a Home in a Sandbank—
The Swallow

1. NESTING HABITS.

(a) Observations to be made by pupils.

Where does this bird build its nest?

Do they always nest in colonies?

What are the favorite nesting places?

What is the shape of the opening?

Notice the different sites and find what distance below
the surface excavation begins.

Does the boring go in horizontally?

Does it go in straight?

What is the size of the hole?

To what depth do they excavate their holes?

Try to find one beginning an excavation and see how it
works.

What is the chief tool it uses in excavation?

Of what is the nest made?

Describe the number and colors of the eggs.

(b) To the teacher.

These swallows only frequent districts where suitable nesting sites can be found. The favorite position is a vertical sand bank bordering a river or stream. With the advent of civilization they have begun to extensively occupy gravel pits. Almost every vertical sand bank in Canada looks as if it had been bombarded by small cannon balls. These holes, which the swallows have occupied for both nesting and a home, have been excavated by themselves. They run in almost horizontally but are slightly elevated towards the inner end of the burrow and are well protected from flooding by water soaking through the sand. These holes pass in, only a few feet below the surface and penetrate usually about two feet but may extend much further depending on the nature of the material. They usually go straight in but, where stones are met, they divert their course to the right or left. The opening is not round.

SWALLOWS.

but horizontally elliptical and the bore is just large enough to admit the bird, but every boy knows that it is too small to admit the hand. It seems marvellous that a bird, with such a weak beak and still weaker legs, can excavate the compacted sand and frequently at a rapid rate, as the burrows are dug out in a few days. In the spring it is not difficult to see them beginning to dig out their home. They cling to the vertical bank with their feet and remove the sand with their beaks. In doing so, they stand in any position with head either up or down. The nest is a very crude affair made of straw and feathers of gulls or ducks, which the bird has picked up on the shore. Four or five white eggs are deposited on this. The young are fed on insects of a larger type than the adult bird usually eats. They raise several broods during the year.

2. MIGRATION AND GENERAL HABITS.

(a) Observations to be made by pupils.

Observe the first appearance of the birds about the sand banks.

Do they come in flocks?

Do they appear to be paired when they arrive?

If opportunity offers, notice their appearance about their homes on a cold day.

At what dates do they disappear?

Find from some reference book where they spend the winter. (See the new *Canadian Bird Book*.)

Find if these birds are found in Europe and Asia?

Where do the old world species migrate for the winter?

What is the nature of their song?

(b) To the teacher.

The bank swallows arrive in flocks in May and begin hovering about the sand banks. They are already mated. They seldom arrive before spring has well set in, for they are pre-eminently a warm weather bird. The arrival of the swallows is the surest sign of spring. If a cold spell comes on after their arrival, it goes hard with the swallows. They pack themselves into their burrows and remain limp and almost lifeless until the warmth reappears. If it is long delayed many of them die of exposure. In the autumn,

NATURE STUDY LESSONS

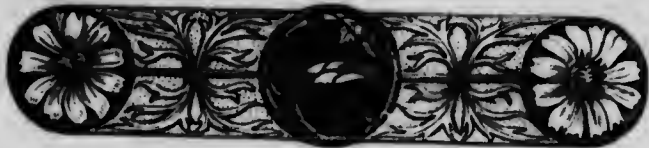
at the end of September, they leave in great flocks for the south and spend the winter under the warm skies of Central America and tropical Brazil and adjoining countries. The bank swallow has the widest range of any land bird.

The banks of Alaska are drilled with its holes, even Labrador is not too inhospitable to harbor it in the summer; the peasants of Ireland know it as the early swallow, and the river banks of China and Siberia form its nesting place. In the winter, the sunny skies of India and Africa as far south as the Transvaal are brightened by its graceful motions. Australia and New Zealand alone are left unvisited. Such a bird, with its remarkable nest and its beautiful motions, needs no song to endear it to us. Its song is not dissonant to the ear, though it cannot be dignified by the name of anything more than a "giggling twitter."

The swallows have representatives throughout the world, living entirely on insects; principally ants, beetles, weevils and flies; hence they are of inestimable value to the agriculturist, as the quantity of these pests consumed in a district can only be estimated in tons.

(For full description of Swallows, see The New Canadian Bird Book.—Dominion Book Co.)





Lesson 17

BIRDS' EGGS—THEIR SHAPE, SIZE AND NUMBER
SHAPE, SIZE AND NUMBER OF EGGS.

(a) Observations to be made by pupils.

What different shapes of eggs have you seen?

Notice how the eggs of one of the sandpipers are arranged in the nest.

Is there any difference in the shapes of eggs in a deep hollow nest and those in a shallow hollow?

Is there any relation between the number of eggs laid and the danger to which the eggs or young birds are exposed?

Is there any relation between the number and the size of the egg?

Is there any relation between the size of the egg and the state of development of the newly hatched young?

(b) To the teacher.

Eggs vary greatly in shape. Some are quite spherical, as those of some owls, parrots and woodpeckers—all birds that lay their eggs in cavities where there is no danger of them rolling out. Others lay the ordinary ovate egg. Many are pyriform, very large at one end and tapering off rapidly in a straight line to a small point. This shape is particularly common amongst those birds that lay their eggs on slight depressions in the ground, where they might be blown by the wind or pushed out of the nest by the bird's feet. An egg of such a form rolls around in a very small circle and is very unlikely to be rolled out of a nest. The gulls, terns, sandpipers, plovers and many sea-birds lay such eggs. A good many that lay such eggs have four to a clutch. These are invariably arranged with the small points toward the centre. These

NATURE STUDY LESSONS

eggs are relatively large, but, by being of this shape and arranged in such an order, can be placed into such a compact space, that the small bird can cover them more completely during brooding. The eggs of some birds are elliptical. The surface may be glossy, as in the woodpeckers, smooth as in the fowl, greasy as in the geese, or rough and chalky as in the grebes. The number of eggs amongst birds, as the young of most animals, bears a definite ratio to the dangers the young encounter. Many sea birds that nest on barren rocks far from all marauders lay only a single egg. The average number is about four; the hummingbird, whose nest is so perfectly protected by its diminutive size, but more so by its complete resemblance to a knot on a branch, only finds it necessary to lay two. The duck, whose nest is exposed on the surface of the ground and whose young, as soon as hatched, leave the nest and rove about amongst all the dangers of the woods and waters, lays more. The bob-white that builds no nest at all, but deposits its eggs in a slight hollow, is exposed in a marked degree to the egg stealers. As the eggs are white they are very conspicuous; the young leave the nest as soon as hatched, and as a result of all these dangers, this bird finds it necessary to lay twelve to fifteen eggs. The size of the egg has a certain relation to the condition of the young when born. A young hummingbird is blind, naked and quite helpless for several weeks. A young duck or chicken when born, is entirely covered with down. When the newly-born bird is able to move about, the egg is generally large, while the helpless young come from comparatively small eggs. If the eggs, as soon as laid, are taken from the nests of some birds, the female will continue to deposit them. By this method, flickers and kingfishers have been made to lay thirty or forty eggs in almost as many days. Birds of the same size, but of different species, often lay eggs of very different sizes. An Australian bird, the kiwi, about the same size as our fowl, lays an egg five inches long. Many other interesting facts about both eggs and nests might be taken in class.



NEST OF RED-TAILED HAWK.

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HAVE THE BEAUTIFUL COLORS OF BIRDS' EGGS A MEANING ?

1. COLOR OF BIRDS' EGGS.

(a) Observations to be made by pupils.

Let each pupil fill out as many as possible of the following observations during a complete spring and summer:

What birds lay pure white eggs?

How many of these eggs were laid in nests hidden in tunnels?

How many were laid in nests hidden in holes in trees?

How many were laid in arched nests?

How many were laid in open nests?

Were those in open nests conspicuous?

Among the white eggs that were conspicuous, in which ones were the parents quite able to defend the eggs against marauders?

How are hummingbirds' white eggs protected?

Were there any white eggs which the sun shone directly upon?

Which of the white eggs have a polish on them?

Are such eggs usually contained in a dark nest?

What purpose would the polish serve to the parents?

Upon what bird's eggs does the sun beat down?

Are they always deeply pigmented?

Which ones laid plainly in sight are difficult to see?

Why are they difficult to see?

(b) To the teacher.

The great variety in color and pattern and surface of birds' eggs is very difficult to interpret and much has still to be accomplished. The eggs of turtles, snakes and lizards are usually white, and we are probably justified in stating that the original color of the earliest birds' eggs was of the same color; but time has brought about the various changes in color in relation to the varied habits of the different birds. A great many birds have retained the orig-

NATURE STUDY LESSONS

inal color—white. The most of these deposit their eggs in hidden nests where it is quite dark and any color would be a useless ornament, as it could never be seen. To such a class belong the swallows and kingfisher, who burrow in the ground; the woodpeckers who build their nest in the hollow of a tree, and many of the owls which have darkened nests. The white color is here useful, particularly when the surface has a polish, as in the case of the woodpeckers and kingfisher. In the dimness of the hole the eggs can be faintly seen and the parents are prevented from tramping them down, or pushing them out of range. Some exposed eggs are quite white. Now a white egg shining out among the darker colored surroundings would appear to be a signal for egg stealers, and thus be a detriment to the bird. But in almost every case there is some compensating factor that negates the injury. While the duck lays a large number of white eggs in a shallow hollow and often in surroundings that make a contrast, she always draws the inconspicuous down over their surface before leaving the nest. The hummingbirds' eggs are white and in an open nest, but they are very small and the nest is deep. Moreover, the nest itself is such a perfect assimilation with its surroundings that the egg thief has great difficulty in detecting it. While geese and swans lay white eggs they are quite capable of defending them against enemies of all kinds. It has often been noted that white eggs are never laid where they are exposed to the direct rays of the sun. Almost all eggs laid under these conditions are deeply pigmented. Many of the gulls, terns and other water birds lay eggs on bare rocks; the sandpipers lay them amongst the shingle on the shore; the night hawk often lays them amongst the pebbles on a tar roof. Now the sunlight penetrating an egg might be very injurious to the embryo within and a pigmented screen may protect the germ against death. Invariably such eggs laid in the open are so colored as to be almost impossible to detect amongst their surroundings. I have stood amongst the nests of gulls and terns on rocky islands where there were dozens of eggs within a few feet of me and yet it was almost impossible to find any of them.



Lesson 19

THE MYSTERIES OF A HEN'S EGG

1. INTRODUCTION.

The nests of birds are so striking, so varied in form, so remarkable in construction and show such ingenuity on the part of the little builders, and it might be added that they are so accessible, that every teacher of nature study should know something of their mysteries and instil into the pupils a spirit of investigation leading to a knowledge of these remarkable homes made with no tool but a pointed beak. The eggs are not less remarkable and have always attracted youth. They have always been a source of interest to the collector, and that is not to be wondered at. The forms are so perfect, the variety in coloring is so great and the markings are so delicate and so beautiful that their discovery begets a sense of joy. They are just difficult enough to be found, to give interest to the hunt and enthusiasm at the discovery. The teacher

NATURE STUDY LESSONS

must endeavor to make the pupils more than mere vulgar hunters of curiosities, he must endeavor to lead the pupil to see, that in all this mad prodigality of nature in form and color, there is a sane economy, in that, these structures are related closely to the welfare of the bird itself.

2. STUDY OF A HEN'S EGG.

(a) Observations to be made by pupils.

(Note.—This work can be done in the class. Each pupil should bring a fresh egg and a hard boiled one.)

What is the surface of the shell like?

With a lens examine the surface for little pores or openings. What is the use of these pores?

An egg, if it freezes, often appears as if liquid had been forced out through the shell, though no crack may be present. Try this. Explain it.

Weigh half a dozen eggs accurately. After letting them stand in a fairly warm place for a few days weigh again. What part has the pores played in this change in weight?

Why do some dip eggs in wax or lard or water glass to preserve them?

What are the colors of the different hens' eggs in the class room?

Have pupils investigate which breeds lay the white eggs and which the brown ones.

Put some egg shell in vinegar and put some limestone in it and see if they are acted on in the same manner by the liquid.

Of what substance is the shell made?

Which would fit more compactly in a nest, ovate eggs or oval ones? What is the shape of the egg?

Roll it on a hollowed surface the shape of its nest and decide how its shape would tend to keep it from rolling out of the nest.

How many times as heavy is the hen as the egg?

Break the raw egg into a transparent vessel of water and examine its structure—the white, the yolk, and observe on the top of the yolk the germ spot.

How would the chick in the egg get air to breathe?

HENS' EGGS

Is the air space of different sizes in the different eggs?
Is there a membrane lining the shell? Is it in contact with the shell at all points? At which end is the air space? How could the age of an egg be told?
How does the experiment, in which the eggs were weighed, help you to interpret the different sizes of the air spaces?

(b) To the teacher.

The surface of the hen's egg is usually smooth and the white ones often have a gentle polish. Painters have one finish, with the slightest touch of polish, called an egg-shell finish. When the shell is placed under the magnifying glass it can be seen at once that the whole surface is perforated with openings as numerous as the sweat pores on the surface of the human hand. Through these the contents of the egg are continually evaporating and it is thus continually diminishing in weight. As the liquid contents go out, the air pushes in and makes the air-space at the large end of the egg increase in size. There is no air-space in a strictly new-laid egg, in contradistinction to a shop new-laid egg in which the air space is frequently well developed. The age of an egg can be determined to a certain extent by the size of this air space, although any factors that hasten evaporation will cause the space to develop more rapidly. The covering of the egg by wax, lard or water glass prevents evaporation by filling the pores. The shell of the egg is largely carbonate of lime and is made of the same material as limestone, marble, chalk or oyster shells. When put in vinegar, or any other acid, the liquid bubbles up violently—carbon dioxide escaping. The color of hens' eggs vary from brown to pure white. The large breeds, such as Rocks, Wyandottes, etc., lay the brown eggs, while the smaller and more active breeds lay pure white ones. The hens' eggs vary considerably in shape, but are almost always ovate. They have one end larger than the other. Such shaped eggs can be arranged more compactly in the nest. If one is put on a flat surface and pushed forward, it does not roll across the surface as would a globular or elliptical body, but rolls around in a small circle; the greater the disproportion in size of the two ends, the smaller the circle. This quality prevents it from being rolled out of the very shallow nest which a hen naturally constructs.



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



1.5

1.6

1.8

2.0

2.2

2.5

2.8

3.2

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11.2

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18

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22.5

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36

40



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NATURE STUDY LESSONS



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

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

—*Lucy Larcom.*

VISITORS FROM THE NORTH—THE GROSBEAKS

1. INTRODUCTION.

The grosbecks are a very interesting group of birds, all showing bright colors and conspicuous on the landscape, wherever seen. Two of them visit us in the winter, one in summer and the other remains permanently, though he scarcely has the right to be called a Canadian citizen, as he has only recently settled in a small part of southern Ontario. They are all of about the same size and have a short, stout beak, the latter characteristic giving them their name. They are a little smaller than the robin. It is not necessary to give a table by which they might be distinguished, as no difficulty will be experienced.

2. THE PINE GROSBEAK.

(a) **Observations to be made by pupils.**

The teacher should wait until they appear in the winter and then direct the pupils to make their observations.

Compare it, as to size, with the robin.

What is the general color of the bird?

What color is conspicuous on it?

On what part is this color brightest?

What color is the band on the wing?

Are all in a flock of the same color?

What takes the place of the red in the female?

Are they always found in flocks?

How many are found in a flock?

Do they come to the ground?

Notice in what trees they are to be found.

What kinds of food do they eat?

What seems to be their favorite fare?

Look under the trees of the mountain ash and decide whether they eat the flesh or the pips of the fruit.

Do they produce any sound while in the trees?

What is the nature of their song while on the wing?

Make a record of all the dates on which you observe these birds during the winter.

What actions of these birds indicate they come from uninhabited parts?

NATURE STUDY LESSONS

From some reference book find where they spend the summer. (See *The New Canadian Bird Book*, by W. T. MacClement, M.A., D.Sc.)

(b) To the teacher.

The pine grosbeak appears irregularly in flocks throughout southern Canada during the winter. These birds make quite an addition to our winter residents as their bright colors and utter fearlessness make them objects of interest to all. The ground color of the body is slate gray but it is washed with rose-red, and this wash is quite bright on the crown, rump and breast. There is also a conspicuous white band across the wings. This is the male I have been describing. The female has none of the rose-red but this color is replaced by olive yellow. These birds seem to be attracted to southern Canada chiefly by the mountain-ash berries. The flocks of grosbeaks strip the trees completely of these berries. They seem to eat mainly the hard, central pips as the flesh is largely deposited on the snow beneath the trees. They also devour the fruit of the sumach, the seeds of the ash, frozen apples and beech nuts. It makes a peculiar gentle sound while at rest, but, on the wing, it has a loud whistle. As we see it in the winter it is quite fearless, allowing a person to approach within a few feet. This is probably a result of its summer home being uninhabited districts, and of it never having learned the fear of man. The pine grosbeak is a winter visitor which only remains in a district for a few days or weeks until the food supply is exhausted, when it moves forward to other regions. Its summer home extends right across the northern part of Canada and Eurasia.

3. THE EVENING GROSBEAK.

Some mention might be made of this bird. It is a resident of the far west and ordinarily does not migrate beyond Lake Superior. Quite erratically it comes, during the winter, in flocks of considerable size and spreads over the eastern part of Canada and the northern United States. These are now frequently seen during the winter and are considered real curiosities. The grace and beauty of color certainly make them attractive features on the landscape. The crown, tail and wings are black, while the under surface and sides are yellow. There is a white patch on the wings as in the pine grosbeaks.

Lesson 21.

THE ROSE-BREADED GROSBEAK

1. THE ROSE-BREADED GROSBEAK.

(a) Observations to be made by pupils.

What are the two prevailing colors of this bird?

Notice the color of the head and upper parts.

What is the exact color, position and shape of the brilliant patch on the breast?

Are there white patches on the wing, as in the pine and evening grosbeaks?

Describe accurately the shape of the beak.

What is the color of the beak?

What is the length of the bird? (The robin is ten inches long.)

Notice the number and position of the toes.

Describe the colors of the female.

Try to hear and become familiar with the song of this bird.

If there are a pair in your neighborhood, after becoming familiar with the song, listen for it at light.

If you can find a nest, listen for the bird's song while it is on the nest.

If the bird can be seen while singing, observe if its wings are in motion.

Observe if it goes to the ground for food?

Does it visit the potato patch?

What does it eat there?

Of what material is the nest constructed?

Where is it located?

At about what height above the ground is it found?

Is there much skill in the structure?

Do both birds assist in brooding?

At what date did they first appear?

When do they leave southern Canada?

Where does it spend the winter? (Consult a good reference book.)*

*Note.—See The New Canadian Bird Book.

NATURE STUDY LESSONS

(b) To the teacher.

This elegant bird should be familiar to all the pupils of the schools. It is elegant not only in its appearance but also in its action and song. The male has the hind and upper parts glossy black. The breast has a most beautiful rose carmine shield-shaped patch. This shield is bordered by pure white. There are two white patches on each wing. The female is a plain bird with much the appearance of a sparrow. The male, in the autumn, takes on his winter colors which are quite different from those of the summer. His rose breast is largely effaced and the brown stripes of the female appear in his coat. This bird has the regular, very short, stout beak of his class. It is yellow in color. He is about 8 inches in length.

The song of the bird is most charming; with vibrating wings he fills the air with a deliciously sweet, clear, mellow carol. He is so filled with his song that he keeps it up well into the night and even while away the monotony of brooding with his sweet rolling warble. The female is almost speechless.

This bird is a favorite with the farmer. Many a patch has been cleared of the Colorado potato beetle by this valuable insect-eater. It also devours flies, wasps and grubs. It is not a skilled architect. The nest, made of coarse stems of weeds, is a crude, unlovely affair. It lodges in the thorn bush or a small tree not far from the ground. The male is a model husband and takes a large part in the brooding, his beautiful rose breast just showing above the circle of the nest. This grosbeak arrives in Canada in May and leaves early in September for the West Indies and Middle America where it spends the winter.

2. ITS COUSIN—THE CARDINAL BIRD.

A word might be added about this grosbeak. It has recently settled down in Ontario as a resident. A few have been seen from time to time in the western peninsula; on Pelee Island and Point Pelee they have become very common. They are certainly a valuable acquisition. The whole body is a beautiful bright cardinal; even the beak is red. The female has the red of a more sombre shade than the male. These birds are very attractive and are favorite cage birds.

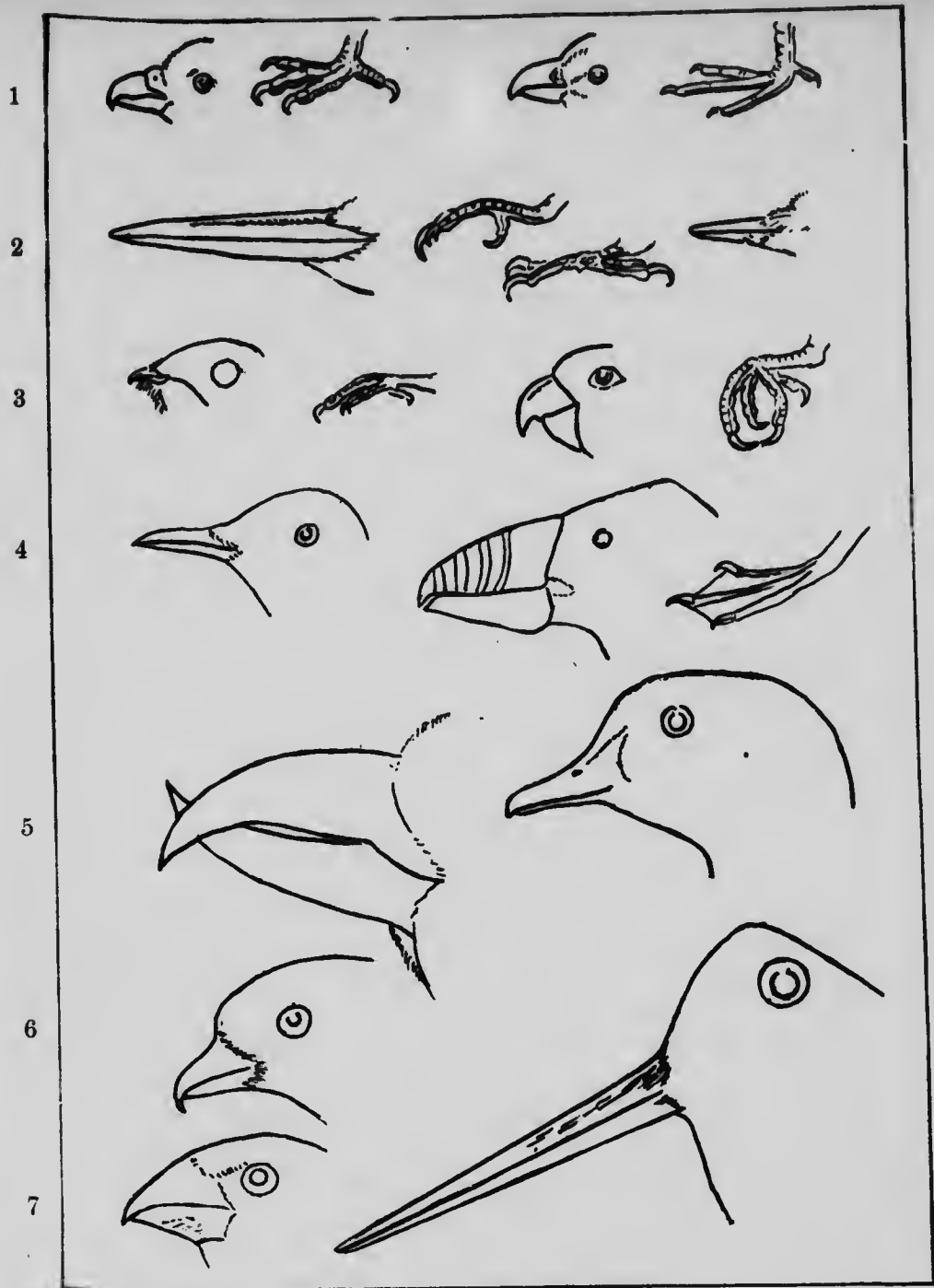
GROSBEAKS

3. OTHER RELATIVES.

The grosbeaks belong to the finch family, which includes a great number of small birds to be found in Canada. All our sparrows, the goldfinch, the purplefinch and the siskin, that form such a large part of our bird fauna during the summer, are closely related to their stout-billed kinsmen, the grosbeaks. These birds have many features in common, but vary much in habits and in colors; they pass through all shades from the most brilliant red or yellow to the dullest sparrowy brown and ashy. Some of them should be studied according to the plan of the two previous lessons.

THE SPARROW

One syllable, clear and soft
As a raindrop's silvery patter,
Or a tinkling fairy bell heard aloft,
In the midst of the merry chatter
Of robin, and linnet, and wren, and jay,
One syllable oft repeated:
He has but a single word to say,
And of that he will not be cheated."



BEAKS AND CLAWS

From left to right:—1st. row,—bill and foot of Birds of Prey; bill and foot of Scratchers. 2nd. row,—bill of kingfisher; cuckoo's foot; woodpecker's foot and bill. 3rd. row,—whip-poor-will's bill and foot; parrot's bill and foot. 4th. row,—gull's bill; puffin's bill and foot. 5th. row,—crossbill's beak; wood duck's head. 6th. row,—shrike's head; woodcock's head. 7th. row,—grosbeak's bill.

Lesson 22.

THE BIRD'S MOST USEFUL TOOL

1. INTRODUCTION.

The beak of a bird serves so many uses that it is an excellent indication of the character and habits of the bird itself. No organ offers so many variations for study. The interpretation of these modifications in relation to the food of the possessor is a fascinating topic for nature study work. The only certain basis for such work is the actual observation of the beaks of the birds by the pupils and a careful study of the uses to which they are put.

2. THE STRUCTURE AND USE OF THE BEAK.

(a) Observations to be made by pupils.

What is the consistence of the covering of the beak of a bird?

Is any part of it soft?

What kind of material is below this outer covering?

Does the covering of the beak grow like a finger-nail?

What aperture is situated above at the base of the beak?

What are the organs corresponding to a person's arms, used for in the bird?

What organ in the bird performs the function of the human hand?

Observe all the uses to which a bird puts its beak. (Study the common wild and domestic birds to answer this).

Do the beaks of different birds differ in color?

(b) To the teacher.

Imagine a person with both arms cut off, or developed into wings, and that all the work formerly performed by the hands and arms was to be transferred to the mouth: then one will realize in what a helpless condition such an individual would be placed. Yet such is exactly the condition of the bird. Its front limbs are modified for flying, and are generally useless for any of the purposes for which an animal usually utilizes the anterior extremities. The beak serves not merely the purpose of a mouth for eating food, but is also engaged in seizing, tearing and sometimes grinding it also. If the bird is carnivorous, it is frequently used also to

NATURE STUDY LESSONS

despatch its victim. But this is only a part of the function of this important organ. Many birds have to defend themselves against fierce and persistent enemies, and the active defence is exercised largely through the beak. When we think of the immense complexity of feathers and how easy they are displaced and ruffled, we marvel at the perfect order in which they are kept by all birds. While a few birds have a comb on the foot, the great majority depend largely on the beak for combing out the plumage, and a very interesting sight it is to see the feather dressing operations of a duck or hen. Many persons oil their hair, but never with half the success of a bird performing this operation on its feathers. It carries its own oil in a little gland in the tail and the oil is extracted from this and distributed uniformly over the feathers, and all by the beak. The nests of birds present the greatest variety both of form, material and position. These are almost entirely formed and the building material gathered by the beak. Whether the material is grass, sticks, cobwebs or mud, they are all carried in the mouth; it may be the nest is excavated in the trunk of a tree, or the side of a bank of earth, and in each case the chief organ of excavation is the beak. The cuckoo lays its eggs on the ground, and carries them in its beak to be deposited in other birds' nests. The surface of a bird's beak is made of horn, but below this is a bony arch. The horn grows like the finger nails but is kept worn down by being well used.



ROSSBILLS

Have a seemingly deformed beak which serves them well in obtaining food from pine cones.

Lesson 23.

THE VARIED FORMS OF BEAKS

I. THE FORM AND USE OF THE BEAK IN DIFFERENT BIRDS.

(a) Observations to be made by pupils.

1. HEN'S BEAK.

Is the hen's beak strong or weak?

What is its shape?

Make a drawing of it.

What are the chief uses this bird makes of its beak?

Is it well adapted to such uses?

2. THE DUCK.

How does the shape of the duck's beak differ from that of the hen?

Examine the inner surface of the beak of the duck.

What is the purpose of the opposed lamellae of the upper and lower mandible?

For what kind of food is it suitable?

Can the duck pick up grains as dexterously as the hen?

Watch a duck feeding in a pond and learn the use of the lamellae.

What other use does a duck make of its beak besides getting food?

Make a drawing of the beak from above and from the side.

3. THE SPARROWS.

Is the beak of the sparrow short or long?

Is it strong or weak?

What kind of food is such a beak suitable for procuring?

The canary is a finch related to the sparrows. Study how it uses its beak on seeds.

Why is it necessary to give it hard substances to pick at?

4. THE C. ICKADEE AND BROWN CREEPER.

How do their beaks differ from that of the sparrow?

Are they longer or shorter?

Are they stouter or more slender?

NATURE STUDY LESSONS

How do they compare in strength?
Are they suitable for breaking hard-shelled seeds?
How are they suitable for procuring food?
For what other purpose are they used?
Make a drawing of the beak from the side.

(b) To the teacher.

1. THE HEN.

It has a stout, strong beak which comes to a coarse point. Such a beak is well adapted for picking up grain and insects and to a certain extent for digging after them; but it uses its feet with coarse claws chiefly for that purpose. The fowl uses its beak in defence, and every small boy who has molested a setting hen knows what an effective blow it can deliver. The hen can also turn its eggs over with its beak.

2. THE DUCK.

Nothing could be more different than the beaks of the hen and the duck. The latter is very broad and blunt pointed, quite unsuited to pick up a grain. It is more like a big trap for engulfing large quantities of material. If it is opened, raised, transverse ridges bounding the whole inner margin both above and below are observed, and when the beak is closed, the lamellae of one mandible fit the spaces in the other. It is really a strainer. The bird takes a mouthful of water and sediment from the bottom of the pool and the liquid part is strained off between the ridges, while the worms, crustaceans, etc., are retained and swallowed. This is its natural way of feeding, although domestication has led it often to various kinds of food. It is strange how nature prepares the same arrangements in widely different animals. The whalebone taken from the mouths of whales is made of ridges arranged in the jaws quite similarly to the lamellae of the duck, and used for quite similar purposes.

3. THE SPARROWS.

The sparrows and some related birds are called the finches. They are all characterized by having a comparatively short, heavy beak. They are all seed eaters and such beaks are well suited to such a kind of food. It is only necessary to watch a tame canary—

BEAKS

which is a hush—shell the seeds fed to it, to understand the adaptation of such a beak. Some of the seeds eaten have stout husks which require a strength of beak well developed in these birds. The grosbeaks have these beaks still more strongly developed, until their bluntness detracts considerably from the bird's appearance.

4. THE CHICKADEE AND BROWN CREEPER.

This is the first purely insectivorous bird we have considered. To seize an insect does not require great strength in the beak, and insect eaters usually have this organ rather long and thin, terminating in a sharp point. These two birds pick the insects off the bark and leaves and also out of cracks and crevices. The long pointed beaks perform this function with neatness and celerity.



Duck and Grebe.

Lesson 24.

MORE BEAKS

(a) Observations to be made by pupils.

1. NIGHT HAWK, CHIMNEY SWIFT AND SWALLOW.

The beaks of these birds can scarcely be studied from the living specimen, as it is almost impossible to get close enough to see the part well, and these birds are almost continually on the wing. To answer some of the questions, a dead or mounted specimen will be necessary.

How does the size of the beaks of these birds compare with those of the sparrow or robin?

How far back does the angle extend?

If you can procure a dead specimen, open the mouth to see the size of the gape.

How do these birds procure their food?

How is the beak suitable for such a method of obtaining food?

Make a drawing of the beak from above and from the side, with the mandibles well separated.

2. THE KINGFISHER.

Estimate the number of times the body is as long as the beak.

How does this compare in length relatively with the length of the beak in other birds?

What is the general shape of the beak?

Is it strong or weak?

Watch the bird along the bank of a stream and see how he procures his food?

Is his beak suited to such a method of procuring food?

Name other birds that get food in a similar manner and compare their beaks with that of the kingfisher.

Make a drawing of the beak from the side.

BEAKS

3. THE SPOTTED SANDPIPER.

This bird is very common along the Atlantic coast and along all inland streams.

Study what places it frequents.

Examine the moist soil where it has been feeding and study the marks made in the soil as to depth and shape.

What kind of food would it find in such places?

What shape is the beak?

Is it weak or strong?

If a dead bird or a mounted specimen can be procured examine the tip of the beak for signs of sense organs.

Make a drawing of the beak from the side.

4. THE HAWK AND OWL.

Describe the shape of the beaks in these birds.

Are they short or long?

What characters give them strength?

What structures make them suitable for tearing flesh or killing victims?

(b) To the teacher.

1. NIGHT HAWK, CHIMNEY SWIFT AND SWALLOW.

The relation of the beak of the bank swallow is considered in discussing that topic. All these birds have exceedingly short, weak beaks. While very short, the angle extends backward so far, that, when the mouth is fully extended, it forms a funnel of relatively great size, and as they sweep through the air it engulfs the flying insects as in a net.

2. THE KINGFISHER.

The beak of this bird is typical of a large class which might be called fishers. It has a long, stout, sharp-pointed bill which it uses to seize its prey alive. The kingfisher sits on a perch above the water, with a keen eye scanning its depth; at the right moment it darts into the water and emerges with a fish between the mandibles; it returns to its perch and after hitting the fish against the perch swallows it whole. This beak is adapted for seizing and

NATURE STUDY LESSONS.

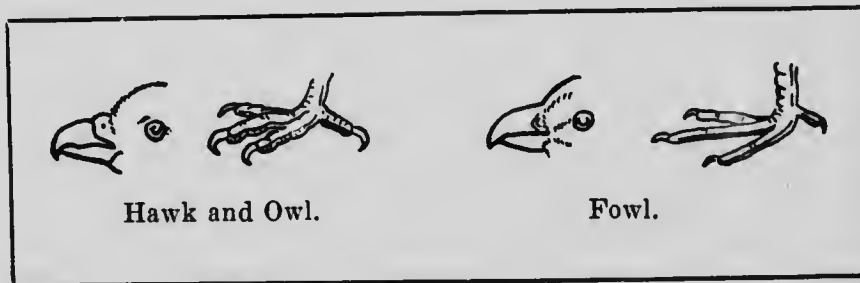
not for tearing its victim to pieces. The tern, the great blue heron and the bitterns have similarly shaped beaks, which they use in a like manner.

3. THE SPOTTED SANDPIPER.

This is the most commonly seen of that class usually called the shore birds, which includes the sandpipers, plovers, killdeer, snipe and woodcock. All have beaks of similar construction. These are very long, thin and weak. They usually do not taper off much from the base to the tip. If a mud flat or a moist shore is examined, where they have been feeding, the holes where they have been prodding are plainly marked. The tips of the beak are somewhat soft and sensitive in some of the species. All feed on small crustacea, larvae, worms, etc., that live in the soft mud near the shore of the river, stream, lake or ocean.

4. THE HAWK AND OWL.

These are birds of prey that seize their victims alive; catching them either in the talons or in the beak. The beak is frequently used for dealing a deadly blow and for rending the victim. Such a weapon requires great strength and a strong grip. The short, stout beak gives the requisite strength while the sharp hook of the upper mandible directed downward can deal a deadly blow and can tear apart the flesh of the victim.





Lesson 25.

THE HORNED LARK



1. METHOD.

The pupils should be asked to begin their observations on the species during the winter. At this season there are few species of birds to be seen and this one is easily found on the country roads and fields with the sparrows. The observations should be given out, a few at a time, and discussed occasionally. Let the observations on the color, structure, feeding-habits be given in January, and then by March those on the nesting-habits and song; those on general habits and economic importance being introduced last, when they have had sufficient opportunity to form an intelligent opinion regarding these matters.

2. COLORS AND STRUCTURES.

(a) Observations to be made by pupils.

- What is the general color as seen from the back?
- Notice particularly the coloring about the head.
- What streaks or patches of black are there?
- What is the color of the throat?
- What is the color of the tail?
- Notice any white on the tail when it flies.
- Observing its head, find why it is called the horned lark.
- Are there any differences in coloration by which you could distinguish the male and female?
- How can these be distinguished from the common sparrows with which they mingle on the road?
- Examine their feet through an opera glass as to position and number of toes and as to the length of the claws.

NATURE STUDY LESSONS.

(b) To the teacher.

The facts asked for above as to color are described in the New Canadian Bird Book. As the bird flies the outer tail feathers show white, the black feathers projecting from the back of the head can be erected and look like diminutive horns and from this it gets the name. The following characteristics in color distinguish it from the sparrow; (1) the pinkish tinge on the back; (2) the black patch below the eye; (3) the white in the outer tail feathers during flight and the yellow on the throat. Its foot has three toes in front and one behind, the latter having a very long claw which is almost straight. The female has none of the colors as pronounced as has the male.

3. LOCOMOTION.

(a) Observations to be made by pupils.

Is its course of flight straight or wavy?

Does it ever run?

Does it hop?

Examine the shape of the tracks in the snow left by its feet in running. Make a drawing of them.

When pursued on the road how does it usually act?

Where does it usually light?

When found in the fields in spring how do they protect themselves when followed by a person?

(b) To the teacher.

Unlike some of the sparrows and the woodpeckers, the horned lark flies steadily with no sign of waviness. It is characteristically a ground bird, and it is very seldom indeed that it will ever be seen to light on a fence, a tree, or even on a shrub. It usually endeavors to escape from an intruder by running away rapidly. Its motion on the ground is very quick and it never hops like the robin or sparrow, but always runs. The tracks in the snow where one has been moving are quite interesting and can easily be found after a light snow. The little prints of the toes are in evidence and every foot mark is connected with the preceding by a furrow ploughed out in the snow by the elongated spurs on the hind foot.

HORNED LARK

When pursued on the road it runs along ahead of the pursuer for a considerable distance, then takes to wing and wheels around back to where it was originally feeding. If molested in the bare fields in the spring, it frequently crouches among the stubble where its brown back assimilates perfectly with the general surroundings, and it will allow an intruder frequently to approach within a few feet before it takes to flight.

4. FEEDING HABITS.

(a) Observations to be made by pupils.

Notice carefully where it is found during the winter.

Is there any kind of food there for it to get?

What does it seem to eat in the fields in winter?

What does it get on the roads?

Study in June if it seizes insects on the wing.

Does it ever eat the grain sown by the farmer?

What injurious insects does it attack in the fields in summer?

(b) To the teacher.

There is not much doubt as to the economic value of this bird. In the fields during the winter when everything is deep below the snow, it finds its food on the seeds attached to the sturdy stems of weeds projecting above the snow, particularly the coarse grasses, the ragweed and smartweed. It also, at this season, resorts much to the road side to pick up any seeds that drop from the farmer's wagon, and particularly to feast on the undigested oat grains from the horse droppings. In the spring it finds abundant seeds on the bare fields, and prefers those of coarse grasses, the birdweeds, the ragweed, and the smartweed, some of the most troublesome of the farmers' enemies, and thus proves itself a friend indeed. The occasional visits during this season to the newly-sown fields for some grain is a very meagre payment for the vast quantity of weed seeds it consumes. In June, and later, it is the farmers' friend once more, as it is now pursuing insects on the wing, and fattening on the grass-hoppers and locusts of the field.



THE HORNED LARK

(Copy the drawing, and color it.)



HORNED LARK.
Life-size.

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Lesson 26.
THE NEST
AND SONG OF THE
HORNED LARK



1. ITS SONG.

(a) Observations to be made by pupils.

Does it make any calls while feeding on the road or in the fields?

As it takes to flight does it make a call?

Watch it during the feeding season in March and April and hear the male sing on the ground.

Does he ever rise in the air like the English lark?

Read Shelley's Skylark and see if it describes the habits of this bird.

(b) To the teacher.

The horned lark while he feeds is perfectly silent, but as soon as he takes to flight makes a faint call, and this will always distinguish him from the sparrows on the road beside him. The male also has a song, which he warbles during his mating season. This song is not quite mellow but is an indescribable warble. He usually perches on a clod in the field or on an elevated knoll when he sings. He also has the same habit as the European lark. He rises straight up until almost out of sight, when he circles around singing a song which is sweet and varied, but lacks the power of his European cousin. This method of singing in the air is to be observed more frequently on the prairies, his original home, than in Ontario and the eastern provinces.

NATURE STUDY LESSONS.

2. NESTING HABITS.

(a) Observations to be made by pupils.

The observations must be begun in spring as soon as the snow is off the ground.

Where does it build its nest?

If you can find several nests notice what direction the land slopes.

Why is the nest difficult to find?

How does the bird act when a person comes near the nest?

Of what substances are the nests composed?

How many eggs are laid?

Can you get any evidence that they rear two broods in a season?

(b) To the teacher.

The horned lark begins building its nest early in March, while there are still patches of snow on the ground. It always selects bare, open fields, and either scratches a depression in the ground or chooses a sunken cow track, in which it builds its nest of grass, nicely rounded and lined with softer material, either the hairy coating of mullein leaves, thistle down, or, if near the railroad, it may choose cotton waste; occasionally there may be feathers in the lining. It is built usually on a knoll and on the eastern side of this. It thus gets the bright sun in the morning when it is coldest and is protected from the cold north-west winds. The top of the nest is level with the surface of the ground and the opening is contracted so that it is most difficult to find. Three to five eggs are laid, most usually four. The ground color is drab gray, profusely spotted and sprinkled with brown. Incubation lasts about fourteen days. They usually hatch a second brood; the male watches the first brood as they roam about, while the female incubates the second clutch of eggs.

3. MIGRATION AND OTHER HABITS.

(a) Observations to be made by pupils.

In autumn watch for the first appearance of the birds. Keep a close record of observations throughout the winter.

HORNED LARK

Observe if the autumn and winter birds are the same size as those seen from April to October.

Which have the brighter colors?

Is there any yellow on the throat of the summer bird?

Are they always in flocks?

What are the favorite haunts of these birds?

(b) To the teacher.

There are really two varieties of the horned lark that visit southern Canada. The autumn and winter bird is the typical horned lark. It migrates to southern Canada as early as October, and returns to the far north in March and April. There it nests. Our summer resident is the prairie horned lark. It is slightly smaller than the other and the whole coloring is duller, the yellow on the throat being replaced by white. It, alone, breeds in southern Canada. It arrives north in flocks early in March, the males preceding the females. By the end of March they are mated and nesting soon begins. This is the only period at which they are not found together in considerable numbers. These segregated birds frequent the dry, barren fields in preference to those that are cultivated. This bird was originally confined to the west, particularly the prairies, but it has gradually changed its habits and spread to the east, until it now quite commonly nests throughout Ontario and Quebec. It is a bird of passage in Nova Scotia.



THE CHICKADEE

“Were it not for me,”
Said the Chickadee,
“Not a single flower on earth would be;
For under the ground they silently sleep,
And never venture an upward peep,
Till they hear from me,
Chick-a-dee-dee!”

“I tell Jack Frost when 'tis time to go
And carry away the ice and snow;
And then I hint to the jolly old sun,
'A little spring work, sir, should be done.'
And he smiles around
On the frozen ground,
And I keep up my cheery, cheery sound,
Till echo declares in glee, in glee;
' 'Tis he! 'tis he!
The Chickadee-dee!”

“And I awakened the birds of Spring—
'Ho, ho! 'tis time to be on the wing.'
They trill and twitter and soar aloft,
And I send the winds to whisper soft,
Down by the little flower beds,
Saying, 'Come, show your pretty heads!
The Spring is coming, you see, you see!
For so sings he,
The Chickadee-dee'!”

—Sidney Dayre.

Lesson 27.

THE CHICKADEE—ITS SONG AND FLIGHT

1. INTRODUCTION.

If the school is situated near a grove or wood, the teacher, in the winter should rub some fat on a tree-trunk near the school or hang a bone or lump of fat meat from the tree. The chickadees will visit it regularly and excellent opportunities will be offered for observation of its form, colors and habits. The winter is the most convenient time to begin the study, as the birds are numerous both in the town and country and they are easy to observe in the leafless branches.

2. COLORS AND FORM.

(a) Observations to be made by pupils.

- What is the size of the bird?
- What are the most conspicuous colors?
- What parts are shining black?
- What is the color of the side of the head?
- What is the color of the breast?
- What is the color of the back?
- What parts are buff?
- Is there any white on the wing?
- What is the shape and color of the beak?
- How many toes are there and what is their position when the bird is on a branch?
- Are there any differences in color in different individuals?
- Are the male and female of different colors?

(b) To the teacher.

The little chickadee is much smaller than the sparrow and its contrasting colors make it quite conspicuous in the bare branches during the winter. The general appearance of the back is ashy, the top of the head and throat are shiny black with a white line on each side separating the black above and below. The breast behind the black throat is white, while further down, the belly and sides are a cream buff. The wings are gray but have conspicuous white tips to some of the shorter feathers. The beak is black, short, conical and sharp. The feet have three toes in front and one behind.

NATURE STUDY LESSONS

3. SONG.

(a) **Observations to be made by pupils.**

What is the chief note of the chickadee?

Does he sing this song at all seasons of the year?

Has he any other call note?

By imitating his call can you bring him to you?

(b) **To the teacher.**

The chickadee's song is so characteristic that it is scarcely necessary to say anything in the nature of a description. As he goes about from tree to tree in all kinds of weather, the chick-a-dee-dee-dee-dee can be heard every few minutes. The only season he ceases is during the time that the young are being reared. He also has a high noted whistle which is used as a call note.

4. MEANS OF LOCOMOTION.

(a) **Observations to be made by pupils.**

Notice whether the flight is regular or undulating.

Does he fly long distances?

Where does he usually light?

How does he support himself?

What different positions does he take on the branch?

See how close you can get to the bird.

Does he remain long at one position?

How many do you usually find together?

(b) **To the teacher.**

The flying is weak and undulating, the extent of a single flight is usually not great, as they move from tree to tree. When lighting on a branch these birds are liable to do so in almost any position, they seem perfectly at ease with head up or down and on the lower as much as the upper side of a horizontal branch. The toes, with thin sharp claws gripping the rough bark, seem to be the main means of support, the tail not playing the part it does in the woodpeckers. As they fly from point to point seeking food, they allow an observer to come very close, and their curiosity will bring them frequently within a few feet of a person. One naturalist remarks that twice one has lit on his hand; another records one as actually lighting on the barrel of his gun as he had it over his shoulder. They are always found in small flocks of about seven or eight. They never light on the ground.

Lesson 28.

THE CHICKADEE A FRIEND OF MAN

1. FOOD AND ECONOMIC IMPORTANCE.

(a) Observations to be made by pupils.

Notice the shape of the beak and decide what kind of food it is suitable for catching.

Observe their purpose in exploring a branch.

Take a branch or piece of bark from an apple tree and examine it carefully with a lens for insect eggs and larvae.

From your inspection of the bark what would you infer regarding the keenness of sight of the bird?

Which are more numerous in a district, chickadees or flickers?

How many chickadees would you judge there are in a square mile of territory in your vicinity?

If each ate one hundred insect eggs a day during the year, how many would be destroyed each year in that area?

What would you infer as to the economic value of the chickadees?

(b) To the teacher.

They are very largely insect eaters. Their sharp-pointed beaks are well suited for picking the small eggs off the leaf and exploring the crevices in the bark for eggs and larvae. They work chiefly over leaves and the small outer twigs, and from many examinations of stomachs their food is pretty well known for all seasons of the year. During the winter it is largely eggs, larvae, and spiders. The eggs and larvae of some of the very worst pests we have are eaten in large quantities.

Amongst those found in large numbers in the stomach are the plant lice, cankerworm, codling moth and the tent-caterpillar. Though chickadees are much smaller than flickers and both are insectivorous, it is a question if the former are not more useful. They are more numerous than the larger bird; and stay with us during the winter cleaning off the bark when almost all our other birds have left us. If we reckon seven birds to a square mile and

NATURE STUDY LESSONS

each one to eat one hundred larvae or eggs per day, it is easy to calculate the immense number of insects destroyed in a year by these little helpers. During the summer they consume large numbers of weevils. They also eat buds and some small fruits.

2. BREEDING HABITS.

(a) Observations to be made by pupils.

Where is the nest to be found?

At what season is it built?

Of what materials is it constructed?

How is the excavation for the nest made?

How high is the nest above the ground?

When the nest is in a tree, what kind does the bird prefer?

During the breeding season are they so frequently seen?

Are they as noisy then as at other seasons?

Describe the eggs as to number and appearance.

(b) To the teacher.

The chickadee is found nesting usually in May or June but nests are sometimes found much later. They always construct it in a hollow in a stump, fence-post or tree. They select a natural cavity, an old woodpecker's nest, or sometimes make their own excavation. This they do in a well decayed trunk and very frequently select a white birch for the purpose. The lining of the nest is composed of moss, grass, feathers, plant down, wool, fur, or sometimes entirely of short hairs. Five to eight little eggs are deposited. These have ground of white and are spotted and speckled with brown, particularly at the large end. The parents and the young go in a flock together for almost a year.

3. MIGRATION AND GENERAL HABITS.

(a) Observations to be made by pupils.

At what season are the birds most common?

When are they seldom seen?

Do they inhabit the same districts at all seasons?

At what season are they most common about houses?

THE CHICKADEE

(b) To the teacher.

The chickadee is a resident bird throughout its range. That means that it does not go to the south for the winter but succeeds in finding its food throughout this season. In fact, it is more common with us during the winter than the summer. In the latter season it retreats more into the woods for breeding, while during the other seasons it seems more to skirt the woods, and in winter particularly, it frequents the trees close to dwellings. If fat meat or a bone is hung out it will visit this regularly. Some observers, by patience and kindness, have succeeded in getting them to feed from the hand or even to regularly enter the house.

4. THE RELATED CLIMBERS.

Two birds closely related to the chickadee are the white-breasted and red-breasted nuthatches. These are delightful little birds, quite similar in their climbing habits to the one just studied. They are still more dexterous in poising themselves in any position on a limb and assume acrobatic positions that no other bird would dare to imitate. They also incubate their eggs in a hole in a tree.

THE BIRDS MUST KNOW

The birds must know. Who wisely sings
Will sing as they.
The common air has generous wings;
Songs make their way.
What bird is that? The song is good
And eager eyes
Go peering through the dusky wood
In glad surprise;
The birds must know.

—Helen Hunt Jackson.

NATURE STUDY LESSONS.



INROADS THROUGH OUR FORESTS.

The forests and birds are dependent each upon the other. Without the forests, the birds would soon become extinct; they require the trees as a shelter for their homes—a protection against their enemies. Without the birds, the trees would soon become leafless, and die; they require the birds to rid them of their insect enemies. Without trees and birds, this beautiful country would be cheerless indeed, and would soon become uninhabitable; we need the birds and trees to adorn the land and preserve its productiveness. Our bounden duty is to conserve the forests and to protect and encourage the birds.

WINTER

When the blizzard from the north-land
Holds the world in fierce embrace,
And ten million swirling crystals
Sting you, bind you, smite your face,
And your world is not your world.
Grotesque, unknown each bush and tree,
Above the raging, howling tempest
Comes a joyous chickadee, chickadee.

In the soul there's something hidden,
That such a message comes to greet,
Above the rage of human passion
Comes a whisper strangely sweet,
A little song from out the tempest,
Born of hope for you and me,
To the heart love seems speaking,
When this bird sings chickadee, chickadee.
--Anon.

Lesson 29.

WHAT FOOD DO BIRDS FIND IN THE TREES IN WINTER ?

(a) Observations to be made by p

Make a list of all the trees and shrubs that retain fruit after the leaves have fallen.

What trees and shrubs have conspicuously colored fruits on them in the winter?

Gather the fruits of sumach, mountain-ash, barberry, snowberry, wild rose, dog-wood or haws and find if there is any food in them for birds.

Notice what birds eat these fruits in the winter.

Break a small branch off an apple tree and examine its surface carefully with a lens for insect eggs.

NATURE STUDY LESSONS

What birds are constantly eating these eggs from the trunks of trees?

Search the trunks and branches of trees for cocoons and pupa of insects.

Examine the cones of pines, spruce, white cedar and hemlock and see if they retain the seeds (1) in November, (2) in March.

What birds can you find picking at these cones?

Examine the fruiting cones of the birch for seeds.

Examine the buds of some common trees as poplar, apple, maple and decide whether they would furnish food when other supplies run short.

What birds can you find eating buds?

What birds roost in the trees near the houses during the winter?

Can you suggest an enemy of these roosting birds?

(b) To the teacher.

The trees are the favorite haunts of birds at all seasons of the year. The bare, leafless branches of winter one would not expect to offer a very inviting repast to our winter residents, but we only see with the dull eye of man, while the keen observations of the birds can detect many meals in all parts of the tree. When the trunk and branches are examined critically, many eggs and pupa are found glued to its surface, and embedded deep within it are the grubs of borers, which the little downy woodpecker's long barbed tongue soon pulls out to the great benefit of the tree and himself. The chickadee, the nuthatches and the woodpeckers are the chief investigators of the trunk and branches for this insect food. One must have been struck with the many shrubs and trees with conspicuously colored fleshy fruits which remain attached late in the autumn and winter. These, by their brilliant contrasts, attract the birds, who in eating them benefit not only themselves but act as distributors of the seeds. The pure white snowberries on the dark vines, the bright, red mountain-ash on the sombre branches, and the highly colored rose hips are all well known. These are fairly common and willingly eaten by birds in winter. The few robins that remain during this season, and the early arrivals in

WINTER FOOD

the spring, subsist almost entirely on these berries. The pine grosbeaks that come down upon us in the winter denude the whole vicinity of the mountain-ash berries. Many of our winter birds disdain not to partake of the frozen apples still clinging to the trees. Chickadees and woodpeckers take them with zest. The stiff cones of the white pine still have seeds in them in the early winter, but these are so deeply embedded that special beaks are necessary to pry out the nutritious morsels. The crossbills can perform the operation with their crossed mandibles and the pine siskin, unlike his brother finches, has a long pointed beak, which enables him to reach the prize. The grosbeaks, with their massive jaws, can shatter the cone with ease. The seeds of the white pine are all gone in early winter. The seeds of the hemlock and cedar are more easily procured from the cones and last well into February or later, while the cones of the spruces are much more refractory and only the strong and long beaks can procure these seeds. If a bud is examined, it will be found that, hid away under the dry unpalatable outer scales, is a soft, juicy protoplasmic mass, and it is not surprising that during the straits of the winter some birds turn to eating these buds. The ruffed grouse (so-called partridge of Ontario) eats almost nothing else during the winter, as some farmers with apple orchards learn to their grief. The pine grosbeak of the east, and the evening grosbeak of the west will consume the buds as they begin to swell; the rose-breasted grosbeak, the purple finch and our chief offender, the English sparrow, all partake of the buds of the oak, the elm and the maple, much to the detriment of these trees.

The owl plies his nocturnal trade not only in the fields but in the trees. Consternation reigns amongst the sparrows, nestled together in the evergreen trees or among the vines, when the screech owl or the sawwhet swoops noiselessly amongst them some fine winter night. They have learned the sparrow to be a tasty tid-bit to break the monotony of mouse diet.



Lesson 30.

BIRD FOOD IN THE WINTER FIELDS

1. INTRODUCTION.

An excellent topic for nature study during the winter is a discussion of the different sources of food for our winter birds. This can only be successfully pursued after considerable observation on the part of the pupils. These observations should be directed toward making the pupils familiar with the winter birds, their habits and food, as well as toward making a thorough inventory of all the available bird food in the district.

2. FOOD TO BE FOUND IN FIELDS.

(a) Observations to be made by pupils.

- What birds are commonly found in the fields in winter?
- Do they scratch up the snow looking for food?
- What food might be found under the snow?
- Bring home some weeds that project above the snow and examine them carefully for seeds.
- Do you find any birds picking at these weeds?
- Try to find the names of the commonest weeds.
- After a fresh fall of snow look for mouse tracks over its surface.
- Do these mice run during the day or night?
- Do you know any night-flying birds that might destroy them?
- Look up some reference books on owls, to find their principal food. (See the New Canadian Bird Book.)
- Do the owls remain in Canada during the winter?
- Why do we so seldom see them?

NATURE STUDY LESSONS

(b) To the teacher.

When the fields are covered with snow and everything appears frozen and still, nobody would suspect that any living creature would find sustenance there. Yet a casual winter walk will reveal the presence of birds regularly in these apparently barren wastes. A little closer observation will show some dead weeds projecting their withered branches through the snow. The rag-weed, the burdock, the golden-rod, aster, and many other tough-stemmed, tall plants are able, throughout the winter, to push their leafless branches above the snow. These are most commonly seen along fences. If you will have the pupils bring some of these branches to the school, you will find many of them contain numerous small seeds, and these form very nutritious food for the birds that can be seen in their branches throughout the winter. The trim little redpoll with his gaudy breast and head; that emblem of winter,—the snowbird; the long-spurred little visitor from Labrador, the horned lark—all can be seen picking these seeds from the projecting branches. All these are doing good service to man, as the amount of seeds left to fall on the ground and overrun the fields with weeds, is greatly diminished. The drifting snow is sure to lay bare the fields in places and thus the seeds of wheat, oats and clover left by the harvester, are eagerly searched by these sharp-eyed visitors. Here also the withered stems of many of the shorter weeds lay bare their seeds as well.

This does not exhaust the supply of bird food which the fields supply. The mice have their homes under the snow and often move from place to place in tunnels cut through its substance; but a visit to a field after a light snow fall will reveal their tracks, indicating that they come out on its surface as well. As a better protection their surface wanderings are performed chiefly at night; but their nocturnal caution often brings destruction. The keen-eyed owls hover over the fields throughout the nights of winter and every mouse that shows itself is relentlessly pounced upon with an unerring aim. As a result the owls thrive and the destructive mice are kept in check.

Lesson 31.

FOOD IN THE ICY WATERS

1. FOOD TO BE FOUND IN THE WATER.

(a) Observations to be made by pupils.

What birds are to be observed swimming in the open water in winter?

What actions would indicate that they get their food from the water?

What food would they probably get in the water of lakes and seas during the winter?

What birds continually hover over the open water of lakes and seas during the winter?

What food do they take?

Inquire what owl is to be seen on the ice near the open water.

What food does it eat?

(b) To the teacher.

In Canada the open waters and marshes, that swarm with bird life in summer, are firmly frozen in winter and present no opportunities for getting food. But, even in winter, parts of the larger bodies remain open, and, when currents are swift, open waters always abound. The grebes are to be found in this open water throughout the winter diving for fish and mollusks that are to be found in the icy depths. Hovering over the open places near towns and cities, and on the open sea, are the gulls and terns acting the useful part of scavengers. They pick up anything that is carried to the water by the sewers, and keep the former clear of dead fish or other sources of pollution. That ghost of the north, the snowy owl, almost a mass of pure white, appears near these open waters in midwinter and crouching by the airholes seizes in his sharp talons every fish that appears. He does not scruple to seize any grebes or ducks that may occupy that open water.

NATURE STUDY LESSONS

2. FOOD FROM OTHER SOURCES.

(a) Observations to be made by pupils.

Why do sparrows congregate about houses in winter?

Where else are they found at this season?

What birds are to be found on the country roads?

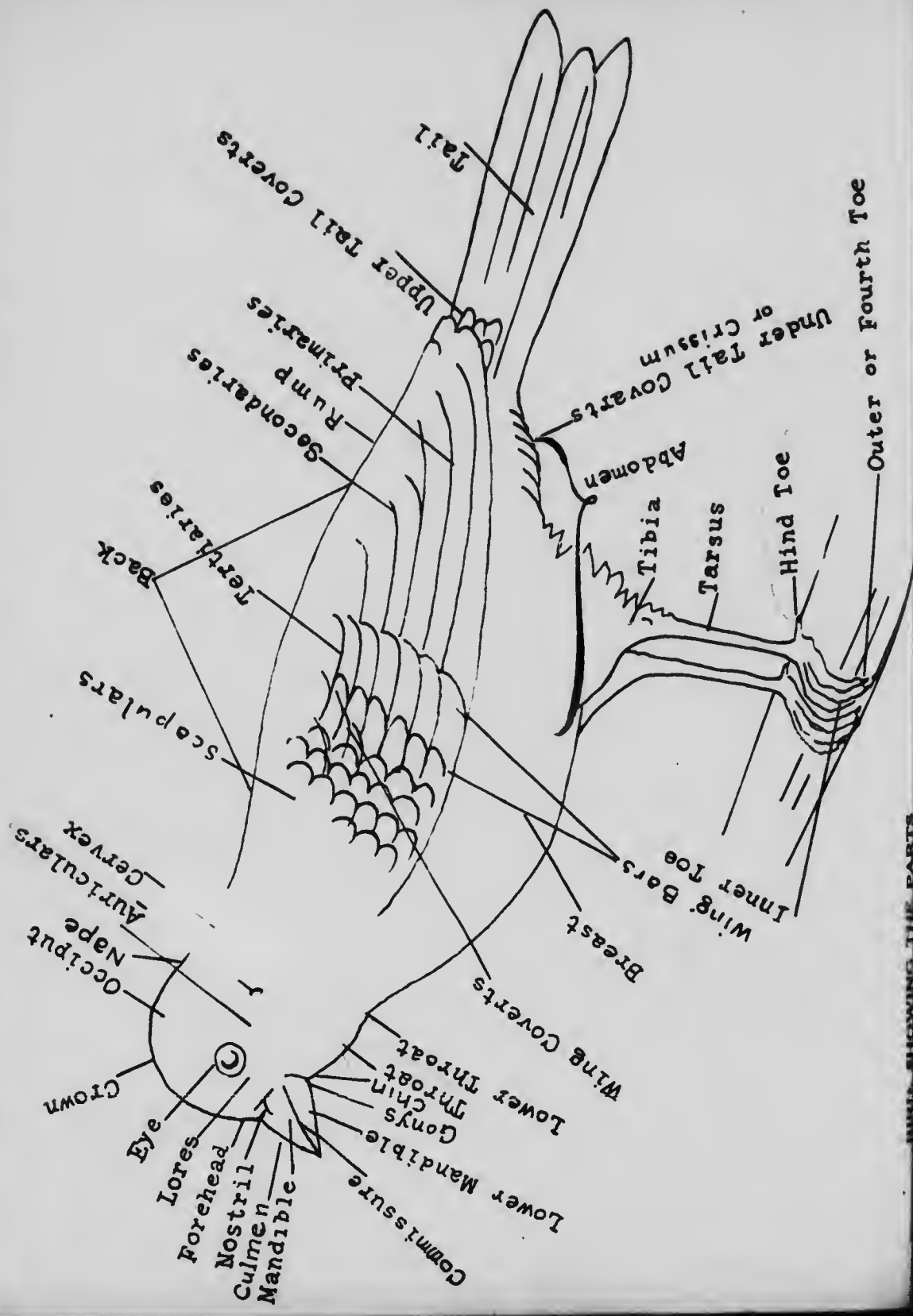
What do they find to eat there?

What food is to be found along the railway tracks?

(b) To the teacher.

In winter, birds congregate about the towns and cities, and about the farm houses and barns in the country. The refuse from the houses,—crumbs, bones, scraps, pieces of vegetables, etc., form a good part of the food of the flock of sparrows found around every house. About the farm yard they consume the seed from the hay and straw, also any grain that is accessible and they frequently enter the granary. They share the daily meals with the barnyard fowls. The sparrows, horned larks and snowbirds frequent the roads where any grain or weed seeds from the farmers' wagons are consumed, but the chief food supply is the undigested oats from the horse droppings. Along the railroads, the same birds are to be seen, as the tracks are kept clear of snow and much grain, seeds and other food are dropped by the passing trains.





WING SHOWING THE PARTS

APPENDIX

THE DUCK-SHOOTER'S RUBAIYAT

If this be Spring, indeed, does not appear
From any venture by the local seer—
But be what may be, it is still a fact,
And one worth knowing, that the ducks are here.

Adieu to Winter! It returns to pluck
The foolish flower and garden truck—
But that is one thing, sirrahs: it is quite
Another matter to deceive a duck.

The early emigrating sprig, no doubt,
Knows very clearly what he is about—
And one misdoubting him has but to try
To get him if he would but find it out.

He is about as foolish as a fox,
As any honest man who ever locks
Horns with that knowing wizard of the air
Will testify—look out for hollyhocks!

Look out for daisies and the birds that sing
Their vernal rhapsodies the while they swing—
This is no Weather Bureau tip, my friends;
It is the pin-tail that proclaims it Spring.

Farewell to Winter with its cheerless snows,
The desolation and the wind that blows,
Nor ever wearies of its mournful dirge—
The pin-tail says so, and he knows—he knows.

I wish I might express the great renown
In which this festive fellow and his brown
Helpmeet are held for wisdom by the folks
Who often measure wits with them—Get down!

A hundred pin-tails in a bunch—Great Scott!
They're coming in—no—no—they must have caught
A whiff of this tobacco down the wind—
What did I tell you—Is it Spring or not?

—*St. Louis Post-Dispatch.*

NATURE STUDY LESSONS

APPENDIX

Ducks—

River (*Anatinae*)

American Wigeon or Baldplate
Black Duck, or Dusky Mallard
Blue-winged Teal
Gadwall or Gray Duck
Green-winged Teal
Mallard
Pin-tail or Sprig-tail
Spoon-bill or Shoveller
Wood Duck or Summer Duck

Sea (*Fuligulinae*)

American Pochard or Red-head
Blue-bill or Greater Scaup
Buffle-head or Butter Ball
Canvas-back or White-back
Cowheen or Old Squaw Duck

Ducks—

Sea (Continued)

Eider,
American
Greenland or Northern
Pacific
Spectacled or King
Golden-eyes,
American or Whistler
Barrow's
Harlequin or Lord and Lady
Little Blue-bill or Lesser Scaup
Ring-neck Scaup or Ring-bill
Ruddy or Rudder
Scoters, Surf Ducks or Sea-Coots,
American Scoter
Surf Scoter or Spectacle-bill
White-winged or Velvet Scoter

The Wood Duck nests in trees; it is noted for its beauty.

The Canvas-back feeds freely on water-cclery or eel-grass; its flesh is noted for its excellent flavor.

The Red-head is distinguished from the Canvas-back, principally by the bill being shorter and wider, forehead higher, posterior parts gray, instead of white, and head chestnut red instead of dark reddish brown.

(For concise sketches of the above ducks, giving their range and markings, see *The New Canadian Bird Book*, by W. T. MacClement, M.A., D.Sc., Professor, Queen's University, Kingston, Ont. Published by the Dominion Book Company, Toronto, Canada.)

The Mallard is the ancestor of the domestic ducks.



A Thrifty Flock of Domestic White Ducks

THE NEW CANADIAN BIRD BOOK



THE NEW CANADIAN BIRD BOOK

FOR

SCHOOL AND HOME

By W. T. MacClement, M.A., D.Sc.,
Professor of Botany, and Lecturer in Systematic
Zoology, Queen's University, Kingston, Ont.

WITH

LIFE-LIKE ILLUSTRATIONS

CONCISE SKETCHES OF
CANADIAN BIRDS FOR
CANADIAN SCHOOLS

Dominion Book Company

Toronto, Canada

1914

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by

W. O. McINDOO

PREFACE

The primary purpose of this book is to assist young Canadians in becoming acquainted with the birds of Canada. The keys and descriptions will—it is hoped—enable a careful observer to identify any bird which he finds in Canada. Along with the name of the

Catalog of Canadian Birds, prepared by the venerable naturalist of the Geological Survey, Dr. John Macoun. For food habits, the circulars published for the Biological Survey of the Department of Agriculture of the United States have been very useful. Other facts of interest have been obtained from every source available, but nothing has been stated for which the evidence seemed less than satisfactory.

ERRATA

- p. 7, line 26, jointed should be joined.
- p. 11, line 9, bady should be body.
- p. 19, line 19, For "having deciduous parts" read "having no deciduous parts."
- p. 33, line 1, Fulmer should be Fulmar.
- p. 39, line 2, hoop should be hook.
- p. 55, line 24, Americana should be americana.
- p. 62, line 18, Ardreidæ should be Ardeidæ.
- p. 84, line 25, minituetella should be minutilla.
- p. 92, line 30, corealls should be borealis.
- p. 121, line 29, For "tone" read "note".
- p. 133, line 4, Honed should be Horned.
- p. 172, line 27, Cyanocetta should be Cyanocitta.
- p. 177, line 13, icteridæ should be Icteridæ.
- p. 193, line 5, For "on" read "or".
- p. 195, line 3, Should be comma after tail, none after wings
- p. 218, line 10, Insert "inches" after "6½".
- p. 225, line 14, americania should be americana.
- p. 227, line 29, referencas should be reference.
- p. 236, line 23, Lanlius should be Lanius.
- p. 239, line 11, Omit comma after saw-fly.
- p. 244, line 18, to be transposed to follow "Helminthophila".
- p. 254, line 20, For "migrant" read "resident"
- p. 269, line 21, For "too" read "the".

PREFACE

The primary purpose of this book is to assist young Canadians in becoming acquainted with the birds of Canada. The keys and descriptions will—it is hoped—enable a careful observer to identify any bird which he finds in Canada. Along with the name of the bird other facts regarding it will be desired and the most important of these are here given.

The need for such a book has become very evident of recent years, because of the greatly increasing interest in the objects of nature. This interest is largely due to the wise encouragement given to observational studies in our schools. The birds, insects, and plants make an irresistible appeal to fresh young minds, and to satisfy the natural desire to know the name, the relationship, the food, the breeding habits, and the range of our Canadian birds, this book has been prepared.

The writer claims no special qualification for the task—other than thirty years or more of most enjoyable study of our birds and their ways, and an acquaintance with most of the standard literature relating to the subject.

Much of the information has been of course obtained from the work of others, and grateful acknowledgment is here made of the pleasure and satisfaction with which the writings of Audubon, Davie, Coues, Chapman, Elliott and others have been studied for many years. The authority for the distribution is naturally the Catalog of Canadian Birds, prepared by the venerable naturalist of the Geological Survey, Dr. John Macoun. For food habits, the circulars published for the Biological Survey of the Department of Agriculture of the United States have been very useful. Other facts of interest have been obtained from every source available, but nothing has been stated for which the evidence seemed less than satisfactory.

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The descriptions for a large proportion of the birds have been prepared with well mounted specimens of the birds before the writer, but for rare forms, and especially for western forms, the fifth edition of that unrivalled work—Coues' "Key to North American Birds"—has been the chief authority. Other works very frequently consulted and quoted are D. G. Elliott's "Wild Fowl of North America," and F. M. Chapman's delightful "Handbook of the Birds of Eastern North America." Lastly, and with especial gratitude as to a father in out door study, the writer must acknowledge his debt to the publications, conversations, and letters of the late dean of Ontario ornithologists—Thomas McIlwraith of "Cairnbrae" Hamilton. His "Birds of Ontario" first encouraged some of us to try to peer through the mystery surrounding the lives of our bird neighbors, while his contagious delight in his favorite study made incipient naturalists of those who loved the outdoors, and came within the circle of his charming and wholesome influence.

It is to be hoped that very many observers will discover errors and omissions, and will make definite records of the facts, for only in this way can our knowledge be repaired and our ignorance dispelled. The best authorities have been consulted, but our information is, on many points, quite uncertain.

The very limited space available, where so wide a field had to be covered in one volume, has necessitated almost unseemly brevity in many places.

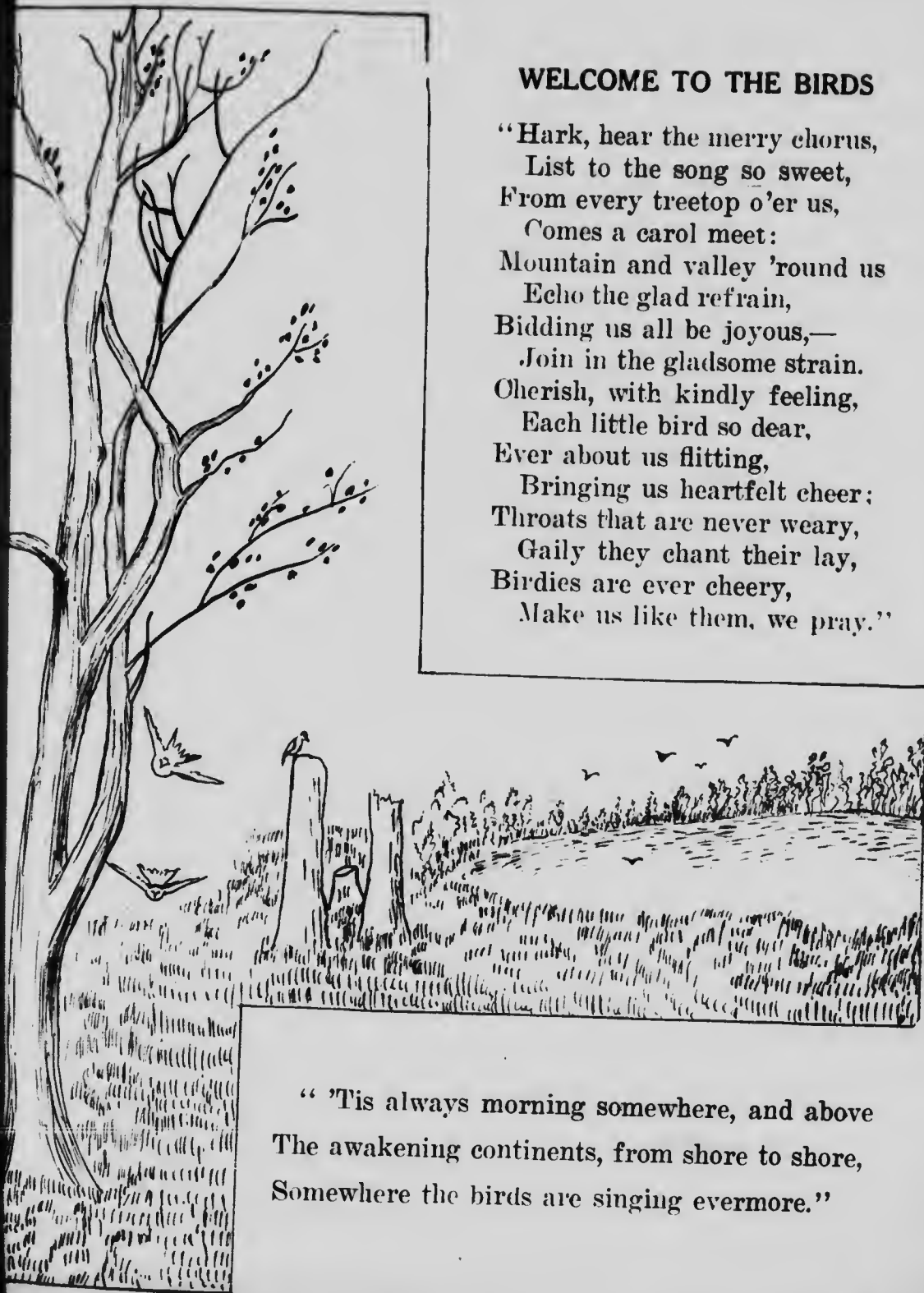
If this book deepens and extends the interest in this study, which is at once so delightful, wholesome, and economically important, the writer will feel that his purpose has been completely served.

—W. T. M.

Kingston, Ont., May 10, 1914.

WELCOME TO THE BIRDS

“Hark, hear the merry chorus,
List to the song so sweet,
From every treetop o'er us,
Comes a carol meet:
Mountain and valley 'round us
Echo the glad refrain,
Bidding us all be joyous,—
Join in the gladsome strain.
Oherish, with kindly feeling,
Each little bird so dear,
Ever about us flitting,
Bringing us heartfelt cheer:
Throats that are never weary,
Gaily they chant their lay,
Birdies are ever cheery,
Make us like them, we pray.”



“ 'Tis always morning somewhere, and above
The awakening continents, from shore to shore,
Somewhere the birds are singing evermore.”

OUR GOOD NEIGHBORS

Hast thou named all the birds without a gun?
—O, be my friend and teach me to be thine.—Emerson.

Man—as a destroying agent—is indeed mighty when attacking large creatures, but against insects, with their activity and enormous powers of reproduction, he is forced to look for help. One very powerful ally we have not yet seriously encouraged—the birds—those beautiful, tuneful, enthusiastic destroyers of insects.

What can man do unaided in the face of an insect host? He has always been practically helpless before their myriads. His history is marked by black spots of famine, plague, and pestilence following visitations by insects. One great victory—that over the San Jose scale—has been told again and again from books and platforms. Why? Because it was practically the first time man ever made a clear and satisfactory conquest of an insect invader. See the destruction of magnificent trees now going on in the New England States—the famous Harvard Elms and others—doomed because of the Gipsy Moth, the Leopard Moth, and the Brown-tail Moth. Money and science are fighting them, but so far the millions of dollars spent have barely kept them in check. Our own northern evergreen forests are being greatly injured by sawflies. Every crop we try to raise has its insect enemies, and the best we have done so far is to encourage the enemies of the insects.

France was threatened with famine because of thoughtless slaughter of birds. The French are a logical people—the cause and the effect were clear. Ever since then, at every cross road and village green, there stands a Government proclamation cast in iron—asking everyone to assist in increasing the birds, and telling of the

OUR GOOD NEIGHBORS

penalties for the destruction of birds, nests, or eggs. Birds are much more numerous in Europe than in Canada, in spite of the dense population; and the crops of Europe are much greater per acre than those of Canada.

A swarm of leaf-eating caterpillars occurred in the Black Forest region of Germany. Its route looked like that of a fire—not a green leaf left on tree or shrub. In the middle of its path lay the estate of a certain Baron, who for twenty years had protected and encouraged the birds. When the insects had passed, there lay his estate with a border about 200 yards wide, green and leafy, an oasis in a desert of defoliated trees. He had several thousand nesting and feeding places for the birds, and his garrison was at home, able and willing to repel the invasion.

Every spring a most efficient corps of experts examine our trees. Some begin at the ground and pick out every worm and nest of eggs, from the crevices of the bark—as they systematically go around and around the trunk. When they reach the branches they fly to the base of another tree and begin again. A different species undertakes the larger branches, while still others do all sorts of fancy acrobatic tricks as they inspect the tips of the branches. These are the Vireos and the Wood Warblers, on their way north. Like a spring housecleaning army they give our trees an inspection and pass on. In autumn again, from August till sharp frost, they slowly travel southward, eating insects as they go—taking just what we wish to be rid of.

A Cuckoo has been known to have 300 tent caterpillars in its stomach at one time. This meal was no doubt repeated twice a day or oftener, either of tent caterpillars or of some other leaf-eating pest.

Think also of the Swallows—what *tons* of insects a colony of these graceful creatures destroy during a summer—without tasting a berry or a kernel of grain!

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But the farmer will say that some birds do take his cherries, strawberries, and corn. So they do—that is, for about two weeks of the fifty-two, they eat something we want to keep—the remainder of the year they are working for us. Surely we can defend ourselves against the birds without killing them, but just as surely without their help we cannot defend ourselves against the insects. Careful study of the feeding habits of birds shows that only about four of our species fail to do much more good than harm. Even the Crow earns our thanks by killing crickets, grasshoppers, beetles, mice, and moles, in myriads, from June till October.

The gardeners tell us every toad is worth \$2 per year because of the insects he eats. Birds work more rapidly and longer hours: most of us prefer their songs and their appearance, how much are 200 birds worth on a farm every year? At least 10 per cent. of every Canadian farmer's crop is destroyed by insects. Most of this would be prevented if we saved and encouraged the birds. And the pitiful and disgraceful side of the question is that we destroy them because of our ignorance of them. No person ever kills birds after studying their ways. Let us give them a chance for ten years. There is absolutely no fear of a plague of birds, but we are always on the verge of plagues of insects.

—W. T. M.

“And now, wouldst thou, O man, delight the ear
With earth's delicious sounds, or charm the eye
With beautiful creations; then pass forth
And find them midst those many-colored birds
That fill the glowing woods. The richest hues
Lie in their splendid plumage, and their tones
Are sweeter than the music of the lute.”

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THE SONG SPARROW

GEM.

“My aviary is the good green wood;
I would not cage its songsters if I could.
Sweeter the song of one wild bird to me,
Than all the notes of sad captivity.”

CLASSIFICATION OF BIRDS

In seeking for a natural arrangement of birds, we take into account the most important facts of their methods of life. These life habits have affected their structures, so that a bird living successfully in one set of conditions is not qualified to get food and protection in another and different environment. In some instances a slight change of surroundings—as from the ocean to a fresh water lake—is too great for the adaptability of the creature, and starvation results. Broadly speaking, we arrange birds with respect to their relationship to water, placing first those which find their homes, food, and protection in closest connection with bodies of fresh or salt water. Such birds are scarcely able to walk on land, and many of them fly only when it is absolutely necessary. They spend their lives in and on the water, swimming on or beneath its surface with such speed and skill as to catch fish and other aquatic creatures on which they feed. Their wings are often serviceable as organs of locomotion under the water. One of these, the Great Auk, lost the power of flight, and through the hasty greed of man, it was destroyed from the face of the earth before it had time to learn to fear and avoid the arch enemy of the feathered folk.

From the most aquatic forms, we pass by stages to those haunting the shore and living on marsh and shallow water creatures, then to those feeding upon small animals and seeds obtained by scratching the soil. Next come the birds of prey, succeeded by those that perch in trees, but capture water creatures or insects. Later we have those with remarkable wing development, living on insects taken at high or low levels of the atmosphere during their almost continuous flights, and these are succeeded by the group that dart upon passing insects from a perch. Gradually we pass from the insect eaters to those which depend largely on seeds, although all use the more easily digested animal food for their nest-

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lings. The last group includes our most highly organized birds, and our sweetest singers.

The largest groups are called *orders*, and are as follows:—

Order I. *Pygopodes*—Diving Birds—Grebes, Loons, and Auks.

Order II. *Longipennes*—Long-winged Swimmers—Skuas, Gulls, and Terns.

Order III. *Tubinares*—Tube-nosed Swimmers—Albatrosses, Petrels, and Shearwaters.

Order IV. *Steganopodes*—Totipalmate Swimmers—Gannets, Cormorants, and Pelicans.

Order V. *Anseres*—Lamellirostral Swimmers—Ducks, Geese, Swans.

Order VI. *Herodiones*—Waders—Hérons, Egrets, Bitterns.

Order VII. *Paludicolae*—Marsh Birds—Cranes, Rails, Coots, and Gallinules.

Order VIII. *Limicolae*—Shore Birds—Phalaropes, Snipes, and Plovers.

Order IX. *Gallinae*—Earth-scratching Birds—Turkeys, Grouse, and Quail.

Order X. *Columbae*—Pigeons and Doves.

Order XI. *Raptores*—Birds of Prey—Owls, Hawks, and Eagles.

Order XII. *Coccyges*—Cuckoos and Kingfishers.

Order XIII. *Pici*—Woodpeckers.

Order XIV. *Macrochires*—Goatsuckers, Swifts, and Hummingbirds.

Order XV. *Passeres*—Perching Birds—Flycatchers, Blackbirds, Jays, Orioles, Sparrows, Swallows, Vireos, Warblers, Wrens, and Thrushes.

In each *order* there are usually several *families*, in each family several *genera*, and in each genus several *species*. Thus in the order *Raptores*, we have the family *Strigidae*—The Barn Owls;

KEY TO WATER BIRDS

the family *Bubonidae*, the Horned Owls; the family *Cathartidae*—the Vultures; and the family *Falconidae*—the Hawks and Eagles.

In the family *Falconidae* we have again such genera as *Circus*, the Marsh Hawks; *Accipiter*—the Darters; *Buteo*—the Buzzards; and *Falco*—the Falcons. In *Falco* we find such species as *Falco columbarius*—the Pigeon Hawk, and *Falco sparverius*—the Sparrow Hawk.

In the key immediately following this will be found short descriptions, which will enable anyone to find the order and the family to which a bird belongs.

Under each family in which the number of genera and species is so great as to make it difficult to read the descriptions of all, there will be found a key to the different genera and to the species in each genus.

ARTIFICIAL KEY TO ORDERS AND FAMILIES.

To avoid the use of many technical terms, the following brief description of each order occurring within our range, and key to the families in each order, are adapted from Chapman's excellent Handbook of Birds of Eastern North America.

THE WATER BIRDS

DIVING BIRDS.

Order I. *Pygopodes*—Grebes, Loons, and Auks.

Duck-like birds with pointed bills; webbed feet placed far back; flattened tarsi; bill without toothlike projections; tail very short or apparently wanting.

1. Toes 4, tipped with a broad nail.
 - a. Toes with lobate webs. *Podicipidae*, Grebes, page 11
 - b. Toes webbed *Gaviidae*, Loons, page 13
2. Toes, 3, tipped with a sharp nail. *Alcidae*, Auks, page 19

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LONG-WINGED SWIMMERS

Order II. *Longipennes*—Skuas, Gulls, and Terns.

Bills sharp-pointed and often hooked; toes four, but the hind one very imperfect in *Rissa*; front toes webbed; wings long and pointed.

1. Tip of upper mandible enlarged, rounded, and sharp-pointed; upper parts sooty-blackish; middle tail feathers longest.
Stercorariidae, Skuas, page 21
2. Tip of upper mandible not enlarged, but curved and sharp; tail feathers of about equal length. *Laridae*, Gulls, page 22
3. Bill straight, not hooked; tail usually forked.

Sterna, Terns, page 29

TUBE-NOSED SWIMMERS

Order III. *Tubinares*—Albatrosses, Petrels, Shearwaters.

Tip of upper mandible enlarged and hooked; nostrils tubular; hind-toe very small or wanting.

1. Very large birds; one tubular nostril on each side of the bill.
Albatrosses, page 32
2. Medium sized birds; tubular nostrils together on top of bill:—
 - a. Lower mandible not hooked. Fulmars, page 32
 - b. Both mandibles hooked Petrels proper, page 34

TOTIPALMATE SWIMMERS

Order IV. *Steganopodes*—Gannets, Cormorants, Pelicans.

All the four toes connected by webs. Gular pouch large or small.

1. Bill stout and slightly curved at tip. Gular pouch small.
Sulidae, Gannets, page 36
2. Bill with hawk-like hook at tip:—
 - a. Bill less than a foot long. Gular pouch small.
Phalacrocoracidae, Cormorants, page 37
 - b. Bill more than a foot long. Gular pouch large.
Pelecanidae, Pelicans, page 38

KEY TO WATER BIRDS

ORDER V.—*ANSERES*—DUCKS, GEESE, SWANS.

LAMELLIROSTRAL SWIMMERS

Bodies broad, flattened below; no gular pouch; tooth-like plates along the edge of the bills.

1. Bill long and narrow, and bearing very distinct tooth-like serrations *Merginae*, Mergansers, page 42
2. Bill long, flattened, and duck-like:—
 - a. Lores feathered:—
 - (1) Scales in front of tarsus more or less square. Sexes dissimilar Ducks, page 41
 - (2) Hind toe simple, not having flap or lobe.
Anatinae, River Ducks, page 43
 - (3) Hind toe with a lobe or flap.
Fuligulinae, Sea Ducks, page 48
 - b. Scales on front of tarsus rounded. Sexes similar.
Anserinae, Geese, page 57
 - c. Lores bare *Cygninae*, Swans, page 60

WADERS

Order VI. *Herodiones*—Hérons and Egrets.

Toes 4, all on the same level, slightly if at all webbed; lores bare; legs and neck very long.

One family only reaches Canada.

Ardeidae, Herons, Egrets, and Bitterns, page 62

MARSH BIRDS

Order VII. *Paludicolae*—Cranes, Rails, Coots and Gallinules.

Toes 4, usually not webbed; hind toe usually small.

1. Bill over 3 inches. Tarsus over 6 inches. Lores with hair-like bristles *Gruidae*, Cranes, page 68
2. Bill under 3 inches; forehead with a bare shield, toes level.
Gallinules and Coots, page 72-73
3. Bill under 3 inches, hind toe elevated and small.
Rallidae, Rails, page 69

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SHORE BIRDS

Order VIII. *Limicolae*—Phalaropes, Snipes, Plovers.

Toes 3 or 4; hind toe when present small and elevated; legs generally long and slender; lower half of tibia bare; bills (except in the plovers) long, slender, and soft; wings long and pointed.

1. Tarsus over $3\frac{1}{2}$ inches.

Recurvirostridae, Stilts and Avocets, page 74

2. Tarsus under $3\frac{1}{2}$ inches:—

a. Sides of the toes with lobes or webs.

Phalaropodidae, Phalaropes, page 76

b. Sides of the toes without lobes or webs:—

(1) Toes 4 (except in Sanderling); front of tarsus with somewhat square scales.

Scolopacidae, Snipes, Sandpipers, page 78

a. Lower back white; black band across rump.

Aphrizidae, Turnstones, page 96

(2) Toes 3 (except in black-bellied Plover); front of tarsus with rounded scales:—

a. Bill under 2 inches. . . . *Charadriidae*, Plovers, page 93

b. Bill over 2 inches.

Haematopodidae, Oystercatcher, page 96

THE LAND BIRDS

EARTH-SCRATCHING BIRDS

Order IX. *Gallinae*—Turkeys, Grouse, Quail.

Toes 4, the hind one small and elevated; bill short and stout, hard and hornlike; wings short with curved and stiff outer primaries.

1. Head and upper neck naked. . . *Meleagrinae*, Turkeys, page 108

2. Head and upper neck feathered.

Tetraonidae, Grouse, etc., page 99

KEY TO LAND BIRDS

Order X. *Columbae*—Pigeons and Doves.

Toes 4, all on the same level; bill rather slender, deeply grooved, the nostrils opening in a fleshy membrane.

Characters as above—*Columbidae*, Pigeons and Doves, page 109

BIRDS OF PREY

Order XI. *Raptores*—Owls, Hawks, Eagles.

Toes 4, three in front, all armed with strong, sharp, curved talons or claws; nostrils opening through a cere at the base of the bill, which is stout, strong, and curved at the tip of the upper mandible into a sharp hook.

1. Eyes set in a facial disk; tarsus generally feathered; plumage soft and fluffy:—

a. Middle toe-nail with a comb-like edge:

Strigidae, Barn Owls, page 132

b. Middle toe-nail without a comb-like edge.

Bubonidae, Horned Owls, page 138

2. Eyes not set in a facial disk; tarsus mostly bare, plumage firm and close:—

a. Plumage black, hind toe small, claws blunt, bill not very sharply hooked; head generally bare.

Cathartidae, Vultures, page 116

b. Hind toe as long at least as the shortest front one; claws sharp; bill sharply hooked; head not bare.

Falconidae, Hawks, Eagles, page 118

Order XII. *Coccyges*—Cuckoos and Kingfishers.

Toes 4, the middle and outer ones jointed for half their length, or two in front and two behind. Tail feathers not stiff and pointed.

1. Middle and outer toe jointed for half their length.

Alcedinidae, Kingfishers, page 145

2. Two toes in front and two behind. *Cuculidae*, Cuckoos, page 143

Order XIII. *Pici*—Woodpeckers.

Toes 4, two in front and two behind, or toes 3—two in front. Bill strong, chisel shaped; tail feathers stiff and pointed; nostrils partly covered with bristlespage 146

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Order XIV. *Macrochires*—Goatsuckers, Swifts and Hummingbirds.

Feet very small and weak, wings generally long and pointed. Bill either short and small, with mouth large, or long and very slender, with mouth small.

1. Plumage variegated black and brown; middle toe-nail with comb-like edge *Caprimulgidae*, Goatsuckers, page 154
2. Plumage sooty black; no comb on middle toe-nail; tips of tail feathers spiny *Micropodidae*, Swifts, page 157
3. Very small; plumage very brilliant at least in part; bill very slender and long *Trochilidae*, Hummingbirds, page 159

PERCHING BIRDS

Order XV. *Passeres*—Flycatchers, Blackbirds, Jays, Orioles, Sparrows, Swallows, Vireos, Warblers, Wrens, Thrushes.

Toes 4, without webs, all on same level, hind toe as large as the middle one; tail of twelve feathers.

This is by far the greatest order of birds, containing one half as many families as all the other orders together.

A brief description of each family is given below:—

1. *Tyrannidae*.—Flycatchers:—Bill wider than high at the base, slightly hooked at the tip; base with conspicuous bristles; wings longer than the tail, second to fourth primary longest; back of tarsus rounded like the front; plumage generally olive-green or grayish; page 162
2. *Alaudidae*.—Larks. Bill rather stout and rounded; nostrils with bristly tufts; nail of hind toe much lengthened; back of the tarsus rounded like the front; page 169
3. *Corvidae*.—Crows and Jays. Large birds over 10 inches in length; bill stout, nostrils concealed by tufts of bristly feathers; fourth to fifth primary longest; outer tail feathers shortest; feet and legs stout; page 171
4. *Icteridae*.—Blackbirds, Orioles. Length 7 to 17 inches, base

KEY TO LAND BIRDS

- of the bill between the nostrils extending backwards and dividing the feathers of the forehead; nostrils not concealed by bristles; first three primaries of about equal length; outer tail feathers generally shortest; page 177
5. *Fringillidae*.—Sparrows, Finches, Grosbeaks, etc. Length $4\frac{1}{2}$ to 9 inches, generally under 8; bill short, stout, conical, fitted to crush seeds; third and fourth primaries of about the same length and nearly as long as any; page 186
6. *Tanagridae*.—Tanagers. Length about 7 inches; the males of our species mostly red with some yellow; bill finch-like but less conical; upper mandible curved and with a slight tooth on each edge near the middle; tail feathers of equal length; page 226
7. *Hirundinidae*.—Swallows. Bill short and flattened, much wider than high at the base; no bristles at base of bill; wings long and pointed, generally reaching beyond the tail; first primary longest; outer tail feathers longest; feet small; tarsus short, round in front, sharper on the back; page 228
8. *Ampelidae*.—Waxwings. Plumage soft brownish or grayish, a black band across the forehead and eyes; tail tipped with yellow; bill short, notched at the tip; head crested; page 233
9. *Laniidae*.—Shrikes. Length 8 to 9 inches; plumage grayish; most of the tail feathers tipped with white; bill hooked and hawklike; page 236
10. *Vireonidae*.—Vireos. Length 5 to 7 inches; backs generally olive-green; tail feathers without white spots; bill stout, higher than broad at the base, the tip of the upper mandible notched and hooked; bristles at base of bill barely evident; tarsus scaled, round in front, narrower and sharper behind; toes united at the base; page 238
11. *Mniotiltidae*.—Wood-warblers. Length generally under 6 inches, but a few species over this; plumage generally brightly colored or marked, olive-green or yellow being the commonest

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- coloration; bill various, never notched at the tip, usually slender and sharp pointed, without conspicuous bristles, but sometimes flattened and broad at the base with bristles showing; tarsus always thin and sharp at the back; second or third primary longest, the first little shorter; tail generally square, but sometimes rounded; page 242
12. *Motacillidae*.—Pipits and Wagtails. Bill slender, much as in the Warblers; no bristles over the nostrils; hind toe-nail as long or longer than the toe; first three primaries of equal length; page 270
13. *Troglodytidae*.—Thrashers and Wrens; page 272
 Sub-family, *Miminae*.—Thrashers, Mockingbirds and Catbirds. Length 8 to 12 inches; tarsus scaly; tail rounded; third to fifth primary longest; first about half as long; pages 278-279-280
 Sub-family, *Troglodytinae*.—Wrens. Length 4 to 6 inches, bill moderate, upper mandible slightly curved, no bristles at the base; third to fourth primary longest, first about half as long; tail short and rounded; brownish birds with indistinctly barred wings and tail; page 273
14. *Paridae*.—Nuthatches and Chickadee; page 281
 Sub-family, *Sittinae*.—Nuthatches. Bill long and slender, end of lower mandible slanting slightly upward; wings long and pointed; the third or fourth primary longest, the first less than one inch long; tail short and square; outer feathers blotched with white; page 282
 Sub-family, *Parinae*.—Chickadee. Bill short, stout and rounded, less than one-half inch long; fourth and fifth primary longest, the first less than one-third as long; tail long and dull ashy gray without white blotches; page 284
15. *Sylviidae*.—Kinglets and Gnatcatchers. Length 3½ to 5 inches; bill slender; first primary very short, only one-third as long as the longest; page 286

DIVING BIRDS

16. *Turdidae*.—Thrushes and Bluebirds. Length over 5½ inches; bill moderate, the tip of the upper mandible notched; tarsus smooth (booted); tail square; wings long and pointed, third primary longest, the first less than one inch in length; page 289

ORDER I.—*PYGOPODES*, DIVING BIRDS GREBES, LOONS, AND AUKS

These are all shaped for floating on the water, and have feet with webs between the toes. The legs are attached to the body far back, a good arrangement for the use of the feet as propellers, but not well adapted for walking on land. In fact, these birds have to make use of their very short tails as a third point of support when out of the water, and thus they stand erect. The tarsus is flat, the bill usually sharp-pointed, and without toothlike projections.

GREBES

(*Podicipidae*).

Six species of Grebes occur in North America, and of these five are found in Canada. The speed with which they dive when alarmed gains for them the vulgar names of "Hell-diver" and "Water-witch." Like the Loons they are able at will to change their specific gravity so as to sink directly and quietly. They are almost helpless on land, and are so thoroughly aquatic as to trust to diving rather than flight for safety, although able to fly rapidly. Their nests are masses of water-soaked plant remains, floating but anchored among the rushes, and the soiled white eggs are not always dry. Grebes feed on fish caught by direct pursuit under water. Their toes are flattened, connected to some extent by interdigital webs, and bear broad lobes which are widest toward the tips of the toes.

THE WESTERN GREBE

(*Aechmophorus occidentalis*).

The Western Grebe ranges from Manitoba to the Pacific, and southward to Mexico. A few specimens are said to have been

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found in Quebec. Its nests have been found in numbers in Saskatchewan, anchored among bulrushes, and constructed rudely of old rushes and mud. The eggs numbered four or five and were laid early in June. The bill and feet are greenish black; the iris red with a white ring. The forehead and lores are silvery ash, the cheeks puffy, and the head crested with dark feathers. Back of head and neck sooty blackish; the feathers of the back black with gray margins. Wings brown with white secondaries. The entire under parts are pure satiny white. Length about 26 inches, extent about 40.

RED-NECKED OR HOLBOELL'S GREBE

(*Colymbus holboellii*).

From the Atlantic to the Pacific in Greenland, Canada, and the United States this Grebe is found, breeding freely on the shallow lakes of the plains. The eggs usually number five, and unless the birds have been suddenly disturbed the observer will find the eggs covered with weeds like those forming the nest. The top and back of the head and neck are greenish-black; the back blackish; the throat and sides of the head silvery white, while the neck and breast are reddish; the primaries and coverts chocolate brown, and the secondaries white. The under parts are dappled silky white. Length about 19 inches, extent about 32.

HORNED GREBE

(*Colymbus auritus*).

The breeding grounds of this Grebe are the northern tier of the United States and Canada in general, as well as northern Europe and Asia. Its range includes these three continents in general. Its nest and eggs are quite like those already described. In breeding plumage this is quite a brightly marked bird, and probably the most beautiful of the Grebes. The black compressed bill is tipped with yellow; the top of the head, the hind neck, the

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DIVING BIRDS

ruff and the throat are glossy black; the back and wings are blackish; the secondaries white. A brownish patch below and above the eye extends and darkens backward into long crests. The fore-neck, breast and sides are chestnut, the other under parts silky white. Its length is about 14 inches and extent about 24.

AMERICAN EARED GREBE

(*Colymbus nigricollis californicus*).

This bird seldom reaches Ontario, but breeds from Manitoba westward to British Columbia, northward to Great Slave Lake, and in winter it retreats southward to Central America. In size and color it most nearly agrees with the Horned Grebe, but is distinguished by the depressed bill,—wider than high,—the absence of a ruff, and the smaller size. The long eartufts are golden brown, and fan-shaped, and show well against the black head and neck. Length 13 inches more or less, extent about 22.

DAB-CHICK, PIED-BILLED GREBE

(*Podilymbus podiceps*).

This is the common Hell-diver, Salmon Dipper, Water-witch, etc., of all North and most of South America. It furnishes an interesting vanishing target for young gunners, feeding peaceably while they get ready for another shot. It breeds on nearly every lake and pond, sometimes in colonies. The bill is bluish white with a broad black band around it. The throat patch is black, the crown, back of the head, and neck grayish-black; upper parts brownish black, and lower parts silky white mottled with dusky.

Length about 13 inches, extent 24.

LOONS

(*Gaviidae*).

The large diving birds called Loons are so thoroughly aquatic as to always seek safety under water, and are able to move very

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awkwardly on land only by the help of bill and wings. Besides being able to sink directly or to keep merely their bills above water, they dive most expertly. Their food consists of fish caught by direct pursuit under water, the bird's speed being increased by the use of the wings as paddles.

Their nests are always very close to the water and are merely depressions in the ground or among washed-up weeds. They lay two eggs, grayish or greenish brown with blackish patches. Loons belong to the northern half of the northern hemisphere, and three forms are well known in Canada.

GREAT DIVER OR LOON

(*Gavia imber*).

This is the common Loon of southern Canada, where it breeds in large ponds and lakes from the Atlantic to the Pacific. It is especially at home in Labrador and from Hudson Bay to Alaska. The wings of the Loon are small in proportion to its size and weight, rarely exceeding four and a half feet, and as a result it rises with difficulty from the water, fluttering along the surface for some distance. When under motion however, it can fly very swiftly in a fixed direction, and when travelling from lake to lake it often produces a loud clear "laughing" note, consisting of the repetition of a rapid succession of "hoo-hoo-hoo-hoo-hoo." This call attracts attention to the duck-shaped bird, with long outstretched neck and head, and wings apparently too far aft, hurrying straight towards its watery destination. At nights, and before stormy weather, Loons are guilty also of a weird maniacal scream, the most remarkable sound heard on our quiet inland lakes. Civilization has not interfered seriously as yet with the numbers of this harmless and beautiful bird, whose presence adds so much to the satisfactory wildness of our summer camping sites.

Its plumage is greenish black on the upper parts, with the throat and sides of the neck sharply streaked with white, and with

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DIVING BIRDS

spots and bars on the back, wings, and sides. The breast and belly are white. Bill black, except at tip. In winter the upper parts and throat are grayish. Length about 32 inches, and extent about 52.

YELLOW-BILLED LOON

(*Gavia adamsii*).

This large northern bird seems to be unknown in southern Canada, and probably spends the winter on the Pacific Ocean. It is known to breed on the coast of Alaska, and has been seen in summer by explorers on Great Slave Lake, and the smaller lakes near Slave River. Its summer range is probably the tundra between Hudson Bay and Alaska. Its head and neck are dark lustrous blue, with purplish and greenish shadings. The white throat patches are smaller than in the Common Loon, but the white streaks are larger. The white bars and spots on the back are larger than those of *imber*, and the bill is light yellowish except at the base. Length about 37 inches, and extent about 56.

BLACK-THROATED LOON

(*Gavia arctica*).

This is a smaller bird, in length not beyond 30 inches. In color it is like the Great Diver except that the top of the head and the back of the neck are gray or ashy. Its range is further north, from Labrador to Alaska, and it reaches southern Canada only in the winter or during migration.

RED-THROATED LOON

(*Gavia lumme*).

The Red-throat is slightly smaller than the Black-throat, seldom exceeding 27 inches in length. It breeds in New Brunswick, Newfoundland, and Labrador, and north to the Arctic and Behring Sea. It is less black than the others, the back being grayish, while the head and neck are ashy; the throat bears a large chestnut patch.

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PUFFINS, GUILLEMOTS, AND AUKS

(*Alcidae*).

These are three-toed, web-footed birds, variable in color and often with curling crests. Their legs are set far back, resulting in an erect position when the birds are standing. The bill is often remarkable in size and shape and may have colored horny processes which are shed after the nesting season. The eggs are few in number, usually only one.

Puffins are often called Sea Parrots. They are maritime birds, living on the open sea, and nesting in colonies on the ledges of rocky shores, or in holes dug in the soil of the shore. They fly, swim, and dive expertly, but move on land awkwardly. They are distinguished by the remarkable size and shape of the beak, which is strongly compressed, about as high as long, and very large for the bird. During the breeding season temporary excrescences are added to the bill. They feed on the fish they catch by diving.

COMMON PUFFIN

(*Fratercula arctica*).

This is a common bird along parts of the coast and islands of Newfoundland and Labrador. It breeds in holes in the rocks or in the soil. The single dull white egg is laid on the bare earth in June or July.

Its feet are orange, bill and eyelids vermilion, with a grayish, horny appendage above and below each eye. The upper parts are blue-black; the sides of the head and throat are grayish white; the lower surface white; length about 13 inches, extent about 24. In diving for its prey, both wings and feet are used.

HORNED PUFFIN

(*Fratercula corniculata*).

The polar sea and North Pacific,—extending on the American side down to the coast of British Columbia,—constitute the range



DIVING BIRDS

of this strongly marked bird. Its breeding grounds are the Aleutian Islands, the coast of Alaska, and the Islands of the Behring Sea, and there they are remarkably plentiful. The nest is usually a loose mass of grass and moss in a deep crevice or easily protected hole, often on a ledge of a high cliff. The single egg is clear white.

The bill of the Horned Puffin is especially large and high, about 2 inches long, and the same in depth, by one half inch wide. This mask-like weapon is vermilion, the eyelids are red, and the feet are orange. On each upper eyelid is a long slender acute upright horn. The upper parts and throat are black, and the under parts white. Length about 14 inches, extent about 24.

TUFTED PUFFIN

(*Lunda cirrata*).

The range of the Tufted Puffin is similar to that of the last described, but extends further to the south, as it breeds on the Farralones, off San Francisco, Cal., (Cones). It nests among the rocks, in holes in the soil, and on the edges of cliffs and bluffs. The middle of June is about the time for their eggs to be laid, and the birds attend closely, to defeat the attacks of foxes.

The upper parts are glossy black; the lower surface a brownish black; the bill, eyelids, and feet are vermilion; the rosette at the corner of the mouth is yellow, as are two tufts of silky plumage streaming back from behind the eyes. The face, and a line along the edge of the wing are white. Length about 15 inches, extent 27.

GUILLEMOTS

As the Puffins with their huge beaks are often called Sea Parrots, so the Guillemots are commonly known as Sea Pigeons. They live on the open Atlantic as far south as New Jersey in winter, but during the breeding season they assemble in flocks on rocky islands and headlands from Bay of Fundy northward to the Arctic. They are expert and graceful except on land, and they

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pursue their fishy prey with the aid of both wings and feet. They incubate on rocky ledges, standing in close rows with their backs to the sea, and their eggs between their feet. The head of the Sea Pigeon is slender and graceful and tapers forward to the acute beak.

BLACK GUILLEMOT

(*Cephus grylle*).

The Black Guillemot has in a few instances been taken on Lake Ontario, but these were doubtless accidental wanderers. It is plentiful about Hudson Strait, and its range is given above. It is gregarious, flying in flocks and nesting in numbers in deep crevices of rocks, on ledges of cliffs, and bluff headlands. In summer the Guillemot is greenish-black above and sooty black below, with a white patch on each wing. In fall and winter it is black and white spotted, with white head and neck, black wings with a white patch, and black bill. The feet are carmine or coral red. Length about 13 and extent about 22 inches.

COMMON GUILLEMOT OR MURRE

(*Uria troile*).

Both coasts of the North Atlantic,—as far south in Canada as the Gulf of St. Lawrence,—are the breeding grounds of the Murre, but in winter it extends its range to the latitude of Massachusetts. Enormous numbers of these birds breed in suitable places where they are undisturbed, but such places are becoming few, since their large eggs have a commercial value. These eggs are notable for the remarkable variability of their coloring and markings, from creamy to a distinct greenish or bluish, spotted, blotched or streaked with shades of brown.

The plumage in summer is brownish black or slaty brown on the head and back; with white tips on the secondaries; white under parts and wing linings, and dusky on the sides. In winter the



BRUNNICH'S MURRE.
3/4 Life-size.

DIVING BIRDS

white encroaches on the black of the head and neck to the line of the commissure of the bill. Length 17 inches, extent 30.

THICK-BILLED GUILLEMOT, BRUNNICK'S MURRE

(*Uria lomvia*).

The range of this plentiful bird is the same as that of the common Guillemot, and in plumage the difference is but slight. The top and back of the head and neck are black instead of brown, the throat is brown instead of white, and the edge of the bill is thickened at the base, which is not the case with the *troile*. Length usually 16 inches, extent about 29.

In migrating southward from Hudson Bay in autumn these birds frequently reach the Ottawa and St. Lawrence Rivers and Lake Ontario. Here they perish from starvation, their stomachs being found empty. They are apparently unable to adapt their fishing methods to fresh water. Several have been captured in a famishing condition or found dead, near Lake Ontario.

AUKS

The Auks are closely related to the Puffins and Guillemots, differing from the former in having deciduous parts on their bills, and from the Guillemots in having hooked instead of sharp, straight-pointed bills. They are like the other marine birds, and when not seeking their food in the sea they stand erect on the rocky ledges of their remote nesting places.

RAZOR-BILLED AUK

(*Alca torda*).

The American range of this bird is, in winter, as far south as New Jersey, but it breeds only from Grand Manan northward. It is found plentifully in the Gulf of St. Lawrence, and northward into the Arctic Ocean. Its usually single egg is laid in crevices and caverns opening over the ocean. Its back and wings are green-

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ish black; its head and neck dull black. There is a white line from the eye to the bill, another around the black bill, and one across each wing. The lower parts are altogether white. Length about 18 inches, extent about 27.

THE GREAT AUK

(*Plautus impennis*).

This large and very interesting bird,—the Gare-fowl,—was last seen alive between 1840 and 1845 in Iceland, but had been plentiful before that about the Newfoundland coast. In coloration it resembled the Razor-bill. Its wings were less than six inches long, although its body measured about 30 inches. Being unable to fly, and unafraid of man, it was destroyed by him for the sake of its flesh, oil, and feathers.

LITTLE AUK, DOVEKIE

(*Alle alle*).

This bird is occasionally carried by windstorms far inland, but its home is the North Atlantic from Long Island to Iceland. It nests on the latter island and is one of the most northern of birds. Its single egg is pale greenish blue. Its coloration is similar to that of the Razor-bill, but there is no definite line or patch of white about the eye, while the wings have white patches or spots. The bill is short and obtuse and as wide as high. Length about 8½ inches, extent about 15.

ORDER II.—LONGIPENNES.

LONG-WINGED SWIMMERS

These birds are characterized by having great powers of flight, as well as of swimming on the surface of the water.

Their structural peculiarities are open lateral nostrils and a small free hind toe. The family includes the Skuas, Gulls, Terns, and Skimmers.

LONG-WINGED SWIMMERS

SKUAS OR JAEGERS

(*Stercorariidae*).

These Skuas are at home on our Arctic shores and lakes but migrate southwards along the coasts, and occasionally by way of the Great Lakes where a few have been captured. Their scientific name *Megalestris* implies *great thieves*, and this is well earned by their habit of persistently plundering weaker or less determined gulls and terns. Their bills are about two inches in length and bear a cere or waxy outgrowth on the base.

COMMON SKUA, SEAHAWK-BONXIA

(*Megalestris Skuas*).

These birds have excellent wing powers and use their strength and spirit to bully weaker gulls into disgorging recently captured food. Upon this the Skuas principally live. They are occasionally found in the Gulf of St. Lawrence and about Nova Scotia, but are at home further north, usually within the Arctic Circle. They have been taken in Hudson Strait, but are more common about Iceland, the Faero Islands, and Norway. Their nests are on cliffs, and they lay two or three olive-green, or brownish spotted eggs. The plumage of the upper parts is altogether a blackish brown, while the under parts are lighter. On the neck are streaks of whitish feathers. Length about 21, extent over 50 inches.

POMARINE JAEGER

(*Stercorarius pomarinus*).

This is a smaller, more slender bird than the common Skua, but has the same range and habits. It is nearly black on the upper parts and lower belly, with white throat, neck, and breast. The sides of the neck show a little yellowish. Its length is about 20 inches, the middle tail feathers project about 4 inches, and are broad throughout and twisted near the tip.

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PARASITIC JAEGER

(*Stercorarius parasiticus*).

Sailors have given this bird many names—such as Boatswain, Marlinspike, Scouty Allen, and others—but wherever found it is the same greedy, thievish bully. It is at home in all Arctic and subarctic parts of both the Old and New Worlds, breeding on the Barren Grounds of our Arctic coast regions. Stress of hunger makes it willing to eat berries, in fact, none of the Skuas can be considered as critical in their feeding. In winter it wanders southward, and may reach the Great Lakes. The whole upper parts are brownish black or somewhat slaty, with an occipital crest and stiff nuchal feathers. The sides of the neck are yellowish, but all the lower surface is pure white. The middle pair of tail feathers project about 3 to 4 inches, tapering for about 4 inches to acute tips. Length about 18 inches.

LONG-TAILED JAEGER

(*Stercorarius longicaudus*).

This is the Arctic Jaeger, having its nesting grounds more distinctly in the far north, usually within the Arctic Circle. It has been taken in Lake Erie, the Gulf of St. Lawrence, and in Manitoba. It has a brownish black cap, the same color reaching below the eyes. The neck all around and the sides of the head are light straw yellow. Upper surface deep slate. Under side white, darkening to black toward the tail. Middle tail feathers project 9 inches. Length 23 inches.

GULLS AND TERNS

(*Laridae*).

These are long-winged swimming birds, without a cere on the beak, and their middle tail feathers do not project beyond the others. The closed wings project beyond the tail. They are strong

KEY TO GENERA OF CANADIAN GULLS

fliers, but are seldom dashing in manner, and are found on all coasts and many large inland waters, rather than on the open sea. Gulls are voracious birds feeding on fish, smaller birds, or almost any kind of animal or vegetable matter.

KEY TO GENERA OF CANADIAN GULLS

1. Adult plumage entirely white. Feet black. *Pagophila I.*
2. Adult plumage not entirely white.
 - 2a. Hind toe poorly developed and with a very small claw or none *Rissa II.*
 - 2b. Hind toe well developed and with perfectly developed claw. *Larus III.*

KEYS TO SPECIES OF GULLS IN EACH GENUS.

I. *Pagophila*—only one species.

Pagophila alba, Ice Gull, or Ivory Gull, page 24

II. *Rissa*—

1. Hind toe very small and clawless.

Rissa tridactyla, Atlantic Kittiwake, page 25

2. Hind toe small, but with small claw.

Rissa tridactyla pollicaris, Pacific Kittiwake, page 25

III. *Larus*—

A. Wing under 15 inches in length.

a. Head white or pale pearly gray.

Larus delawarensis, Ring-billed Gull, page 27

b. Head and throat slaty black:—

b1. Outer primary entirely black.

Larus atricilla, Laughing Gull, page 28

b2. Outer primary partly white:—

c. Tip of first primary white.

Larus franklini, Franklin's Gull, page 28

d. Tip of first primary black.

Larus philadelphia, Bonaparte's Gull, page 29

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B. Wing over 15 inches in length.

a. Back dark slate color.

Larus marinus, Black-backed Gull, page 26

b. Back "gull blue" or pearly gray:—

b1. Bill under 2 inches in length:—

c. Outer primary with black on both webs.

Larus brachyrhynchus, Short-billed Gull, page 28

c1. Outer primary pearl gray, lighter at tips.

Larus leucopterus, Iceland Gull, page 25

c2. Outer primary pearl gray with definite white tip.

Larus glaucescens, Glaucous-winged Gull, page 26

b2. Bill over 2 inches in length:—

d. Outer primary pearl gray.

Larus glaucus, Burgomaster, page 25
and *Larus barrovianus* (slightly smaller)
Western Glaucus, page 26

d1. Outer primary with some black.

Larus argentatus smithsonianus, Atlantic Herring Gull,
page 27

d2. Similar, but dark pearl gray.

Larus occidentalis, Pacific Herring Gull, page 26

IVORY GULL, SNOW GULL

(*Phagophila alba*).

This beautiful bird has been taken in Lake Ontario, but its home is Hudson Bay and the Arctic regions. Its length is about 18 inches, and extent about 41. In coloration it is entirely pure white, but there may be dusky spots remaining on the wings and tail. The feet are black and the bill yellowish.

LONG-WINGED SWIMMERS

KITTIWAKE

(*Rissa tridactyla*).

The Kittiwake breeds along the Labrador coast and about islands of the Gulf of St. Lawrence. In late autumn it is common on the St. Lawrence River and Lake Ontario. Its mantle is black and wings are bluish gray, and there is a black line along the edge of each wing, otherwise its plumage is white. In the kittiwakes the hind toe is very imperfect. The Pacific Kittiwake has this toe better developed than the Atlantic form, but otherwise they are alike.

GLAUCOUS GULL, BURGOMASTER ICE GULL

(*Larus glaucus*).

The Burgomaster is said to be the common large gull of the north, breeding in Hudson Bay and along the Labrador coast. It is frequently seen in Lake Ontario in winter. Wherever found it is a gross and voracious feeder. The Pacific form, by some called *Larus barrovianus*, is found along the northern Pacific coasts, and is practically identical with the above. The mantle is pearl gray, and the remainder of the plumage white. The bill is yellow and the feet pinkish. Length about 29 inches, extent nearly 60.

IOELAND GULL

(*Larus leucopterus*).

The Iceland Gull belongs chiefly to Europe, but has been found nesting on our Arctic coast, and specimens have been taken in Baffin Bay, Davis Strait, St. Lawrence River and Gulf, and as wanderers in Lake Ontario.

Its appearance is exactly that of the Burgomaster, except that it is less in size, reaching only 24 inches in length.

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GLAUCOUS-WINGED GULL

(*Larus glaucescens*).

The coasts of the north Pacific are the haunts of this gull. It breeds on Canadian shores, from the south end of Vancouver Island to Behring Straits. In appearance it is like our common Herring Gull, but the wings lack the black markings found on all the other large gulls. Its mantle and wings are entirely bluish gray with white spots at the tips of the primaries. Length about 27 inches.

GREAT BLACK-BACKED GULL

(*Larus marinus*).

This is the largest and most powerful of our gulls, but is not confined to the American side of the Atlantic. It nests on the Labrador coast, in Nova Scotia, and probably in New Brunswick, and on islands in fresh water lakes, as well as on the ocean. The nest is made of moss and grass on the ground, and the two or three eggs are olive gray or drab, blotched with dusky. The bird gives the impression of strength. The bill is very stout, and bright chrome yellow in color in the nesting season. The terminal half of the lower mandible is vermilion, as are the eyelids. The iris is pale lemon yellow. The mantle is deep slate, nearly black, with white wing bars. The white of the head and neck is in winter streaked with dusky. Length 30 inches, and extent 65.

WESTERN GULL

(*Larus occidentalis*).

The Western Herring Gull is very common and breeds along the British Columbia coasts. In winter it is common in the Gulf of Georgia. Its feet and bill are unusually large and stout, and its mantle dark bluish ash, but not quite slate colored. Length about 24, and extent about 55 inches.

LONG-WINGED SWIMMERS

AMERICAN HERRING GULL

(*Larus argentatus smithsonianus*).

The common Herring Gull is the most familiar and widely spread of our gulls. It breeds freely on the Atlantic coast, the Great Lakes, and many small lakes of Ontario, in Manitoba, and throughout the North-West and Yukon to the Arctic Ocean. As a scavenger it is common and fearless about the harbors and wharves of our cities, following vessels on the lakes and along the coasts. It builds its usually crude nests either on the ground, or, where persecuted, as at Grand Manan—in trees many feet from the ground. The eggs are normally three, from bluish white to yellowish or olive brown, with irregular dark markings. The mantle is pearly gray or "gull blue." In breeding plumage the bill is bright chrome, with a vermilion spot at the angle. The legs and feet are pale flesh color. The primaries bear black spots and shafts. Length 25 inches, extent 56.

CALIFORNIA GULL

(*Larus californicus*).

This gull breeds abundantly in the interior of the Pacific States, also along the British Columbia coast, and is said to be plentiful in Alberta and Saskatchewan. Its mantle is pearl blue; the bill as in the Herring Gull, but with an imperfect black band; the feet bluish green with yellow webs. The first primary has a white end for two inches from the tip. Length 22 inches, extent about 53 inches.

RING-BILLED GULL

(*Larus delawarensis*).

We have the Ring-billed Gull recorded as common in Newfoundland and the Great Lakes, breeding in Georgian Bay and



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



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2.8

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Lake Muskoka, and in the prairie lakes from Manitoba to the Rocky Mountains. It is also found in British Columbia. The nests are of grass, on the ground, and the eggs laid are usually three, bluish white, often so splotched with brown as to appear to be entirely of that color. The bill is greenish yellow, and encircled near the tip with a broad black band. The plumage is the same as that of the Herring Gull. Length not over 20 inches and extent about 48 inches.

SHORT-BILLED GULL

(*Larus brachyrhynchus*).

One specimen was shot near Quebec, but the range of this gull is Alaska and British Columbia and the coast south to California. It breeds also on the Arctic coast. Its bill is bluish green, short and stout, not longer than $1\frac{1}{2}$ inches, and the tip is bright yellow. Legs and feet dusky bluish green, the webs yellowish. These colors are bright during the nesting season. Mantle light grayish blue, darker than that of the Herring Gull. Length about 17 inches, extent about 42 inches.

LAUGHING GULL

This species has been taken near Toronto, but its home is south of the boundary and down within the tropics. It gets its name from its "long-drawn clear note on a high key." It is one of the Rosy Gulls, having in summer the white under parts tinged with rose red. The bill and edges of the eyelids are carmine. The mantle is lead gray. Length about 16 inches, extent 41.

FRANKLIN'S ROSY GULL

(*Larus Franklini*).

This is a western form, accidental in Lake Ontario, but common across the prairie provinces and breeding there. They follow

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BONAPARTE'S GULL.
1/9 Life-size.

LONG-WINGED SWIMMERS

the ploughman, along with blackbirds, feeding on the worms and grubs which are turned up. They have also been found with the stomach full of grasshoppers. They nest on the ground or in sloughs among grass and rushes where the nests may be afloat, and are usually in colonies. Its bill is red, mantle slaty gray, hood almost black, neck and tail white. The under parts are white washed with rosy red, which also tints the under side of the wings. Length about 14, extent about 35 inches.

BONAPARTE'S GULL

(*Larus philadelphia*).

This little gull breeds all across Canada from ocean to ocean, on almost every lake of considerable size. Its nest is often in trees or bushes or on a stump, but if these are lacking it incubates on the ground. Its eggs are three or four, greenish gray with small brownish spots. Its head and throat are dark slate color and its bill is black. The back and wings are pearly gray, except the tips of the latter, which are black. Otherwise it is white. Length 13, extent 32 inches.

TERNs, SEA-SWALLOWS.

(*Sterna*).

In most of their characteristics Terns closely resemble gulls, but they are all comparatively slender, with close-fitting plumage, tail generally forked, long sharp pointed bill, and elongated narrow wings. Their slight buoyant bodies, combined with great powers of flight, enable them to rival our swallows in aerial evolutions, and the name Sea Swallows admirably designates the group, especially as some of the smaller forms are insectivorous. Their food is usually, however, small fish captured by an impetuous dash from above, the bird going quite under for a moment. They haunt the shores of large bodies of both fresh and salt water, and nest in colonies on sandy or gravelly shores, where they lay two grayish eggs, variously marked with chocolate. Terns have shrill voices,

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and as they are usually in flocks, attract attention. They are readily distinguished from gulls by their habit of carrying their bills pointing downward, while gulls carry theirs in line with the direction of flight. Terns are beautiful, harmless birds, which should be protected from the wing and plume hunters.

THE CASPIAN TERN

(*Sterna caspia*).

This is the largest of this group, reaching 22 inches in length, with a wing spread of over 50 inches. It is found about the Newfoundland coasts, Nova Scotia, Hudson Bay, and Great Slave Lake. It is not uncommon about the Great Lakes during fall and spring, and breeds in Lake Michigan. The crown, sides, and back of the head are black. This *hood* is very common among the terns. The mantle is pearl grey, the bill vermilion, and nearly three inches long, and the feet are black. In winter the hood is streaked with white.

FORSTER'S TERN

(*Sterna forsteri*).

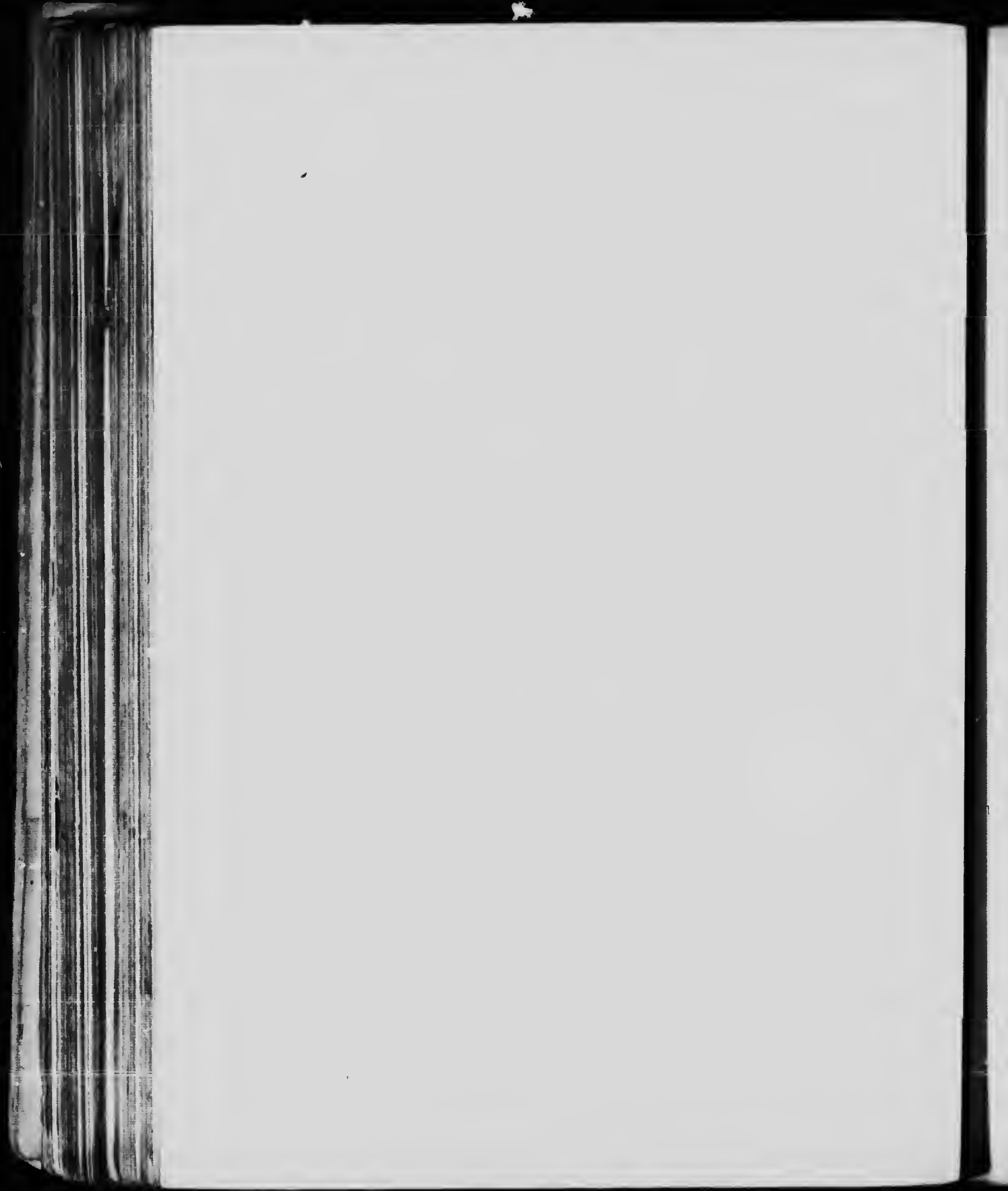
This Tern breeds in the St. Clair Flats in Ontario, in the marshes of Manitoba lakes and southward to Texas. Its colors are very like those of the Caspian Tern, but its length is only 15 inches and its extent 30. It nests in marshes on grass or seaweeds, and lays two or three eggs, brownish or greenish, spotted and blotched with brown and blackish.

WILSON'S TERN

(*Sterna hirundo*).

This is the common tern, breeding from Labrador to Bay of Fundy, River St. Lawrence, the Great Lakes, Manitoba, and British Columbia. Its range extends also over the United States as





LONG-WINGED SWIMMERS

well as Europe, Asia, Africa, and South America. It wears the black hood and pearl gray mantle, but its breast and belly are pale pearl gray, the bill red at the base and black at the tip, the feet orange red. Length $14\frac{1}{2}$, extent 31 inches. The eggs are laid in a hollow in the sand and are greenish gray to brown, blotched with darker brown and lilac.

ARCTIC TERN

(*Sterna paradisaea*).

The Arctic Tern breeds on the shores of Hudson Bay, and from Massachusetts around the Arctic coast and the Aleutian Islands. It is known over North America at large, also in Europe, Asia, and Africa. The hood is shining black, the mantle pearl gray, and the lower parts but slightly paler. The feet are small and weak, and vermilion in color, the bill is entirely red. It greatly resembles the common tern. Length about 15 inches, extent 31.

LEAST TERN

(*Sterna illarum*).

This is a southern bird occasionally found in Lake Erie and the west end of Lake Ontario, and about Nova Scotia and Newfoundland. It is found all across from the New England States to Minnesota and southward. Its mantle is dark, the same color covers also the tail. A white crescent separates the hood from the bill. A black line through the eye extends to the feathers on the bill. Length about 9 inches, extent 20.

AMERICAN BLACK TERN

(*Hydrochelidon nigra*).

This graceful swallow-like bird breeds from our southern boundary north to Alaska, in the Cataraqui Marsh at Kingston, in the St. Clair Flats, and especially in the marshes of Manitoba and

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Saskatchewan. Nearly all parts of North America where marshes extend are visited by these birds. They build often in colonies, making careless nests of a few rushes and dead stalks, insufficient to keep the eggs out of the water. They lay from two to four brownish olive eggs, heavily marked with spots and splashes of brown. Length about 9 inches, extent 25 inches.

ORDER III.—*TURBINARES*.

TUBE-NOSED SWIMMERS

The Albatrosses, Petrels and Shearwaters make up this group, the character common to all being tubular nostrils, which are lateral and separated in the Albatrosses, but united in the Petrels.

Albatrosses are among the most remarkable of birds in powers of flight, owing to the great development of the wing and the very numerous flight feathers. They lay one egg in a nest on the open ground.

SHORT-TAILED ALBATROSS

(*Diomedea albatrus*).

This species is found on the coasts of British Columbia, especially the west side of Vancouver Island. From there northward to the Arctic Sea it is numerous. Other species are accidental on our ocean borders. They are oceanic wanderers, seldom landing except to breed, but resting safely on the water and swimming strongly. The Short-tailed Albatross is supposed to nest on lonely islands west of the Sandwich group. Its color is white with some yellow on head and neck, and black on wings and tail. The bill is about 6 inches long, concave above and prominently hooked. The bird is about 36 inches long and has a wing extent of about 7 feet.

PETRELS

The nostrils of the Petrels form two closely united tubes. The Fulmars are peculiar in having only the upper mandible hooked. The hind toe is present, but often very small.

TUBE-NOSED SWIMMERS

COMMON FULMER, ST. KILDA PETREL

This bird is said to breed in northern Greenland, certainly at St. Kilda. It is very plentiful along the Labrador coast and Newfoundland, and occasionally is seen further south. It lays a single white egg on ledges and crags overhanging the sea. It feeds on fish and is greedy for oily foods, following the whalers for blubber. Its back and wings are pale pearly blue. Other parts white, except usually a dark spot in front of the eye. Length about 19 inches, wing 13 inches.

The Pacific variety of same is common on the coast and islands of the northern Pacific. It is like the Common Fulmer, but rather smaller and darker.

SHEARWATERS

(*Puffinus*).

These differ from the last in having both mandibles hooked, and the partition between the short nostril tubes is very thick. Their long thin wings fold beyond the tail, and the feet are large and strong. A single white egg is laid in a rocky crevice or in a burrow dug by the bird near the beach.

COMMON OR GREAT SHEARWATER, HAG

(*Puffinus gravis*).

This bird is common on the coasts of Labrador and Newfoundland, and is often seen near Nova Scotia and New Brunswick. It hunts over the whole Atlantic, gliding over the surface of the water without perceptible effort or wing motion. Its nest and eggs are not certainly known. The upper parts are blackish, with a grayish brown on head and rump. Under parts are white and changing to ashy gray on lower belly and under tail coverts. Length about 20 inches and extent about 40 inches.

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MANX SHEARWATER

(*Puffinus puffinus*).

Although really a European bird, we find this species quite common on the coast of the Gulf of St. Lawrence, its powers of flight making all parts of the north Atlantic its home. The upper parts are lustrous black, sometimes with a brownish shade, and ashy across the nape. Under parts white. Length about 14 inches, extent about 31 inches.

BLACK-VENTED SHEARWATER

(*Puffinus opisthomelas*).

The Pacific coast, from California to Vancouver Island, is haunted by this petrel. It nests on islands off the Californian coast. It is dark above and white below, like the others, but the under tail coverts are sooty black. Length about 11½ inches, extent 26 inches.

SOOTY SHEARWATER

(*Puffinus fuliginosus*).

The Sooty Shearwater is common on the Banks of Newfoundland and the coast of Labrador, and is seen on the coast of Nova Scotia and New Brunswick. It ranges over the Atlantic, breeding in colonies. Its plumage is uniform sooty brown above, and but slightly grayish below. Length 17 inches, extent about 40 inches.

STORMY PETRELS.

The Stormy Petrels are smaller birds, with a thin partition between the nostrils. Most of the species known on our coast are of the short-legged members of this group, but Wilson's Petrel is of the long-legged section.

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WILSONS PETREL.
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TUBE-NOSED SWIMMERS

COMMON STORMY PETREL

(*Procellaria pelagica*).

These birds—the different species being all known commonly as Mother Carey's Chickens—breed on the islands about Greenland and in the Gulf of St. Lawrence. The coast of Greenland, Hudson Straits, and the Labrador islands and bays are populated thickly with many kinds of birds during the short summer, and among them these Petrels are always numerous. The upper plumage is glossy brownish black, below it is more smoky in tint. The rump feathers are white with black tips, the crissum has white streaks, the tail is square, and the leg bones are shorter than the wing bone. Length about 5½ inches.

GRAY FORK-TAILED PETREL

(*Oceanodroma furcata*).

The Aleutian Islands of the North Pacific and the shores of Behring Sea are the home of this Petrel, but it is quite plentiful about Vancouver Island. Its color is bluish-ash above and paler below. Its length is about 8½ inches.

LEACH'S FORK-TAILED PETREL

(*Oceanodroma leucorhoa*).

This bird is often called the White-rumped Petrel, although not peculiar in carrying this mark. It is found on both coasts of America, breeding from Maine northward, especially on Bird Rock, and probably on the coast of Newfoundland. It is brownish black above except for the conspicuous white tail coverts. Below it is paler, but nearly altogether blackish. Length about 8 inches.

WILSON'S PETREL

(*Oceanites oceanicus*).

This is one of the best known birds, ranging over all seas. It is known to breed in Antarctic regions. On our shores it is com-

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mon on the Gulf of St. Lawrence. Its coloration is similar to most of the others—blackish brown above, with a little gray on the wings and with white tail coverts. Somewhat paler below, and the crissum and the base of the tail may be white. The legs and feet are very long, the latter black with a yellow spot on the webs. Length about 7 inches, extent about 16.

ORDER IV.—*STEGANOPODES* TOTIPALMATE SWIMMERS.

Hind toe well developed and low. All four toes united by complete webs reaching from tip to tip. Nostrils minute or abortive. A gular pouch from lower mandible and throat. Bill neither membranous nor lamellate, the edges sometimes serrate. Altricial, eggs few. Carnivorous. The order includes Gannets, Cormorants, Pelicans, and others not in our range.

GANNETS (*Sulidae*.)

These are large, heavy, oceanic birds, that fly vigorously with outstretchd necks, resembling geese in general attitude. Their bodies are pneumatic, and they are strong swimmers. They feed upon fish, which are caught by plunging from the air, often from great heights. One species is northern, the others are at home near the equator. A common name for them is Booby. They nest in colonies, the common white Gannet or Solan Goose breeding in great numbers on the rocky coasts of southern Labrador and Nova Scotia, as well as on Gannet Rock and Bird Rock in the Gulf of St. Lawrence, and Bass Rock in the Firth of Forth.

WHITE GANNET—SOLAN GOOSE (*Sula bassano*.)

As noted above this is an inhabitant of North Atlantic coasts, being common in the Gulf of St. Lawrence, and accidental in the

TOTIPALMATE SWIMMERS

Great Lakes. In winter it goes as far south as the Gulf of Mexico. Its plumage is white except for some yellowish feathers on the head and neck. Its gular pouch is small, bare, and blackish. The length of the Gannet is about 3 feet and extent of wings about 6 feet. On rocky cliffs it nests in swarms of thousands, laying a single egg, bluish with chalky deposit.

CORMORANTS

(*Phalacrocoracidae*).

These are large oceanic birds with solid bodies, short wings and large stiff tails. The legs are set far back, so the bird stands nearly erect, using its tail as the third point of support. In the water they move with grace and ease, diving from the surface and catching fish by speed of swimming under the water, the wings acting as paddles. The neck is long, the gular pouch small, the bill strongly hooked and the gape opens far behind the eye.

SINGLE-CRESTED CORMORANT—SHAG

(*Phalacrocorax carbo*).

This, the common Cormorant, nests on ledges of rocky cliffs along the coast of Labrador, Newfoundland and Nova Scotia. It is often found in the St. Lawrence River, Ottawa River, and Lake Ontario, and in winter south to Virginia. Its general plumage is bluish black, with brownish on the shoulders and a white patch on the throat and on the flank. In the breeding season a crest of long, white, filamentous feathers is scattered on the hind head and neck. The gular sac is small and yellow, and bordered behind with white feathers. The tail consists of fourteen feathers. Its eggs are three or four, bluish green with a coating of white chalky material. Length of body about three feet, extent about 5 feet.

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DOUBLE-CRESTED CORMORANT

(*Phalacrocorax dilophus*.)

This Cormorant breeds plentifully on the Newfoundland Coasts, also in Manitoba, Saskatchewan and Alberta. It is common in the Gulf of St. Lawrence, and is frequently seen in Lake Ontario, where it may breed, but such nesting place is not known. In plumage it resembles the Single-crested Cormorant, but has two curly black tufts of feathers on the sides of the head during the breeding season, and its tail consists of but twelve feathers. Length about 32 inches, extent about 50.

The White-crested Cormorant is a variety of the Double-crested, found on the Pacific coast from California to Alaska, being common about Vancouver Island. It has a white crest of curly feathers over each eye, and it reaches 36 inches in length.

VIOLET-GREEN CORMORANT

(*Phalacrocorax pelagicus*.)

This is also a Pacific bird, inhabiting the north Pacific from Japan to the Aleutian Islands and south to Washington. It resides winter and summer in the Aleutian Archipelago, breeding freely, and becoming extremely plentiful. The back is lustrous green; wing coverts and sides purplish; neck violet iridescent; a crest on the top and another on the back of the head. Length about 27 inches, extent about 40.

PELICANS

(*Pelecanidae*.)

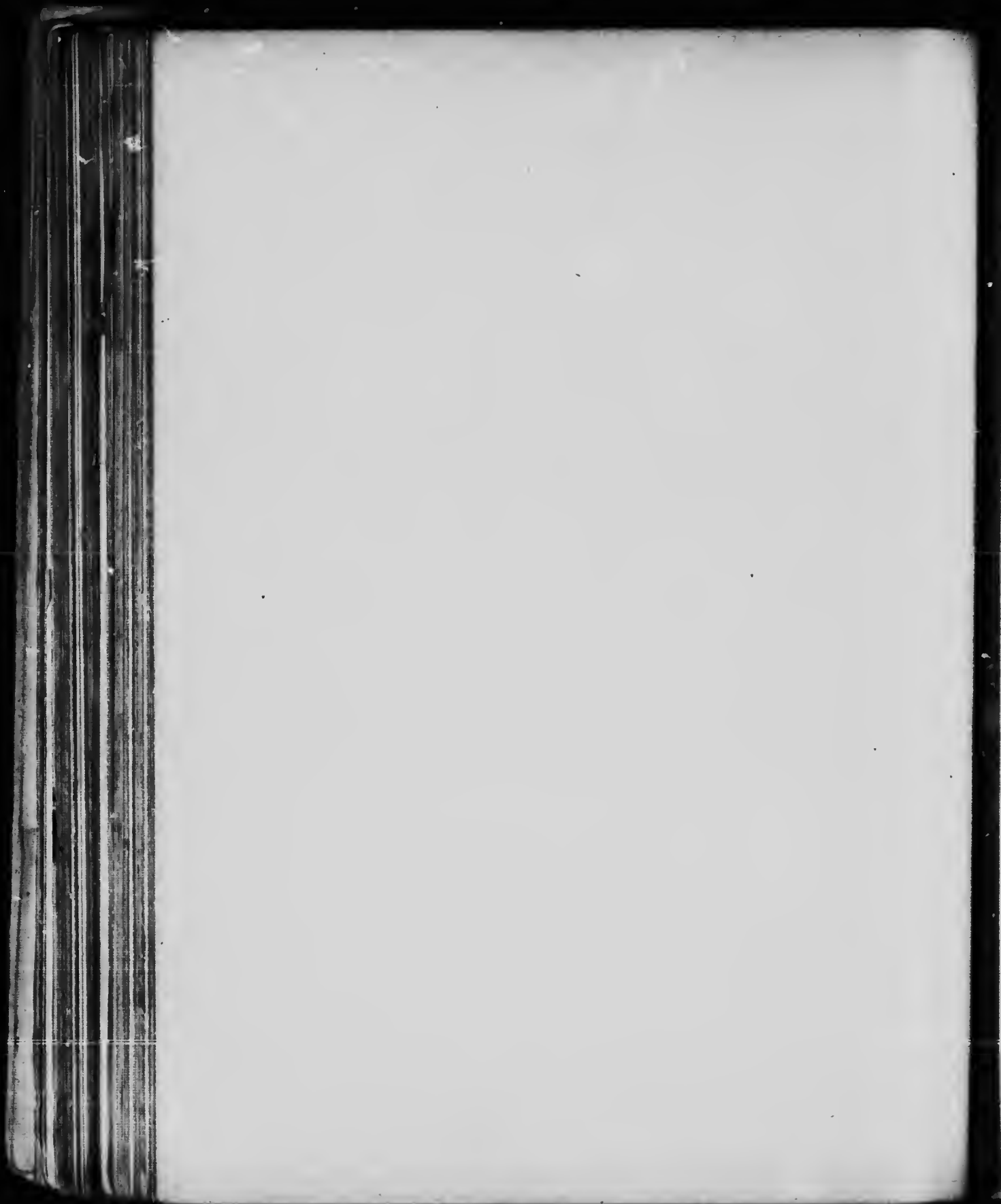
These are large aquatic birds reaching six feet or more in length, and having a wing expanse up to nine feet. The body is remarkable for the numerous air cavities which greatly increase its buoyancy. The most noteworthy feature of this group is the large pouch hung to the throat and lower mandible.



COL. CHI. ACAD. SCIENCES.

DOUBLE-CRESTED CORMORANT.
(*Phalacrocorax dilophus*).
Life-size.

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TOTIPALMATE SWIMMERS

The bill itself is several times as long as the head, broad, straight, and strong, and ends in a sharp hook. When the gular pouch is distended it will hold several quarts. Most of the species are maritime, but some are found also in fresh water. They are gregarious and nest in colonies. On land they move awkwardly, but fly strongly though leisurely, and swim and dive with grace and ease. Some kinds scoop up small fish while swimming, others plunge from the air and dive under the water for their prey. When hungry they contract the pouch, emptying it of water, and then swallow their catch. The young are fed on partially digested fish, regurgitated by the parents. The nest is placed on the ground or among rocks near water and the eggs are two or three in number, rough and dull whitish.

AMERICAN WHITE PELICAN

(*Pelecanus erythrorhynchos*).

These great birds are accidental east of Manitoba, where they breed on the large lakes. They are also found in the western States and in Saskatchewan, Alberta, and the North-west Territory near Fort Smith, but they are not common in British Columbia. Their plumage is white, with the flight feathers of the wings black. In the breeding season, the male has a yellow crest of few feathers, and a horny prominence on the yellowish bill. Length about 5 feet, extent about 8½ feet.

BROWN PELICAN

(*Pelecanus fuscus*).

This species of pelican is seldom seen in Canada. It is a much smaller bird, with dusky plumage, except that the top and sides of the head, and sides of the throat are white, with a yellow shade on the crest. Its home is the eastern coast of the United States from the Caribbean Sea to Cape Hatteras. Occasionally

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a wanderer may reach Nova Scotia. They nest in colonies, usually on the ground, but occasionally in low trees, and lay two or three chalky white eggs.

A remarkable study of these birds has been made with a moving picture camera by Frank M. Chapman, the famous American ornithologist.

ORDER V.—ANSERES

LAMELLIROSTRAL SWIMMERS

The members of this order are all embraced in family *Anatidae* including our Ducks, Geese, and Swans. They are characterized by having broad bodies flattened on the lower side, no gular pouch, but a series of lamellae or tooth-like plates along the cutting edge of their bills.

KEY TO THE SUB-FAMILIES OF DUCKS

1. Hind toe not lobed, bill flattened, duck-shaped
Anatinae, River Ducks.
2. Hind toe lobed, bill flattened. *Fuligulinae*, Sea Ducks.
3. Hind toe lobed, bill round, narrow, not flattened.
Merginae, Mergansers.

KEY TO SPECIES OF *Anatinae*, RIVER DUCKS

1. Bill narrow but flattened; head with long, low crest . .
Aix, page 47
2. Bill widened to spoon-shaped; head not crested.
Spatula, page 46
3. Bill not spoon-shaped; head not crested—
 - a. Tail with long black central feathers. . *Dafla* (male), page 47
 - b. Tail feathers acute, not long; crown not whitish.
Dafla (female), page 47
 - c. Tail feathers not acute; crown whitish. . . *Mareca*, page 45

KEY TO DUCKS

- d. Speculum of wing white; feet orange. *Chaulelasmus*, page 44
- e. Speculum of wing violet; feet orange. *Anas*, page 44
- f. Speculum green. Very small ducks:—
 - f1. Head dark gray; wing coverts sky-blue.
Querquedula, page 46
 - f2. Head chestnut or brown; wing coverts green.
Nettion, page 45

KEY TO SPECIES OF *Fuligulinae*, SEA DUCKS

- 1. Bill ordinary, duck-shaped:—
 - a. Nail of bill large and white; tail long as wing.
Havelda (male), page 52
 - b. Bill as above; tail not long; sides of head whitish.
Havelda (female), page 52
 - c. Nail of bill narrow; head black with white in front of eye.
Clangula, page 50
 - c1. Head black, with white behind the eye.
Charionetta, page 52
 - c2. Head black, brown or chestnut, without white.
Aythya, page 48
- 2. Bill with broad decurved nail; tail feathers narrow, stiff, and exposed *Erismatura*, page 56
- 3. Bill with lobe at inner angle; white spots in front of eye and behind the ear *Histrionicus*, page 53
- 4. Bill swollen at base:—
 - a. With processes of bill extending upward toward the eyes.
Somateria, page 53
 - b. Without processes extending backward. . *Oidemia*, page 55

DUCKS

The Ducks differ from other *Anatidae* in having the sexes unlike, and the tarsus scutellate in front and shorter than the middle toe without the claw. They are separated into sub-

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families as follows: *Merginae* or Mergansers, *Anatinae* or River Ducks, and *Fuligulinae* or Sea Ducks.

THE MERGANSERS

(*Merginae*).

en The Mergansers, also called Shelldrakes and Sawbills, are fish-eaters. The lower mandible has a series of distinct toothlike serrations along the upper edge; the bill is narrow, the head more or less crested and the hind toe lobate. They pursue and capture their prey under water. The flesh of all but the Hooded Merganser is rank and fishy.

AMERICAN MERGANSER—GOOSANDER—SHELL- DRAKE (*Merganser americanus*).

P B This large Duck breeds in Labrador and Newfoundland, probably in all the maritime provinces, certainly in Ontario, Manitoba, and north-westerly. Both mandibles have conspicuous tooth-like serrations, and the bill is strongly decurved at the tip. It nests in a hole in a bank or tree or among rocks or boulders. Eggs six to ten, creamy to buff. The plumage of the head, upper neck, and back, is greenish black. The breast is reddish; the lower neck and belly are white, as are the secondaries and most of the wing coverts. The rump and tail are gray. The female is white on the chin and upper throat, brown on the top of the head and lower throat. Instead of the black back and tail, these are ashy gray. Length about 25 inches, extent about 35.

RED-BREASTED MERGANSER—SHELLDRAKE (*Merganser serrator*).

This beautiful bird nests all across Canada as well as the northern United States, except the open prairie. The nests are made on the ground among rocks and shrubs and always near water. Eggs usually eight to twelve, dull buff. The head and neck



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RED-BREASTED MERGANSER

(LALAGE BRYANTII)

47 L.

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LAMELLIROSTRAL SWIMMERS

are blackish green with a thin crest. The neck has a white ring, and the under parts are white except the front of the breast which is chestnut red with black streaks. The head and throat are brownish; back and tail gray; under parts white. Length about 24 inches, extent about 34.

HOODED MERGANSER—LITTLE SAWBILL OR SHELL- DRAKE

(*Lophodytes cucullatus*).

This is the most striking in appearance of all the smaller ducks because of the large circular crest. It probably nests in Quebec and Ontario, being found there at all times in the summer. It is known to breed in Manitoba, and northward and westward, being common on the Pacific coast. Its nest is made in holes in trees and stumps, often in flooded forests. The head, neck and back are black; breast and belly white; sides brownish. The remarkable crest is black in front, the remainder is clear white with a narrow black border. The female has the head, neck, and upper breast grayish brown, with some yellow brown, especially on the small crest. The back is blackish. The young lack the crest. Length about 17, extent about 25 inches.

THE RIVER DUCKS

(*Anatinae*).

These Ducks are marked by having the tarsus scutellate in front, and the hind toe simple,—without a flap or lobe. They are not confined to fresh water, but do not dive for their food as do the Sea Ducks. They feed on aquatic grasses, and their flesh is excellent.

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MALLARD

(*Anas boschas*).

The wild form of our domestic duck breeds in the United States, and occasionally in Ontario, but chiefly on the ponds of the prairies. The nest is built on the ground among weeds, and the eggs are yellowish drab. The range of this duck is from the Atlantic to the Pacific, but it is rare in the maritime provinces. The head and upper part of the neck of the male are rich, dark, glossy green; a white ring around the neck; the breast bright chestnut; the belly gray with fine, wavy, black lines; the back dark; and the tail black. The speculum is violet or purple, bordered at the base and tip with black and white. Female brownish on head, neck, back and belly. Speculum purple. This is one of our largest and most beautiful ducks, reaching about 23 inches in length and 35 in wing extent. It is known to interbreed with several other species, producing puzzling hybrids.

BLACK DUCK—DUSKY MALLARD

(*Anas obscura*).

This duck, which is thought by some to be the melanistic form of the Mallard, is entirely dusky in both sexes, with buff streaks on the head and neck, and no white anywhere except in the lining of the wings. The speculum is purple. Size, that of the Mallard. Its range is the eastern half of North America, and it is not known in Canada west of Manitoba. It breeds still in Ontario and Quebec, and about Hudson Bay, but is becoming less numerous with each successive shooting season.

GADWALL—GRAY DUCK

(*Chaulelasmus streperus*).

The Gadwell is rarely seen in Quebec or Ontario, but breeds very commonly on the prairies of the western United States and

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LAMELLIROSTRAL SWIMMERS

in southern Manitoba, Saskatchewan, and Alberta. It seems to belong to open prairie districts rather than to forested regions. The nest is made of grass and lined with feathers, and is often on an island or point close to the water of a fresh prairie pond. The eggs sometimes number twelve, and are a pale yellowish drab. The head and neck are mottled brown and black; breast black, marked with white spots in the form of a border and inner ring on each feather; belly grayish or white; chestnut on the wings. The female resembles the male as to the head and throat, but has yellowish in place of most of the black and white. Length about 21 inches, extent about 34 inches.

AMERICAN WIDGEON OR BALDPATE

(*Mareca americana*).

The Baldpate is a migrant in eastern North America, but breeds freely from Manitoba north-westwardly. It flies high with whistling wings, and often associates with the Diving Ducks, stealing their food. The top of the head is whitish; the sides and back of the crown green with black flecks; the back is grayish brown; the breast is brownish; the belly white, crissum black. The wings have a white patch, and the speculum is green with black border. The female has a black crown, otherwise the head is white with black streaks; breast and sides yellowish; belly white. Length 19, extent 32 inches.

GREEN-WINGED TEAL

(*Nettion carolinensis*).

The Green-winged Teal is not common in Ontario or Quebec, but it is a resident of New Brunswick, Newfoundland, and Labrador. It breeds about James Bay and all across to the Pacific and north to the Arctic Ocean. The nest is often at some distance from the water, placed on the ground, or a knoll in a thicket, and made of dry grass. It breeds early, laying from six to twelve creamy-yellow eggs.

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The head and neck are chestnut, the breast somewhat lighter with dark spots. A green patch behind each eye. Back and sides grayish with wavy lines; a white crescent bar in front of the bend of the wings. The speculum in both sexes is rich green on the upper half, purplish black on the lower or outer half. This is one of our smallest ducks, reaching about 14 inches in length and 23 inches in extent; but very beautiful, and exceedingly swift on the wing. The members of the flock manoeuvre together with wonderful unanimity. It is an early migrant both north and south, and its flesh is of the highest quality.

BLUE-WINGED TEAL

(*Querquedula discors*).

The whole of North America, except the southern Pacific slope, may be considered the range of this little duck. It is fairly common in Quebec and Ontario in spring and fall, and a few breed here, but its home is the prairie of southern Manitoba and Saskatchewan, and a few are known to nest in British Columbia. It lays eight to ten buff eggs in a nest on the ground. Both on the water and in flight these teal prefer to keep in close flocks, and move with wonderful swiftness and uniformity. The general plumage is brownish, thickly spotted with black and yellow. The head and neck are dark gray, with a large white crescent in front of the eye. The female lacks the crescent and is altogether streaked brownish. Both sexes may be known by the blue wing coverts, and green speculum. Length about 16 inches and extent about 28.

SPOON-BILL OR SHOVELLER

(*Spatula clypeata*).

The Shoveller breeds very plentifully in the northern prairie and in British Columbia. It is found occasionally in Ontario and Quebec in summer, and is a migrant eastward to the coast. In breeding plumage the Shoveller is a bird of beautiful coloration,

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LAMELLIROSTRAL SWIMMERS

but his appearance is marred by his unusually long legs, and long and wide bill. The head and neck are green; the breast white; the belly brownish. Like the preceding he has blue wing coverts, and green speculum. The back is yellowish and the rump is black. The female is brownish, streaked with darker, and easily distinguished by the bill.

PIN-TAIL OR SPRIG-TAIL

(*Dafila acuta*).

This beautiful, slender and graceful duck is not plentiful in eastern Canada, although seen in migration, and probably breeding in Ontario. About James and Hudson bays and westward it breeds in great numbers, nesting in the grass on dry ground under bushes. It winters in the southern United States, Cuba, and Panama. The head and throat of the male are brownish with green and purple shadings, and a long white stripe on each side from the neck upward. The back is gray with wavy lines. The under parts are whitish; the wings gray and brown, the speculum bronze green. The central tail feathers are very long and greenish black. The female is brownish with dark streaks. The unusually long neck and tail are characteristic. Length up to 30 inches.

WOOD DUCK, SUMMER DUCK

(*Aix sponsa*).

Of all our wild water-fowl this is the most highly colored, and most beautiful. It breeds in all eastern North America except the extreme north and the states near the tropics. Its nests are found in New Brunswick, Quebec, Ontario, and eastern Manitoba, in holes in trees and stubs often not very near water. The young are often carried in the bill of the parent to a stream or pond. The feet seem well adapted to perching on large branches. The cream colored or greenish eggs are usually twelve, but may reach fifteen in number.

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The head is shining green and purple, with a long low crest of the same, but with white stripes. The lower cheeks, throat, and neck are white all around. The breast is a bright chestnut red, with white spots especially toward the lower margin. The back is brown and green, the sides yellowish with parallel white and black bars. The speculum is bright green or blue, and the bill is red. The female has a grayish head with small greenish crest, white chin and throat, and spotted chestnut breast. The lower surface is yellowish or white. Length about 19 inches, extent about 28.

THE SEA DUCKS

(*Fuligulinae*).

These have the tarsi scutellate in front, and the hind toe lobate, i.e., with a flap or web. The feet are larger and the tarsi shorter and placed further back than in the River Ducks, giving less power on land, but better swimming and diving ability. They feed to some extent on mollusks, and the flesh in some is unfit for food.

RED-HEAD, AMERICAN POCHARD

(*Aythya americana*).

While not recorded as common in the maritime provinces even during migration, the Red-head is fairly plentiful in Ontario, breeding in the western part, and from Missouri north-west to the prairie lakes of Manitoba, Saskatchewan, and Alberta. It is scarcely known on the Pacific slope or in the far north. It builds near the water, often of marsh vegetation, almost or quite supported by water. Eggs—up to twelve or thirteen, yellowish drab in color. The forehead arches from the bill. The head and upper neck are rich red-chestnut; lower neck, back, and breast black; posterior parts gray with fine wavy black lines; belly white with black lines towards the tail. Female of same colors in duller shades. Length about 21 inches, extent about 33.

LAMELLIROSTRAL SWIMMERS

CANVAS-BACK, WHITE-BACK

(*Aythya valisneria*).

The Canvas-back breeds plentifully in Saskatchewan and Alberta and north to Slave Lake. It migrates to the east coast of the United States and also to the Gulf of Mexico, so as a migrant it is known in Ontario and Quebec. Its breeding habits are similar to those of the Red-head, as are also its feeding and migrating methods, although it seems to favor the west and north to a greater extent. Both of these related ducks are famous for the excellence of their flesh, but the flavor on which their reputation depends is due to the accident of their being able to feed freely on *Valisneria spiralis*—Tape or Eel grass—sometimes called Water Celery. If this has not been their chief food, the River Ducks excel them for the table. They are excellent divers and bring up rafts of vegetable matter, which they devour on the surface of the water. The Canvas-back is colored and marked much as is the Red-head, but may be distinguished as follows:—its forehead is low, following the line of the bill; the head and neck are not brownish or chestnut red, but dark reddish brown. The posterior parts are not gray but white, with wavy vermiculations in black. Size, same as the Red-head, but bill longer and narrower.

BLUE-BILL OR GREATER SCAUP DUCK

(*Aythya marila*).

The whole of North America must be given as the range of this common duck, although it is rare near the east coast in the northern regions. Its nesting grounds are chiefly in Canada, from Ontario north-westerly to British Columbia and Alaska. Its nest is on the very edge of the water when such a site is available, but the drab eggs are kept dry. This and its smaller cousin—the Little Blue-bill—form the greater proportion of the great flocks of wild ducks which collect on our Great Lakes and near the marshy feed-

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ing grounds in late October and November. If it has fed largely on mollusks its flesh is far from dainty, but usually its diet has been such as to make it desirable food. The male has dull blue-gray with black, hooked nail. The head, neck, shoulders, and breast are black, either dull or greenish. The lower back, rump and tail blackish. The middle of the back and the under parts from the breast are white with fine wavy black lines. The female has brownish instead of black, with a white band above the base of the bill. Speculum white. Length about 19 inches, extent about 32.

LITTLE BLUE-BILL, LESSER SCAUP DUCK

The description of the range, habits, and coloration of the preceding will serve for this bird. In size there seems to be a constant difference of about 3 inches in length and 4 inches in extent. This duck is more plentiful than the Blue-bill, with which it is usually associated in migration and nesting, although this form is believed to occur less frequently in the maritime provinces of Canada.

RING-NECK SCAUP, RING-BILL

(*Aythya collaris*).

This duck closely resembles the Scaup Duck in coloration, but has a chestnut collar about the lower neck and a triangular white spot on the chin. The bill is dark, black at the end below a band of pale blue. It associates with the Blue-bills, but is nowhere plentiful, and little is known of its nesting. It breeds in Maine, Manitoba, and British Columbia, and probably in northern Ontario and in Quebec. Length about 17 inches, extent about 29.

GOLDEN-EYES

(*Clangula*).

These ducks have short bills, much shorter than the head, high at the base, tapering toward the tip which ends in a narrow nail.



FROM COL. CH. ACAD. SCIENCES.

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LESSER SCAUP DUCK.
(*Aythya affinis*).
!; Life-size.

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LAMELLIROSTRAL SWIMMERS

The head is puffy, with white patches. The females have less puffy heads and the white patches are nearly wanting.

AMERICAN GOLDEN-EYE, WHISTLER

(*Clangula americana*).

This well-known duck breeds in Newfoundland, the shores of James Bay, and northwestward, and late in the fall—driven only by freezing water—it migrates southward through the United States. It is common in Ontario and Quebec when the smaller lakes are freezing over for the winter. Its wings produce a shrill whistling sound in flight. It nests in holes in trees, often as high as twenty feet, usually near water. Seton found it nesting in holes in Balsam Poplar as far north as this tree grows in the valley of the Athabasca River. The male is white and black, the puffy black head having a greenish lustre, and a roundish white spot between the eye and the bill. Upper parts black, except the wing coverts and speculum, which, like the lower surface, are white. The head and upper parts of the female are brownish, lower parts white. Length 17 to 20 inches, extent about 32.

BARROW'S GOLDEN-EYE

(*Clangula islandica*).

This species is known to nest in British Columbia, and is thought to breed in the far north. Its nest is in a hollow tree. It is less plentiful in the east than the preceding, but is common on the British Columbia coast. In coloration it is similar to the American Golden-eye, but the white spot in front of the eye is crescent-shaped, and that on the wings is divided by a black bar. The female of this species is very like that of the preceding, but the white collar is very narrow.

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BUFFLE-HEAD, BUTTER-BALL

(*Charionetta albeola*).

This is a common migrant in Ontario and Quebec, and nests in British Columbia, but its breeding places in the east have not yet been sufficiently determined. A hole in a poplar tree seems to be the favorite nesting place. It wears its black and white suit very jauntily, its decidedly puffy head failing to destroy its alert appearance. A plate of black feathers rises from the top of the bill, but the top and back of the head are white, the feathers rising almost to a crest. Upper neck and back black. Lower neck, breast, and belly white. Length about 13 inches, extent about 23.

OLD SQUAW DUCK—COWHEEN

(*Harelda hyemalis*).

This is one of the noisiest and liveliest of all our water-fowl. It flies swiftly, dives most expertly in deep water, congregates in flocks which make themselves heard for long distances, and attracts the covetousness of the inexperienced gunner. After many crafty and laborious attempts he may find himself the conqueror of a Cowheen, so rank and fishy as to be quite inedible except to a hungry Indian. "Old South-southerly"—as this is sometimes called from its scolding notes—is a sea duck breeding along the Labrador, Arctic, and Alaska coasts, and in the lakes of the tundra. It is common in the Gulf and River St. Lawrence, and remains in the Great Lakes all winter, often being found entangled in fishermen's nets. The sides of the head in the male are gray to dark gray; throat and back of the head and neck white; a broad white collar; breast blackish; belly and upper parts of the wings white. The middle tail feathers are very long and separated. The female is mostly white as to head, neck, and belly; brownish on breast and back, and the tail is short. Female about 18 inches in length, male up to 24 inches, extent about 30 inches.

LAMELLIROSTRAL SWIMMERS

HARLEQUIN DUCK—LORD AND LADY

(*Histrionicus histrionicus*.)

This duck, thought by some to be next to the Wood Duck in beauty, breeds, it is said, in Newfoundland, Hudson Strait, and along the Arctic coast. It is a resident of Siberia and Manchuria and Alaska, but is nowhere reported other than uncommon. The male has a white spot in front of the eye, and this extends as a stripe along each side of the crown, which is black. A white spot marks the ear and a white bar extends from behind the ear down the neck. A clear white bar forms a collar on the lower neck, sometimes broken in front or behind, and parallel with it a second crescent extends in front of each wing. Two short white wing bars and a long patch of white on the inner part of each wing completes a decidedly mottled or pinto decoration. The remainder of the head, back, and breast are slate colored; the belly grayish to black. The female is grayish or brownish, with a large white spot in front of the eye. Length about 17, extent about 25 inches.

GREENLAND OR NORTHERN EIDER

(*Somateria mollissima borealis*.)

This variety is the American representative of the semi-domestic Eider of Europe, but is not so common with us as the next species. The Northern Eider is abundant about Greenland, Hudson Strait, and northern Labrador, and has been seen in Hudson Bay. It is not uncommon in the Gulf of St. Lawrence, and visits Nova Scotia in winter. Like the other eiders, it lines its nests with down plucked from its own breast. The European form which this very closely resembles, is so encouraged about Iceland as to be fairly tame, and more than two ounces of down are taken from each nest in a season. The six to eight eggs are buff, drab, or greenish in color. The top of the head of the male is black, except a median greenish line; the remainder of the head, the throat,

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neck, upper breast, shoulders, back and wing patches are white, tinted with greenish on the sides of the head and with purplish on the breast. The tail, lower breast, and belly are black. The frontal processes of the bill are short, acute, and parallel. The female is dark, with brownish and yellowish markings. Length about 24, extent about 40 inches.

AMERICAN EIDER

(*Somateria dresseri.*)

This eider breeds abundantly in Newfoundland, and is resident in Nova Scotia. It might well become a most interesting and important resident, if the senseless and reckless destruction of its eggs were checked, and instruction given in encouraging the nesting of the birds and the collecting of their down. Its nests are found along the Labrador coasts and James Bay. The male in spring is colored similarly to the Northern Eider, but the frontal processes of the bill are in this species broad, rounded, and divergent. The female differs as in the preceding species, being yellowish brown, but distinguishable by the frontal processes. Length and extent same as for Northern Eider.

PACIFIC EIDER

(*Somateria V-nigra.*)

Hudson Bay and Great Slave Lake, as well as our Arctic coasts, are haunts of this eider, which is common on the Aleutian Islands and north Pacific shores. Its plumage is like that of the two preceding, except that it bears a large black V-shaped mark on the white throat, the point being forward and the limbs diverging behind. The frontal processes are as in the Northern Eider. The food of all the Eiders is bivalves, especially mussels, which they obtain by diving. Length about 22 inches.

LAMELLIROSTRAL SWIMMERS

SPECTACLED EIDER—KING EIDER

(*Somateria spectabilis*).

This eider breeds on Davis Strait, the Labrador coast, the northern shores of Hudson Bay, and is an occasional visitor to Nova Scotia, New Brunswick, and Lake Ontario. The white throat of the male bears a large black V; there is also a black spot below the black-ringed eye, and a black line along the edge of the enlarged bulging frontal processes; the top of the head and nape are pearl gray; the sides of head sea green; the bill orange red. Remainder of the head, throat, neck, upper back, lesser wing coverts, and sides of rump white. Breast variable buff. The greater wing coverts, the scapulars, and the primaries are brownish or chestnut. Lower back, rump and tail, and remainder of under parts black. Female buff, streaked with brown above. Tail black. Under parts blackish brown. Length about 23 inches.

SCOTERS

(*Oidemia*).

These Surf Ducks, or Sea Coots, are characterized by the swollen or gibbous bill, combined with black plumage, with white patches on head or wings, or both. They are mollusk eaters when on the ocean, and are then scarcely fit for food, but when fed on aquatic plants of the fresh water lakes are quite palatable.

AMERICAN SCOTER

(*Oidemia Americana*).

This Black Sea-Coot breeds in Alaska, and probably all along the Arctic coast and northern Labrador. It is seen during migration in Newfoundland, Nova Scotia, Quebec, and Ontario. The male has entirely black plumage, less glossy below. The bill is black, with an orange patch on the enlarged upper part. The

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female has a normal bill and plumage of various shades of brown. Length of male nearly 21 inches; female 17. Extent of male 36; female 30 inches.

WHITE-WINGED SCOTER, VELVET SCOTER

(*Oidemia deglandi*).

This Velvet Duck breeds in the far north and in Alaska, being known in southern Canada only in spring and fall, when it is found on the Great Lakes, the St. Lawrence, and in Manitoba. The male has the knobbed bill, with an orange spot, a small white spot below the eye, and a white speculum; otherwise entirely black. The female is grayish to brown, with the white speculum. Length about 20, extent about 36 inches.

SURF SCOTER—SPECTACLE-BILLED COOT

(*Oidemia perspicillata*).

This Scoter breeds in Alaska and along the Arctic coast and Labrador. It is common along the shores of Newfoundland and the maritime provinces, and also on Lake Ontario, and the coast waters of British Columbia. The upper swollen base of the bill of the male in spring is crimson or scarlet. A white spot on the forehead, and a large one on the nape are the only exceptions to the solid black of the plumage. The female is dark brown, with a whitish spot in front of the eye, and another behind the ear. The belly is also nearly white. Length about 20 inches, extent about 34.

RUDDY DUCK—RUDDER DUCK

(*Erismatura jamaicensis*).

This is a species differing in many respects from all other ducks reaching Canada, particularly in the short, stiff, pointed tail feathers, which greatly resemble those of the Cormorants.

LAMELLIROSTRAL SWIMMERS

The head is small and the neck thick, and the nail of the bill is widened and decurved to form a hook. The bill itself is widened and depressed, suggesting that of the Spoonbill. This strange little duck breeds from Manitoba to the Pacific, and is occasionally found in Ontario and Quebec. It migrates to Mexico and the West Indies. The clin and sides of the head of the male are white; crown and nape glossy black. Upper parts brownish red, lower parts whitish. Female brown above, pale below. Length 16, extent about 22 inches.

WILD GEESE

Geese are the members of the group *Anseres*, which are medium in size, have necks shorter than their bodies, sexes similar, and feed upon vegetable food alone. They lay usually six eggs, in nests on the ground, and commonly not far from the water. Lores completely feathered, and tarsi entirely reticulated.

LESSER SNOW GOOSE—LITTLE WAVEY

(*Chen hyperborea*).

This goose nests about Hudson Bay and the shores of the Arctic Ocean. It migrates southward chiefly along the Pacific coast, although some follow the Mississippi valley, and a few travel by the Great Lakes. A few have been taken in Ontario, where they are accidental wanderers. Its plumage is entirely white when mature, except the tips of the wings. Length about 25 inches.

GREATER SNOW GOOSE—COMMON WAVEY

(*Chen hyperborea nivalis*).

This Wavey breeds with the smaller form, and all that is said of one applies to the other, except the matter of size, and it is quite certain that there is every gradation. The smaller form reaches 28 inches in length, the larger 34. A few of both sizes have been

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taken in Ontario. They are plentiful at times in the fall on the coasts of Virginia and North Carolina, and especially in Alberta. The young birds are dusky or grayish.

ROSS' SNOWY GOOSE—HORNED WAVEY

(*Chen rossii*).

The breeding ground of this goose is not known, as it is rarely taken by any one who reports its collection. It is said to migrate through Alberta, and one was taken in Manitoba. Seton found it on the Athabasca River on June 1st, 1907, and in October of the same year many were killed near Fort Chipewyan. Its plumage is snow white, except the primaries, which are black. The basal part of the bill is covered with wart-like excrescences. Length about 29 inches.

BLUE GOOSE

(*Chen caerulescens*).

This species is said to breed in the interior of Labrador and on the eastern shores of Hudson Bay. A few have been captured in Ontario, but its chief migratory route is the Mississippi Valley. In color it is grayish brown, with wing coverts and rump bluish gray, and the head and upper part of the neck white; the under parts are whitish. Size and shape about the same as the Snow Goose, of which it was thought to be the young.

AMERICAN WHITE-FRONTED GOOSE

(*Anser albifrons gambeli*).

The northern migration of this goose is through Saskatchewan and Manitoba. Its breeding grounds are the Arctic Islands and about the mouth of the Mackenzie River, and Seton states that it nests near Aylmer Lake, N.W.T. Occasionally it visits Ontario

LAMELLIROSTRAL SWIMMERS

and Quebec. The European White-fronted Goose has been seen in Greenland. The fore part of the head is white, bounded by a narrow line of black; the remainder of the head is dark brown; the body and wings grayish brown; the rump white. Length 28 to 29 inches.

CANADA GOOSE

(*Branta canadensis*).

This is the wild goose known to most Canadians, who have watched it with interest in spring and fall as it passes over in angular, musical companies, on its way to or from its breeding grounds. It nests in Newfoundland, Labrador, and Hudson Bay, and from Manitoba westward and northward through the wooded region. The throat is white, and this patch extends on each side of the head up behind the eye. The remaining parts of the head and neck are black. The back and wings are blackish brown. The lower parts are lighter, fading to white on the lower belly. Length 36 to 43 inches, extent 60 inches. Tail normally of 18 to 20 feathers. The dark variety, *occidentalis*, has been seen in British Columbia.

HUTCHIN'S GOOSE—LITTLE WILD GOOSE

(*Branta canadensis hutchinsi*).

This variety of goose is rarely seen in Ontario or eastward, but is common in Manitoba and eastern Saskatchewan. Its breeding ground is the coast of Behring Sea and the Arctic Ocean. The description of the Canada Goose applies to it in every point, except that its tail is said to have only 16 feathers, and its length is about 30 inches, extent about 48 or 50. Only a tape will distinguish the variety from the species in most specimens.

The variety *minima*, or Cackling Goose, only about 24 inches long, is seen in British Columbia.

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BRANT GOOSE, BARNACLE GOOSE

(*Branta bernicla*).

This species is said to breed in Greenland toward the Polar Sea, also in Hudson Bay, and northward on the Barren Grounds. It is frequently seen on the St. Lawrence, occasionally on the Ottawa and Lake Ontario. About Vancouver it is not uncommon. In late autumn it migrates along the coasts as far south as the Carolinas. It is said to fly in compact flocks without a definite leader when migrating. The plumage of the head, neck, and throat is black with a small patch of white streaks on each side of the neck. The back is brownish gray and the sides of the rump are white. The lower breast is abruptly ashy gray, fading to white on the lower belly. Length about 25 inches, extent about 48.

BLACK BRANT

(*Branta nigricans*).

This is the Brant of the Pacific Coast, though occasionally found on the Atlantic. Like the Barnacle Goose, it nests in the Arctic regions, but migrates chiefly along our west coast. Both these species feed upon the common marine "eel grass" (*Zostera marina*). The Black Brant differs from the preceding species in being darker on the lower breast and belly, with no abrupt change to gray. On the front of the neck, as well as the sides, there are white markings. Size same as the last.

SWANS

(*Cygninae*).

This group of the *Anatidae* is characterized by having the lores partly naked, the tarsus reticulate, the hind toe simple, and the neck not shorter than the body. The Swans are the largest of the order *Anseres*, and are very graceful on the water, but walk awk-

LAMELLIROSTRAL SWIMMERS

wardly on the land. They feed on underwater plants and small shell-fish, by reaching down or tilting their bodies, as do geese. Their notes are high-pitched and like those of a clarinet, and when severely wounded in the body while flying they have been heard to produce plaintive musical notes—the “swan song”—as they sail towards the water. Their nests are large, of grass and weeds, usually placed on a small island, or the shores of secluded lakes. The white eggs number from two to five or six. These beautiful birds have become so rare that it is something of an event to see a number of Swans. At the shooting stations on our Great Lakes one is occasionally killed, but this occurrence is less frequent each year. While enjoying a game of golf early one morning in April, 1904, I had the unexpected pleasure of watching for some time a flock of ten swans, and at the same time a flock of thirty Canada Geese, flying slowly northward along the west shore of Lake Michigan.

WHISTLING SWAN

(*Olor columbianus*).

This great bird breeds on the Arctic coast, and in spring and fall is plentiful on the west side of Hudson Bay. It is also found in British Columbia. During migration it is occasionally seen in Manitoba, and on the Great Lakes and the St. Lawrence. In color it is pure white, with black bill and a small yellow spot on the bare patch between the bill and the eye. Length 55 inches, extent of wings 6 to 7 feet.

TRUMPETER SWAN

(*Olor buccinator*).

The Trumpeter is thought to breed somewhat further south than does the Whistling Swan, but principally near or within the Arctic circle. During migration it is occasionally seen flying in

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Alberta, Saskatchewan, and Manitoba, and less frequently in Ontario.

Its bill and feet are entirely black, and body entirely white. In length it reaches 60 inches or more, and in extent of wings as much as 8 feet.

ORDER VI.—*HERIODIONES*

THE WADERS

This group includes the Herons, Egrets, and Bitterns. All have the peculiarity of narrow or compressed bodies, suitable for hiding in slender, close-growing vegetation, such as characterizes the margins of quiet waters. Here they live, wading about on the boggy, uncertain soil, their light bodies supported often on long stilt-like legs and wide reaching toes. They feed on fish, frogs, reptiles, and mollusks, which they spear with their straight, sharp beaks. They are remarkably sharp-sighted and watchful. The sexes are similar.

HERONS AND BITTERNES

(*Ardreidae*).

The greater part of this family belongs to tropical regions. The Herons are gregarious for nesting and roosting, but solitary when feeding. Some of the group build in trees, others among the marsh vegetation, but all are capable of perching on trees.

BITTERNES

Bitternes are shy and solitary marsh birds, nesting separately in pairs on the ground. They have no white plumage, nor peculiar changes of plumage. Their size is medium, the bill is somewhat longer than the head, the neck feathers are loose, but there are no dorsal plumes, and the sexes and young are alike.

WADERS

AMERICAN BITTERN

(*Botaurus lentiginosus*).

This bittern breeds abundantly in all the provinces of Canada and as far north as Hudson Bay and Lesser Slave Lake. All of the northern United States are used as breeding ground, and for the winter it retires to Central America and the West Indies. Its nest is made of old rushes and cattails in a marsh, but usually well raised above the water, and the eggs are four or five in number, greenish yellow in color. The plumage of the bittern makes it inconspicuous, but it has a remarkable attitude for protection, when it stands erect with its bill pointing straight upward. In this position it so closely resembles the common structures among the vertical vegetation that it is very easily overlooked.

In the evenings and mornings, during the nesting season, the bittern produces a strange "pumping" or "booming," which has given it such names as "Bull of the Bog" and "Stake Driver." This strange vocal performance is accompanied with such movements as are usually associated with violent nausea. A bittern's storage capacity can scarcely be judged by its appearance. I have seen a small specimen swallow a fish ten inches or more in length. The bird feeds also on frogs, snakes, and insects.

Its plumage is brown, spotted and streaked with black and buff yellow. The neck has a black streak down each side. Length from 23 to 30 inches or more, extent 20 to 35 inches.

LEAST BITTERN

(*Ardretta exilis*).

This is a shy bird, probably more plentiful than usually supposed, because when searched for a few may be found in nearly all large marshes in southern Quebec and Ontario. It is resident in the southern States, but migrates from Canada and the northern part of the United States. Its nest can usually be found in south-

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ern Ontario, but its residence in a district is not regular, as with some birds. A locality that is occupied by them one year, may show none of these birds for several years afterward. This little bittern is more retiring than its larger cousin, but its habits are similar. It lays four to six bluish or greenish-white eggs in a large, loosely-built nest, made of and supported by dead marsh plants. The upper parts of its plumage are greenish black, except the sides and the back of the neck, which are chestnut. The lower parts are yellowish. Length from 10 to 14 inches, extent about 18.

Cory's Least Bittern is probably a variety of the above, darker in color on the lower surface. It has been found in Ashbridge Marsh near Toronto, but elsewhere only in Florida.

HERONS

These are slender erect birds, with long bare legs, elongated feathers on the neck in front and behind, and during the breeding season a crest of two long, slender flowing plumes from the hind-head. They feed largely on frogs, which they often carry several miles from their hunting grounds to their young. The nest is usually one of many in a lonely, inaccessible swamp. Several nests may be in one tree, large platforms of sticks on which the birds stand or rest. Herons have remarkable eyesight and are very wary.

THE GREAT BLUE HERON

(*Ardea herodias*).

This graceful bird is often erroneously called a crane. It always nests in colonies, and the parents may be seen making regular trips between their home and their hunting grounds. In flight the head is drawn back to the shoulders. The sounds produced by the old and the young birds in a herony are suggestive of the yelping and barking of foxes or wolves, and are often attributed to wild animals. Their eggs are usually three or four in number and

WADERS

are dull, light, greenish blue. The plumage is slaty blue with black and grayish blue stripes in great variety. It is not to be mistaken for any other species. Length from 40 to 50 inches, extent 65 to 75, bill from $4\frac{1}{2}$ to 6 inches.

LITTLE BLUE HERON

(*Florida caerulea*).

This bird has been seen and captured a few times in eastern Canada, but its home is from the middle United States southward, being resident in the Gulf States. There is a remarkable difference between the plumage of the young and the mature birds. Immature birds are white, but usually with some slaty blue, especially on the tips of the primaries. The full grown birds have reddish maroon head and neck, and bluish slate color for the other parts of the body. The lower neck feathers are elongated, but no plume is worn at any age or season. Length about 32 inches, extent about 40 inches.

SNOWY HERON—LITTLE EGRET

(*Garzetta candidissima*).

Florida and the Gulf States, Mexico, Central and South America are the home of this beautiful bird, but it occasionally strays across our southern boundary. Two are known to have been taken in Nova Scotia, one in Renfrew County, Ontario, one near Kingston on the Rideau, one near Pincher Creek, Alberta, and several in British Columbia. We should give it a more kindly reception, as it has been nearly exterminated in Florida, through the barbarous demand for its beautiful plumes for head dresses. No more exquisite nor harmless bird could be added to our Canadian list, and it is to be hoped that all such visitors may be encouraged to come again, rather than be pursued to their death.

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It nests in the everglades and other swampy districts of the tropics. Frogs, lizards, small snakes, and shell fish are its chief food. The plumage of both sexes is entirely white. The eyes, the base of the bill, and the toes are yellow; the remainder of the bill and the legs are black. From the back of the head and from each shoulder in both sexes, during the nesting season, there float long fine, filmy plumes and somewhat similar feathers hang from the neck in front. Length of body about 24 inches, extent about 38, the bill about 3, and the bare leg more than 6 inches long.

GREEN HERON

(*Butorides virescens*).

This beautiful little wader seems to be coming more frequently than formerly into eastern Canada from the United States, where it is resident. It is now quite often seen in New Brunswick, Quebec, and Ontario. It is only from 16 to 18 inches long and looks more like a bittern than like our other herons. Its plumage is dark green above and brownish below. The neck is reddish chestnut, with a light line in front from the white throat downward. Extent about 25 inches, bill about 2½ inches.

BLACK-CROWNED NIGHT HERON

(*Nycticorax nycticorax naevius*).

Our Night Heron is a variety of the European Night Heron, and the specific name *naevius*, which implies *wearing a birth-mark*, is applicable to the immature spotted birds. From Saskatchewan to Quebec this bird is occasionally seen in Canada, but it is not common. On the Lower St. Lawrence it is much more plentiful, breeding in large colonies, and returning to the same location year after year. The nests are large and carelessly made, on trees, shrubs, or on the ground, the taller site especially on marshes of Saskatchewan, and southward to Texas. The adult birds feed at

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BLACK-CROWNED NIGHT HERON.
(*Nycticorax nycticorax naevius*).
 $\frac{1}{2}$ Life-size.

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MARSH BIRDS

night, and their loud—"quawk"—is a startling sound when heard suddenly from the darkness overhead. The mature birds are handsomely dressed in spring. Two or three long narrow plumes arch backward from the back of the head. The crown, shoulders, and upper part of the back are greenish black, the lower back, the wings, and tail are clear ashy gray; the forehead, neck, and under parts are white; the legs and feet are yellow. Immature birds are grayish brown with many white spots and streaks, the belly white instead of gray. Length about 24 inches, extent about 44, bill about 3 inches.

THE YELLOW-CROWNED NIGHT HERON

(*Nycticorax violacea*).

The bird has seldom been seen in Canada, as it belongs to the Southern States. It is grayish blue, darker on the back; head and upper neck behind black; with a cheek patch, crown, and crest of whitish or yellow. Length about 24, extent about 44 inches.

ORDER VII.—PALUDICOLAE—MARSH BIRDS

Cranes, Rails, Gallinules, and Coots.

This family of waders are shy, skulking birds, living among the cattails, bulrushes, and wild rice of our marshes, most of them being confined to the southern part of Canada and southward in the United States. They agree in having narrow, compressed bodies and large strong legs and long toes. Thus they run over floating vegetation or soft mud, and find safety without flight. Leaving out the cranes, their wings are very short and round, and are seldom used except during migration. The bill is usually short, except in the cranes, and is not used for probing, as they gather their food from the surface of the mud and water.

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THE CRANES

(*Gruidae*).

These are common birds of Europe, Asia, and Africa, where more than a dozen species are known, but only three species belong to North America, and of these only one is known to nest regularly. All are remarkable for length of leg and wing.

WHITE OR WHOOPING CRANE

(*Grus americana*).

This tall and wary bird is said to have been common in Manitoba and Saskatchewan long ago, but it is now seldom found breeding, and has retreated for nesting to the far north. Seton saw only seven migrating on the Athabasca River in October, 1907. One specimen, now in Queen's University Museum, was captured near Varty Lake in Addington County, Ontario, but this is the only specimen known in eastern Canada. The path of its migration seems to be the valleys of the Red and Mississippi rivers, and it is said to still breed in Dakota and Minnesota. The top and sides of the head are dull red without feathers; the primaries of the wings are black; otherwise the plumage is white. Length about 50 inches and extent about 90. Bill about 6 inches long and nearly 1½ deep at base. Windpipe as long as the body and coiled in the hollow keel of the breastbone. Voice harsh and very resonant. They carry their legs and long neck in line with the body when in flight.

LITTLE BROWN CRANE

(*Grus canadensis*).

This northern bird is said to breed from Hudson Bay to Alaska, and is known to nest on Great Slave Lake. It incubates in late May or early June in the Yukon district, laying its eggs in

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MARSH BIRDS

a hollow in the top of a sandy knoll. The nest itself is slight, and made of grass and straws. The eggs are two in number, grayish yellow with reddish brown blotches. The birds at that season feed on the berries of the various heath shrubs and on small mammals. It migrates through western Canada and the United States to Mexico. A point of feathered skin reaches upward on the back of the head. Above that the skin has a few hairs, but no feathers down to the eyes. The bill is stout and nearly straight and about $3\frac{1}{2}$ inches long. The adult plumage is lead gray with brownish gray on the wings. The young are grayish brown with head feathered. Length about 36 inches, wing not over 19 inches, tail 7, tarsus $8\frac{1}{2}$.

SANDHILL CRANE

(*Grus mexicana*).

This bird has been taken in Ontario, but is now a very rare migrant, its route being the valley of the Mississippi and westward. It breeds in Manitoba, British Columbia and southward to Florida and the Gulf Coast. These birds perform a remarkable dance on knolls during the mating season, quite in accord with the evolutions of Asiatic members of the family. In every point except size this species agrees with the preceding. Length 40 to 48 inches, extent about 80, wing over 20, tarsus over 9, bill 5 to 6 inches long.

RAILS

(*Rallidae*).

Rails are seldom noticed except by naturalists and hunters, and may be plentiful and frequently heard, but very seldom seen. They seek safety by running and hiding, and rise in flight only as the last resort. Some of the race are flightless, and as a group they are considered to be degenerating toward extinction. When they fly for safety their flights are short and awkward, as they skim

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over the tops of the rushes with feet dangling, and they soon drop into any place offering shelter. Their nests are on the ground in the marsh and they lay 6 to 12 eggs, yellowish white with reddish brown markings.

KING RAIL

(*Rallus elegans*).

This is the largest of the rails found in Canada and the most brightly marked. Its home is the middle part of the United States from Kansas eastward, but occasionally it reaches Ontario and the New England States. It nests in the St. Clair marshes, and is a casual migrant in other parts of Ontario, and in Manitoba. The plumage of the back is brownish and black; the throat is white; the under parts and wings are chestnut; while the flanks are dark with bars of white. Length about 18 inches, extent about 24, bill 2 to 2½ inches, tarsus 2¼ inches.

VIRGINIA RAIL

(*Rallus virginianus*).

This small edition of the King Rail is found in the spring in Newfoundland, Labrador, and the maritime provinces, no doubt breeding there, as it does through southern Ontario and Manitoba, and more rarely westward to British Columbia. Its eggs are buffy or creamy white. Coloration exactly as in the King Rail, but length under 11 inches, and extent about 14 inches; bill about 1½ inches, and tarsus about the same.

CAROLINA RAIL—SORA

(*Porzana carolina*).

From Prince Edward Island southward and westward this Rail breeds, extending its range northward into the Plains region

MARSH BIRDS

to Lesser Slave Lake. In the marshes of southern Ontario it is very plentiful, and especially so further south along the Atlantic Coast. It goes by many names, such as Soree, Meadow Chicken, Little Water Hen, and even Ortolan. Its flesh is held in high favor in autumn. The dozen or more eggs are drabish, spotted with reddish brown. The plumage of the face about the base of the bill, up over the crown and down the front of the neck is black. The remainder of breast and throat are bluish gray, the head being the same color. The back is olive brown, marked with black and streaked with white; the wings are yellowish brown with white streakings, and the flanks are sharply barred with white. The breast is brownish and the lower belly and crissum are white. Length $8\frac{1}{2}$ inches, extent 12 to 13 inches.

YELLOW RAIL

(*Prozana noveboracensis*).

Few records of the Yellow Rail are available from eastern Canada, though it is taken quite regularly in Ontario, and may be fairly common. It is not known to be plentiful anywhere, but its range is wide, and it has to be sought carefully. It may be much more abundant than we think. Like the others its nest is on the ground, and here it lays from six to twelve buff colored eggs spotted with white and reddish brown. The plumage of the upper parts is black, with yellowish streaks and white bars. The breast is yellowish; the middle of the belly is white; the sides and lower belly are dusky, barred with white. A yellow line over the eye and a black line through the eye. Length about 6 inches.

BLACK RAIL

(*Prozana jamiacensis*).

While this bird has been taken in southern Ontario and Minnesota, its home is really south of the United States, although its

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nest has been found as far north as New Jersey. It seems to be rare everywhere, but is extremely shy and difficult to flush, and thus easily overlooked.

The head and the under parts are slate color, changing to black on the lower belly. The upper parts are blackish, marked with spots and bars. The flanks and tail coverts are barred with white. Length about 5½ inches.

PURPLE GALLINULE

(*Ionornis martinica*).

This is a bird of tropical America and the West Indies, but a few occasionally stray up through the United States as far north as Wisconsin, Ontario, Maine, and Nova Scotia. One has been taken in Ontario. Its habits resemble those of the Florida Gallinule. The front of its head is protected by a lead colored plate, an extension apparently of the bill. The plumage of the head and under parts is dark purplish blue, the back is shining olive green; the wings light greenish blue, the under tail coverts white; the bill is carmine or reddish orange, tipped with yellowish green. Length about 13 inches and extent about 22 inches.

FLORIDA GALLINULE—MUD HEN

(*Gallinula galeata*).

This "Mud Hen" belongs to the southern United States, but reaches regularly to the Great Lakes and nests freely on the north shores of Lake Ontario. In habits and flight it resembles the Rails, but is not so shy, frequently nesting and raising its young within sight of a road. Its forehead is covered with a broad, bare, horn-like shield, bright red in the spring. It lays from eight to thirteen eggs, yellowish, with chocolate spots. Its plumage is dark slate color on the head, neck, and under parts, white on the belly, and brownish on the back. The bill is red, tipped with yellow; the legs and feet greenish. Length about 13 inches, extent about 21.



FROM COL. CHS. ACAD. SCIENCES.

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FLORIDA GALLINULE.
(*Gallinula galeata*).
About $\frac{1}{2}$ Life-size.

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KEY TO SHORE BIRDS

AMERICAN COOT, WATER HEN, OROW DUCK

(*Fulica americana*).

This bird, which much resembles the Gallinules, but has feet like those of the grebes, is occasional in the maritime provinces, and a migrant in Quebec, but breeds freely in Ontario, and plentifully in the plains region as far north as Lesser Slave Lake. It is also quite common in British Columbia. Its crown plate is brownish, its bill white, its plumage slate color, with the head and neck nearly black and the under tail white. Its length is about 15 inches, extent about 25, bill up to $1\frac{1}{2}$, and tarsus 2 inches.

ORDER VIII.—LIMICOLAE

SHORE BIRDS.

Phalaropes, Woodcock, Snipes, Sandpipers, and Plovers.

• They are all of rather small size, with round heads, slender long bills, long legs, and lobed or webbed feet, swimming with ease, but living mostly on sandy shores and along the edges of marshes. Their bills are adapted for probing in the mud, being in many cases sensitive at the tip.

KEY TO FAMILIES OF SHORE-BIRDS

1. Toes with distinct membranous lobes on the sides. Bill as long as the head, slender and weak. The Phalaropes, page 74
2. Toes without lobes, but sometimes webbed:—
 - a. Bill very long, upcurved, slender and weak: naked part of tibia longer than middle toe with claw $3\frac{1}{2}$ inches; front toes connected as far as the second toe. Stomach large.
 - b. Naked part of the tibia shorter than the middle toe with claw; tarsus less than $3\frac{1}{2}$ inches, and scutellum small.

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ered with a row of transverse scales reaching all across:—

b1. Bill slender, soft and sensitive with blunt tip.

The Snipes, Sandpipers, and Curlews, page 75

b2. Bill stout, hard, pointed and wedgeshaped at the tip.

The Turnstones, page 96

c. Tibia and tarsus, as in "b," but reticulate in front, i.e., covered with small rounded scales:—

c1. Bill under 2 inches, not longer than the head or the tarsus, and not compressed but constricted behind the horny tip.

The True Plovers, page 93

c2. Bill over 2 inches, and longer than the head or the tarsus, and much compressed at the tip. Toes 3, bordered by a narrow membrane Oystercatchers, page 96

KEY TO THE GENERA OF THE SHORE-BIRDS

THE PHALEROPE FAMILY

(*Phalaropodidae*).

1. Lobes on the sides of the toes almost plain; bill awl-shaped.

Steganopus, page 77

2. Lobes scalloped; bill awl-shaped, not broadened toward the tip.

Phalaropus, page 76

THE STILT FAMILY

(*Recurvirostridae*).

1. Toes 4, full webbed in front; bill very long, upcurved, flattened and tapering to a slender, acute point.

Recurvirostra, *The Avocets*, page 77

2. Toes 3, slightly webbed; bill long, but slightly upturned; plumage altogether dark above except the forehead, and entirely white below. The Stilt (*Himantopus*), should be found in Canada, but has not yet been definitely recorded.

KEY TO SHORE BIRDS

THE SNIPE, SANDPIPER, AND CURLEW FAMILY

(*Scolopacidae*).

1. Toes 3, scarcely webbed; bill as long as head, slender straight, and soft *Caladris*, The Sanderling, page 86

2. Toes 4. Three outer primaries narrowed near the tips; upper mandible elevated at base; front toes slightly webbed.

Philohela, The American Woodcock, page 78

No outer primaries narrowed:—

Toes not at all webbed:—

Tarsus shorter than middle toe and claw:—

Bill about twice as long as head; tibia naked below:—

Gallinago, Wilson's Snipe, page 80

Bill little longer than head; tibia, feathered:—

Arquatella, Purple Sandpiper, page 82

Tarsus equal to or longer than middle toe and claw:—

Bill straight; equal to or longer than head:—

Bill soft and flexible; tarsus longer than middle toe and claw *Tringa*, page 82

Toes partially webbed, or semipalmate:—

Tarsus scutellate in front only; bill very long and decurved:—

Numenius, page 91

Tarsus scutellate both in front and behind:—

Tail not barred; primaries mottled; one very small web between the toes *Tryngites*, page 91

Tail not barred; primaries plain; two full webs between the toes:—

Bill about the same length as the head:—

Ereunetes, page 85

Bill much longer than the head *Micropalama*, page 81

Tail barred with light and dark:—

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Gape not reaching beyond the base of bill:—

Under 12 inches long; upper mandible furrowed at the tip:—

Macrorhamphus, page 81

Over 12 inches long; upper mandible not furrowed at the tip *Limosa*, page 87

Gape longer than bill; total length of bird under 9 inches; Bill grooved from the base nearly to tip. . . . *Actitis*, page 90

Bill grooved about half way to the tip. . . *Helodromas*, page 88

Gape longer than bill; total length of bird over 9 inches.

Bill not longer than head *Bartramia*, page 90

Bill longer than head.

Legs bluish; bill stout *Symphemia*, page 89

Legs yellowish or greenish; bill slender. . . . *Totanus*, page 87

THE PLOVER FAMILY

(*Charadriidae*).

Toes 4 *Squatarola*, page 93

Toes 3; plumage without bands of color, but speckled above.

Charadrius, page 93

Plumage with bands of color about head and neck.

Aegialitis, page 94

PHALEROPES

(*Phaleropodidae*).

THE RED PHALEROPE

(*Phaleropus fulicarius*).

This is known as a migrant in the maritime provinces, Newfoundland and Labrador, but is seldom seen in the interior, except on the coasts of Hudson Bay. It breeds on the arctic coasts and islands. A few have been collected in Ontario. The upper surface is blackish, with yellowing edges to the feathers, the sides of head and rump white, and the lower parts chestnut with purplish shades. The bill is yellowish with a white tip, and the feet

SHORE BIRDS

yellowish with lobed webs on the toes. The Phalaropes are peculiar in reversing the ordinary domestic conditions—the female being the larger and more brightly colored bird. She does the wooing, and lays the eggs, but the male does most of the incubating. Length 8 inches.

THE NORTHERN PHALEROPE

(*Phalaropus lobatus*).

This bird migrates along the Atlantic coast and is occasionally seen in Quebec and Ontario. It breeds about Hudson Bay and the Labrador coast, and also along the Arctic Ocean. It is seen in great numbers in spring in Saskatchewan and Alberta. Its upper parts are grayish black with yellowish marks; the rump and under parts mostly white, and the sides and front of the neck chestnut. Bill and feet black. Length about 7 inches.

WILSON'S PHALEROPE

(*Steganopus tricolor*).

This is a bird of the interior, breeding plentifully about sloughs of Saskatchewan and Alberta. As an accidental migrant it has been collected in Ontario. The top of the head and the back are ashy; a line over the eye, the back of the neck, the rump, and the under parts are white. A dark streak leads from the eye down the side of the neck where it changes to reddish or chestnut. Length 9 to 10 inches.

AVOCETS

(*Recurvirostra*).

This is a small group of wading birds, having extremely long slender legs and bills, and belonging to the warmer latitudes. The toes are webbed in the swimming forms. The bill is either straight and acute or recurved. Only one species is known in Canada.

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BLUE STOCKING—THE AMERICAN AVOCET

(*Recurvirostra americana*).

This is an accidental migrant east of Manitoba, a few having been seen in Ontario. It breeds all across the plains region, especially on the margins of the alkali ponds, and as far north as Great Slave Lake. It prefers saline districts, being plentiful near the Great Salt Lake of Utah. Their nests are mere depressions in the soil, lined with a little grass, and they lay three or four eggs—drab to brownish, with chocolate markings. Their food is obtained under water in the shallow alkaline pools.

The shape of the body differs from that of most waders, being depressed, as in the case of ducks. The plumage is largely white, with yellowish brown on the neck and head, and black on the back and wings. The legs are blue, the bill black, recurved and flexible. Length 16 to 17 inches, expanse 28 to 35 inches. Bare legs 6 inches, bill 3½ inches.

SNIPES, WOODCOCK, SANDPIPERS

(*Scolopacidae*).

Includes the Woodcock, Snipes, Dowitchers, and Sandpipers. These may be distinguished from the Plovers by the difference in the texture and shape of the bill. The bill of a plover is constricted just behind the horny tip. The Snipe family has grooved bills, covered throughout with a soft skin, and lack the constriction near the tip.

THE AMERICAN WOODCOCK

(*Philohela minor*).

Although a member of the Snipe and Sandpiper family, the American Woodcock, unlike these, lives in bogs and thickets, and is never seen in flocks. These habits, along with the fact that it feeds mostly at night, may enable it to survive for some time, in



AMERICAN WOODCOCK.
 $\frac{2}{3}$ Life-size.



SHORE BIRDS

spite of its high rank as a game bird. It is found in all the provinces of Canada, as far west as Manitoba, breeding throughout the range. When unhurried, the Woodcock's flight may be as silent as that of a bat, but when startled, its rush produces a whistling sound from its wing feathers.

Its most striking features are the great length of its straight, grooved bill, and the large prominent eyes set very high and far back above the ears. It has been found that the tip of the long bill is served by both nerves and muscles, thus the bird is able to feel its prey in the soft wet soil, and capture it without enlarging the hole to enable the base of the bill to open. Earth worms are its commonest food, but no doubt other succulent creatures are welcome.

Its plumage is gray, brown, and chestnut, with black bars on the upper surface, and paler brown without bars below. The legs and neck are not elongated. Length 10 to 11 inches, female somewhat larger; bill $2\frac{1}{2}$ to 3 inches.

The nest is usually on a hummock surrounded by shrubs in a swampy thicket, and is but a slight depression lined with leaves. The eggs are four, grayish or yellowish with chocolate markings.

The nocturnal spiral flight of the Woodcock is mysterious and fascinating. During the nesting season, if one will place himself on a hill above an alder and cedar thicket, bordering a stream, he may, if fortunate, listen to the woodcock's method of celebrating his honeymoon. A nasal "peet-peet" is the prelude to a rapid spiral flight upward, accompanied by the sharp whistling of the flight feathers. After reaching apparently 150 yards vertically above the starting point, he shoots downward, making a zig-zag path when near the earth, and almost immediately rises for another evolution. The path of the descending bird can be made out only by its whistling, and the performance is attributed to the male, because of the analogous dances of other birds which celebrate by daylight.

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WILSON'S SNIPE

(*Gallinago delicata*).

This is the true Snipe of America, and a favorite game bird wherever found. It breeds from the Atlantic to the Pacific, as far north as Hudson Bay, and across to Alaska. Its favored nesting ground is a marsh, in the vicinity of quiet wood-land. The nest resembles that of the woodcock in lack of careful structure, and the eggs are somewhat similar in color. The back feathers of the snipe are black, with bars and spots of light yellowish, the neck and breast are speckled with the same color, the crown of the head black, with a light median line, the sides and under wings are barred with black, the belly white. Its length is 9 to 10 inches, bill 2 to 2½ inches.

The Snipe is becoming scarce in the settled districts, and is rarely seen in southern Ontario except during the migrations. It feeds and migrates at night, and its presence or absence cannot be safely predicted at any particular place.

Its flight on rising is very erratic and troublesome to inexperienced sportsmen, but this does not prevent its continual persecution during its southern journey.

The Snipe's evening performance is similar to that of the Woodcock and is no doubt the result of like stimulating conditions. After rising to a satisfactory height above its home, it speeds downward, producing a peculiar wavering sound, usually called "bleating"—apparently by the rush of air through its wing feathers. This is repeated many times, and in southern Ontario may be heard on cloudy warm days in late April. It should be the call for careful, patient observation, which may add an important detail to our meagre knowledge of such phenomena.

DOWITCHERS

Two species of these snipe-like birds are found in Canada, breeding in the far north and seen in southern Canada only in spring and fall.

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THE RED-BREASTED DOWITCHER

(*Macrorhamphus griseus*).

Newfoundland, Labrador, and about Hudson Bay are the breeding grounds of this bird, and in spring and fall it is known to migrate through the maritime provinces, Quebec, and Ontario, especially from Toronto eastward.

Its plumage is in summer brownish black above, and reddish brown below, fading to whitish on the belly. In winter the brown and chestnut are replaced by gray. At all seasons the tail is well marked by bars of black, white and yellowish. Its length is from 10 to 11 inches, and its bill is about two and a half inches, flattened and pitted at the tip.

THE LONG-BILLED DOWITCHER OR RED-BELLIED SNIPE

(*Macrorhamphus scolopaceus*).

This bird is slightly larger and brighter, in the same colors as the above, and its bill averages nearly three inches in length. It is known to nest in Alaska, and is thought to breed on the central plains near the Arctic Circle.

THE STILT SANDPIPER

(*Micropalama himantopus*).

The Dowitcher and the Stilt Sandpiper are in structure between the Snipe and the ordinary Sandpiper. The front toes are connected by small webs, the bill is long, and the legs are long and bare. In length, Stilts reach to 9 inches and in wing expanse to 17. Bill $1\frac{3}{4}$, tarsus $1\frac{3}{4}$, bare leg $2\frac{3}{4}$ inches. The feathers of the upper parts are black, each bordered with grayish or chestnut. The lower surface is dark with reddish brown and whitish bars. The neck is streaked obscurely with white. The upper tail-coverts are white with black bars.

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This interesting bird is not recorded as plentiful anywhere, but is widely distributed. It has been seen in Newfoundland, New Brunswick, Ontario, Manitoba, and on the shores of the Hudson Bay and even in British Columbia.

Its breeding grounds are probably in the far north, but further exploration and study are required in connection with the life history of this and many others of our birds.

THE KNOT

(*Tringa canutus*).

The Robin Snipe, as the Knot is often called, is considered the handsomest, as it is the largest of our sandpipers. Its length is about 11 inches, its expanse 20, and its bill nearly 1½. The upper surface of the body is in summer brownish black, shading to chestnut on the shoulders, but each feather is bordered or tipped with white or gray. The under surface is uniform chestnut, fading to white about and behind the legs. In winter the back is clear ashy gray with white on the rump, while the under parts are almost pure white, with dusky marks on the breast.

The nest and eggs of the Knot have been the object of search in the north, and though nest and nestlings were found on Grinnell Land by the Nares Expedition, and one egg obtained by Gen. Greely on Lady Franklin Bay, we know little of its domestic history. During its migration it roams widely and is occasionally seen from Manitoba eastward and along the Atlantic coast to Florida. The bill is widened and hard at the tip. They probe in the mud on beaches, feeding on small crustaceans and mollusks.

THE PURPLE SANDPIPER—ROCK SANDPIPER

(*Tringa maritima*).

This is a marine bird, as its scientific name implies. Its upper parts are very dark bluish gray, almost black, and sometimes with

SHORE BIRDS

purplish reflections. Many feathers are edged with light yellow. A line over the eye, the secondaries, and the belly are white, while the breast and throat are brownish gray with black streaks. The winter plumage is lighter all over, grayish rather than blackish. Its feet are large and its toes long. It measures 8 to 9 inches, and extends to 16 inches. Its bill is rather over 1 inch. As a Canadian bird this can be claimed only as breeding on Melville Peninsula, and being plentiful on the Labrador coast and occasionally found on the Great Lakes in its migrations. Its nest is said to be of the slightest, and its 3 or 4 eggs bluish gray, with olive shading, and marked with reddish brown.

THE PECTORAL SANDPIPER

(*Tringa maculata*).

This bird, often called in Canada the Jack Snipe or Grass Snipe, is clothed on the upper surface with black feathers, each edged with gray or chestnut, especially on the shoulders. The chin, throat, and underparts are pure white, except the lower neck and breast, which are streaked with brown and grayish. Its length is 9 inches or more, and expanse 16 or 18 inches. The bill is slightly over 1 inch in length. It breeds about Hudson Bay and plentifully in Alaska, and migrates down both coasts and by way of the Great Lakes. Here its feeding grounds are low marshy meadows, and it flies in flocks from place to place. Its remarkable characteristic is the inflation of the throat and breast of the male to produce a deep booming call during the breeding season. Its note at other seasons is described as a squeaky whistle.

THE WHITE-RUMPED SANDPIPER

(*Tringa fuscicollis*).

Its small size and white tail coverts will distinguish this little wader. Upper parts brownish black, the feathers bordered with

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lighter; shoulders nearly white; throat, neck, and breast white, with distinct streaks of dark brown which extend along the sides. Belly and undertail pure white. Length $7\frac{1}{2}$ inches, and wing expanse 15. The bill is rather less than 1 inch long. The breeding ground of the White-rump is not exactly known, but is probably north of Hudson Bay, as it is plentiful, but not found nesting in Ungava, and migrates along both Hudson Bay and the Labrador coast, as well as by the Great Lakes and Manitoba. It is rarely seen in Ontario, but is more plentiful on the lower St. Lawrence River and the Gulf. It feeds on the coast, but seems also to enjoy the margins of fresh water ponds.

BAIRD'S SANDPIPER

(*Tringa bairdii*).

This is another typical sandpiper, with more of the tan or yellowish shades on the back, but giving the general impression of dark brown, the rump being lighter. Under parts generally unspotted white, but the front of the neck yellowish with darker spots. The shores of the Arctic Sea, with its inland ponds and lakes, are the nesting grounds of this little slender billed and long winged shore bird. In its autumn migration it is common from Manitoba westward, but it is rare in Ontario or farther east. In length it is only about 7 inches, and expands to 16 inches. Bill less than 1 inch.

LEAST SANDPIPER—LITTLE STINT

(*Tringa minutetella*).

This is, as the name implies, the smallest of the sandpipers, and has no remarkable markings by which to distinguish it. In the winter its plumage on the upper parts is ashy, and under parts white, with dark streaks on the fore neck. In summer the feathers of the upper surface have a dark centre, with reddish yellow mar-

SHORE BIRDS

gans and whitish tips. The under parts are always nearly white. The bill is black, $\frac{3}{4}$ inch long. The legs and feet are dark greenish, the toes without webs. Length about 6 inches and expanse about 11. All across Canada it is plentiful in migration, and breeds in the north, but little of the details are known.

THE RED-BACKED SANDPIPER

(*Tringa alpina pacifica*).

This, the Crooked-billed Snipe of sportsmen, is rather a bird of the western parts of Canada, being seldom seen on the Atlantic Coast or in Quebec, but visits Ontario regularly during migration. It is common on the Hudson Bay coasts and breeds in great numbers along the Arctic Ocean.

The feathers of the back have black centres with rufous margins, the breast is white with blackish streaks, a large black patch marks the middle of the belly, behind which the feathers are white. In winter the black belly spot is not present, and the whole upper plumage is brownish gray, the lower parts lighter, but streaked with dark. The bill is more than $1\frac{1}{2}$ inches long, and bent downward near tip. Length about $8\frac{1}{2}$ inches, and expanse about 15. The eggs are yellowish greenish brown, with chestnut brown markings. These birds move in close flocks, feeding mostly on shores or beaches.

THE SEMI-PALMATED SANDPIPER

(*Ereunetes pusillus*).

In coloration and size this "Peep" much resembles the Least Sandpiper, but the partial webbing between the toes in this will distinguish them. The two species associate in feeding, in flight, and in migration, breeding in similar locations, but this one in the Hudson Bay region rather than the Arctic tundra. Its length is about $6\frac{1}{2}$ inches, expanse about 12, and bill rather less than 1 inch.

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The Western Semi-palmated is thought to be distinct, in having a darker coloration on the back in summer, and the length of the bill averaging over 1 inch.

THE SANDERLING

(*Caladris arenaria*).

The upper plumage is of black feathers edged with chestnut and tipped with whitish, as in most of the other sandpipers. The wings are grayish; the bill and feet black; the latter without the hind toe.

Length between 7 and 8 inches, and expanse 15 to 16. This is a common plover on the shores of rivers and lakes of Canada east of the Rocky Mountains, as it migrates northward in April and May. Its nest is built on marshy ground and has been found about James and Hudson Bays.

THE GODWITS, TATTLERS AND CURLEWS

are amongst the largest bay birds, and their long bills attract attention even when their calls are not being uttered.

THE MARBLED GODWIT—BROWN MARLIN

(*Limosa fedoa*).

The Marbled Godwit is rarely seen east of Manitoba, although occasionally taken about the Great Lakes. It nests in the plains regions from the western border of Ontario to British Columbia, building its slight nest in meadow land, and laying four olive-gray eggs spotted with brown. The plumage of the back is brownish with dark bars, the lower surface of the same light cinnamon brown, but almost without markings. The bill is long and slightly recurved. Various in size. Length about 18 inches, expanse 35 or more, bill $4\frac{1}{2}$, stont toes $1\frac{1}{2}$.

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THE HUDSONIAN GODWIT, RED-BREASTED GODWIT, RING-TAILED MARLIN

(*Limosa haemastica*).

This Godwit follows the Atlantic coast during migration, being seen often in Newfoundland, Nova Scotia, and New Brunswick, but seldom in Quebec and Ontario, and very rarely in Manitoba and Saskatchewan. It is said to breed plentifully on the tundra toward the Arctic Ocean, and is often taken about Hudson Bay. In the spring its lower plumage is largely chestnut or rufous, the upper parts being brownish black with white rump and black tail. In fall and winter the upper parts are grayish, and under surface yellowish white. It lays four olive or pale brown eggs, spotted with darker brown. Length 16 inches, expanse about 27. Bill 3 to 3½ inches, and slightly recurved.

TATTLERS OR YELLOW-LEGS

We have only two species of these sharp-eyed and shrill-voiced birds, but they are found all across Canada, being especially common in the spring migration along the Atlantic coast. In September they regularly visit the Great Lakes, on their way south to the Gulf States.

THE GREATER YELLOW-LEGS

(*Totanus melanoleucus*).

The black plumage of the back is spotted with white or light gray, that of the neck and head is streaked with the same light shades. The tail and tail coverts are white with black bars. The belly is white, the breast and sides spotted and barred with black. In fall and winter, brown takes the place of black. The bill is black, straight, grooved less than half its length and over two inches long. Length from 12 to 14 inches and expanse about 24.

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These are slender, graceful birds, attracting attention by their cries as they circle far overhead: They are found breeding on Anticosti and also on Vancouver Island, as well as on the prairie near the foothills of the Rockies. During the breeding season they frequently light in trees, but nest on the ground, laying three or four brownish or grayish eggs, which are irregularly marked with dark brown. The eggs are so seldom found as to be highly prized. The birds themselves are very attractive game to the country boy who has learned to hide himself on the edge of the muddy flats where these and other waders gather their food. A boat that will float "wherever the grass is wet," or a very well trained dog is necessary in the retrieving of Yellow-legs.

THE LESSER YELLOW-LEGS

(*Totanus flavipes*).

This is a copy of the preceding form on slightly smaller lines. In length it does not exceed 12 inches and in extent it is less than 21. The bill is under 2 inches in length and grooved rather more than half its length. They are thought to breed in Newfoundland, northern Quebec and about Hudson Bay. Its nests have been rarely found except on the Anderson and other rivers flowing through the Barren Grounds. The eggs are various in coloration but usually gray to creamy with brown blotches. Like the larger form this bird when disturbed will often perch in a tree near its nesting grounds. They are found regularly in fall and spring in the Great Lakes region, haunting the shallow streams and ponds which drain the northern shores of Lake Ontario, and they remain for several weeks as they travel gradually southward in our beautiful September weather.

SOLITARY SANDPIPER—AMERICAN GREEN SANDPIPER (*Helodromas solitarius*).

The upper parts of the body are olive brown with white streaks on the head and neck, and white spots on the back. The

SHORE BIRDS

tail and sides are barred with white and black, and the belly is white. In winter, like all others of the race, the prevailing shade is grayish. The form most common in British Columbia is larger, darker on the back and lighter about the head and neck. It is separated as the Cinnamon Solitary Sandpiper. Length between 8 and 9 inches, extent about 16, bill 1 to 1½ inches.

This species is found scattered sparsely all across Canada probably breeding in the wooded parts of every province, but its eggs have been rarely found. In northern Alberta, however, Mr. Walter Raine obtained several sets of eggs, all found in the old nests of other birds, such as the robin, grackle, Canada jay and kingbird, and in some cases 15 feet from the ground. More careful observation will probably show us that this is a resident of Ontario also, as it remains with us throughout the summer, and then indulges in the habit unusual among sandpipers of perching on trees. The eggs are described as pale greenish white, heavily spotted and blotched, especially at the larger end, with brown and gray. Their average size is 1.36 x .98 inches.

THE WILLET

(*Symphemia semipalmata*).

The Willets resemble the Tattlers or Yellow-legs in general appearance and plumage, but are larger and have stouter bill and legs. The latter are not yellow but bluish black, and the feet are semipalmated. The eastern form is said to be common in Nova Scotia and is found also in Newfoundland and New Brunswick. It is taken occasionally in Ontario, but its nesting grounds are mostly south of our boundary.

The western form is occasionally seen in Ontario; but is common and breeds in southern Saskatchewan and Alberta. Its low monotonous call,—from which its name is taken,—is uttered almost continuously. Its home and feeding grounds are beaches and margins of ponds, both salt and fresh water. In length they vary

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from 12 to 16 inches, with expanse of about 28. The bill is 2 to 2½ inches long and straight. Like other shore birds, its winter plumage lacks the blackish markings, and approaches an ashy gray in color.

THE BARTRAMIAN SANDPIPER

(*Bartramia longicauda*).

The upper plumage of the Field Plover is blackish with markings of white and yellowish, the throat and belly are whitish, the neck and breast light yellow with streaks and bars of dark. Wings lined with white, with black bars,—tail yellowish black and white. Bill with black tip. Length about 12 inches, expanse 22, bill 1 to 1¼.

This is an upland bird, building its nest on the ground in rough dry pastures. It shows no fear of animals, but can scarcely be approached by a man on foot. Its note is clear and can be heard when the bird is so high as to be invisible. It is seen occasionally in eastern Canada and some undoubtedly nest in eastern Ontario, but its home is the prairie of the northern United States and Canada from the western boundary of Ontario to the mountains, and as far north as Lake Athabasca.

THE SPOTTED SANDPIPER

(*Actitis macularia*).

This is the tip-up or "Teeter Snipe" of our brooks and shores. It is dressed in quaker drab above and pure white below; the throat, breast, and belly being marked with circular black spots. The female is larger than the male and more strongly spotted. Length between 7 and 8 inches, expanse 13, bill about 1 inch.

The peculiar habit of bowing or vibrating the body up and down which this little shore bird practises so energetically when excited, has never been satisfactorily explained. They flit ahead of a pedestrian or a boat moving along the shore, until far enough



LONG-BILLED CURLEW.
 $\frac{1}{2}$ Life-size.



SHORE BIRDS

from their own particular haunts, then with a 'peet-peet' they make a wide curve close to the water as they return to the favorite locality. They nest on the ground, often among dry grass, sometimes on a gravel bar, laying three or four creamy or grayish eggs, spotted with chocolate.

The range of the Spotted Sandpiper is from the Atlantic to the Pacific, and it nests wherever suitable situations are found.

THE BUFF-BREASTED SANDPIPER

(*Tryngites subruficollis*).

This small shore bird is not common in the southern parts of Canada. It is to be distinguished by the black specks and markings on the white inner wing quills, the outer webs of which are yellowish. The inner wing coverts are also strikingly marked with white and black. The tail feathers are grayish yellow with dark ends but white tips. Upper surface grayish brown, lower surface pale fawn, with white tips and obscure dark markings. Length 7 to 8 inches; bill less than an inch.

Its nest is merely a hollow in the soil or moss, in which usually four eggs are deposited. These are yellowish gray with spots, blotches, and stripes of rich brown.

While nowhere described as abundant, this sandpiper is seen quite regularly in Ontario and Manitoba, and is reported from British Columbia. Its breeding grounds are the Barren Grounds near the Arctic coast, and its food minute crustaceans found along the shores.

LONG-BILLED CURLEW

(*Numenius longirostris*).

The extreme length of the bill of this large and handsome bird enables anyone to readily identify it. The prevailing color of the plumage is buff, dark above and light below. The head and neck

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are streaked, and back and tail cross-barred with black. The lower neck and breast are also streaked with dark brown or black. Length about 24 inches, expanse 36 to 38. Bill decurved, and 5 to 6 or even 8 inches in length in the mature bird.

In all eastern Canada this must be considered a rare migrant, but it breeds in southern Saskatchewan, Alberta, and in open parts of British Columbia. Its nest is well hidden on the open prairie. The eggs are drab with brown markings. When flying, it whistles or calls loudly in the spring, and when in flocks often takes the narrow shape or triangular arrangement so notable in the movements of wild geese. Its feeding grounds are the moist meadows and marshy shores of lakes and streams, where it obtains, worms, larvae, and crayfish as well as crickets and grass hoppers.

HUDSONIAN CURLEW

(*Numenius hudsonianum*).

While resembling in general appearance the Long Billed Curlew, this bird is not buff but grayish in general color. The top of the head is marked by two dark patches separated by a line of the grayish body color. The under side of the wings is varied by markings, instead of plain buff as in the preceding form.

Length 17 to 18 inches; bill decurved and not more than 4 inches long.

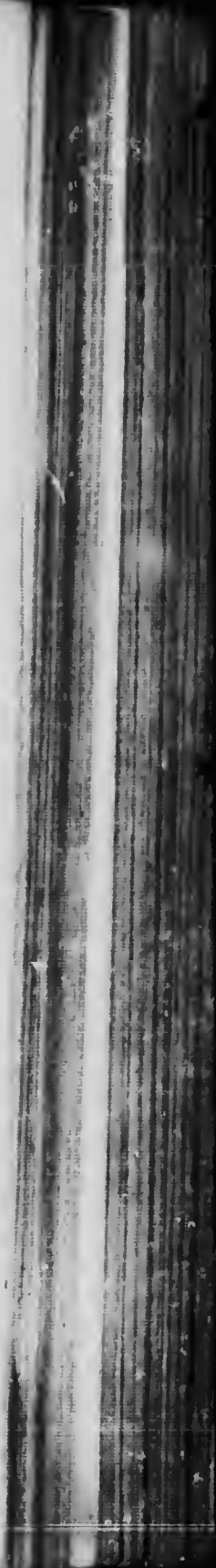
This Curlew migrates along the Atlantic coast principally, being abundant in Newfoundland in spring and fall. It is occasionally seen in Ontario but very seldom further west. Its breeding grounds seem to be the southern and western shores of James Bay and Hudson Bay, but little is known of its nest and eggs.

ESKIMO CURLEW

(*Numenius corealis*).

This is the smallest of the three curlews which we may look for in eastern Canada. Its plumage greatly resembles that of

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AMERICAN GOLDEN PLOVER.
1. Life size.



SHORE BIRDS

the Hudsonian Curlew, from which it differs in having no chestnut or white bars on the primaries, and having several narrow dusky streaks on the crown. In length it is under 15 inches, and the bill is under 3 inches and nearly straight. Its range in Canada is chiefly on the eastern coast, breeding on the level grounds toward the Arctic. It was formerly plentiful on the Labrador and Newfoundland coasts and is still frequently seen there. In Ontario it is now rare. In September, 1881, the writer collected several curlews on Wolfe Island, probably of this species, but they were not identified because of lack of definite description. They associated with the Golden Plover.

THE BLACK-BELLIED PLOVER, OR THE BULL-HEAD PLOVER (*Squatarola squatarola*).

The coloration which gives its commonest name to this plover is seldom seen south of Hudson Bay. The head is large and rounded in appearance, with a straight bill, much like that of a pigeon. Unlike other forms, this species has a small but distinct hind toe.

The upper plumage is grayish, made up of black, white and ashy. In the breeding season, from the eyes downward the under parts are black. In fall and winter the lower parts are whitish, with mottling of light brown on neck and breast. Length 11 to 12 inches. Bill 1 to 1 $\frac{1}{4}$. In autumn this plover is found going southward across Newfoundland, Nova Scotia, New Brunswick, Quebec and Ontario, from their breeding grounds near the Arctic Ocean. The northward migration seems to be largely from River St. Clair westward following the Mississippi valley. They were formerly common in autumn on the old pastures and gravel bars of Wolfe Island.

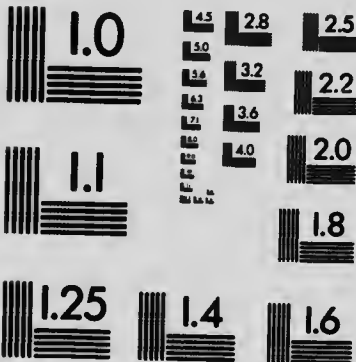
THE AMERICAN GOLDEN PLOVER (*Charadrius dominicus*).

While the difference in appearance between the Golden and the Black-bellied Plover is difficult to make clear in words, it is



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not difficult to distinguish average specimens from each other. Besides the darker plumage of this bird, with its golden yellow markings, the tail is gray with faint whitish bars instead of being white with black bars as in the preceding species. The head also does not give the impression of being so globular. The absence of the small hind toe is a good distinguishing mark. In size the Golden averages smaller than the Black-bellied. Length 10 to 11, bill less than one inch. Great flocks of Golden Plovers were common on old pasture fields and along gravelly shores of Lake Ontario, in September and October, but their numbers have greatly diminished since every boy can own a breach-loader. On Wolfe Island, many were killed by flying against the telegraph wires, and it was not uncommon for two dozen birds to fall at one discharge of a double barrelled gun. They nest from Hudson Bay westward on the tundra, and along the Arctic Ocean, and migrate all across Canada spending the winter in southern Brazil and Argentina.

The Pacific Golden Plover is smaller, with more yellow or gold color about the head. It is the common form in Vancouver Island and Western Alaska.

THE KILLDEER PLOVER

(*Aegialitis vocifera*).

This is the best known of our plovers in Ontario, breeding in dry rough pastures that are not far from stream or lake shores, and calling out its name whenever disturbed. Its back is grayish brown, rump yellowish or chestnut brown, tail darkening toward the end, but with a light bar and brownish tips. The throat, fore-neck, and line over the eye are white. A complete black collar, broad in front encircles the neck, and a second black breast band is incomplete behind. The forehead has a white band from eye to eye with a black band behind it. Belly and lower breast white, and patches of white on the wings. Length from 9 to 10½ inches, and bill ¾ of an inch.

SHORE BIRDS

While not common east of Ontario, the Killdeer is very much at home in the country bordering the Great Lakes, making its nest often among pebbles or bits of wood, and feeding on field and shore insects and crustaceans. It comes in April and leaves toward the last of September or after the first frosty nights. It is plentiful all across the plains, and in open parts of British Columbia.

SEMIPALMATED PLOVER, RINGNECK PLOVER

(*Aegialitis semipalmata*).

Back and tail ashy brown, lower parts white, except a black band on the lower neck. A white band from eye to eye interrupts the black cap which covers the head from the bill upward. A broad white band includes the throat and encircles the head, and is followed by the black band mentioned above. Length 6 to 7 inches. Bill $\frac{1}{2}$ inch. The toes are plainly semipalmated.

This plump little plover is a resident in Newfoundland and Nova Scotia, and probably in the other eastern provinces. It nests in Ontario and in the prairie provinces, but its chief breeding grounds are further north, the Labrador coast, Hudson Bay, and across the plains to Alaska. About the east end of Lake Ontario they are plentiful in September, often associating with Killdeer Plover, but are more gregarious than the latter. They fly in close bunches of from ten to thirty, and run rapidly along the sandy and muddy beaches. Their nests are in the sand or pebbles.

PIPING PLOVER

(*Aegialitis meloda*).

In this little plover, the head is pale brown or ashy, with a black bar across the forehead from eye to eye. The throat and a ring around the neck are nearly white and this is succeeded by a breast ring of black, incomplete in front, and usually so behind. The variety *A. meloda circumcincta*, or Belted Piping Plover,

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differs only in having a complete black breast band. All the upper parts are ashy brown, the under parts lighter to whitish. The bill is short, rather under $\frac{1}{2}$ inch, stout and black. Their note is a musical, plaintive high pitched "peep.". Length $6\frac{1}{2}$ to 7 inches. They nest in the maritime provinces and have been found in Ontario, and Manitoba, but are abundant only along the Atlantic coast of the United States.

THE TURNSTONE

(*Arenaria interpres* and *A. morinella*).

The crustaceans of the wet shores which form the food of this plover, are obtained by industriously upsetting shells and pebbles, hence the name. From its beautifully mottled white, black and chestnut plumage it gets the name of Calico bird. The chestnut seems part of the breeding dress, and is absent in winter, when brown and gray take the place of the clearer black and white markings. The base of the tail is white and the tip is black. The breast is black and belly white.

Length 8 to 9 inches, expanding about 18, bill about 1 inch long, black; feet orange.

The breeding ground of the Turnstone is the Arctic regions, and in its migration it is found in all the provinces, but not plentiful or common anywhere, and belonging evidently to the ocean beaches. Two species have been distinguished, but probably one is merely a variety of the other.

The Black Turnstone is darker throughout than the eastern forms, the head especially lacking white, hence the name *A. melanocephala*. It is reported as breeding on the shores of Vancouver Island and the mainland of British Columbia.

BLACK OYSTER-CATCHER

(*Haematopus bachmani*).

This is the only species of this striking group certainly found in Canada. These birds have large, coarse, strong feet and legs,

EARTH SCRATCHERS

pale in color; the bill is adapted for opening the shells of the oyster, the "catching" being not difficult, because as Coues says "oysters do not run fast." A large vermilion bill, compressed and chisel shaped, truncate like that of the large woodpeckers, is the efficient weapon by which they explore clam and mussel shells.

The head and neck are glossy black, other parts brownish black. Length about 20 inches but varying greatly. Bill 3 to 4 inches long, and various in shape, sometimes bent near the tip.

The nest is placed in gravel or on bare rocks, and is common on the British Columbia coasts; eggs yellowish drab, speckled with blackish.

ORDER IX.—GALLINAE.

THE GALLINACEOUS BIRDS—EARTH SCRATCHERS

The Gallinaceous birds or those related to the domestic hen, have the following characters in common. Bill generally short, stout, convex, with blunt arched tip, of horn like substance except in the nostril cavity, which contains scales or feathers. The bill is not constricted and its base terminates high on the forehead. The edges of the upper mandible are sharp, and overlap the lower. Legs moderate in length, strong, sometimes bearing spurs, and usually feathered. The hind toe is present but elevated and smaller than the others, which are tipped with short blunt claws. The wings are short, strong and concave. Tail various, immensely developed in some forms. They are land birds, living mostly on the ground and nesting there, although some feed in trees and nearly all roost there. Eggs numerous. The young are precocial, —running as soon as hatched.

To this group belong our upland game birds—turkeys, grouse, quail, as well as the pheasant and peacock of other lands.

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BOB-WHITE—QUAIL

(*Colinus virginianus*).

Representing the quail and partridge of Europe we have in eastern Canada only the Bob-white.

This bird is called quail in Ontario and the eastern United States, and partridge in the Middle States. The term "partridge" as applied to our grouse is misplaced, as the Bob-white alone resembles the Partridge of Europe and Africa. Our Bob-white or quail is, however, quite distinct from transatlantic forms. Many of the quail family are found in the United States, Mexico and Central America.

We can still claim the Bob-white as a Canadian bird although its range is now restricted to the southwestern peninsula of Ontario, and practically to the southern counties. Here it is not uncommon, although becoming less plentiful every year in which it is not continuously protected.

Its food consists chiefly of weed seeds, crickets, grasshoppers potato beetles, wireworms and cutworms. No bird can show better reason for being carefully preserved and encouraged. It nests on the ground, laying a dozen or more white eggs. The call note of the male gives it its popular name.

The top of the head bears a number of long loose feathers which are scarcely a crest. The plumage in general is chestnut with dark bars and streaks. The tail is grayish, the throat is white, and so is a broad line across the forehead and over the eye. This white is yellowish in winter, and in the female's plumage at all times. Length about 10 inches, expanse about 15. Albino forms are not rare, and instances of melanism are occasionally found. These should be preserved for scientific study.

EARTH SCRATCHERS

PLUMED PARTRIDGE OR MOUNTAIN QUAIL

(*Oreortyx pictus*).

This beautiful game bird is found in southern British Columbia and on Vancouver Island, having come from the south.

Its back, wings, and tail are olive brown; foreparts above and below slaty gray; throat and belly chestnut, sides banded with broad bars of black and white. Two narrow black plumes curve backward. A narrow white line borders the base of the bill above and continues beyond the eye down the side of the neck. Length 11 to 12 inches, with expanse of 16 inches.

CALIFORNIA PARTRIDGE—VALLEY QUAIL

(*Lophortyx californica*).

This is another beautiful bird spreading—or probably introduced—from California, but breeding freely in British Columbia.

A narrow white line from the bill passes under the eye and downward along the side of the neck. A tufted plume of a few feathers curves forward from the brownish top of the head. "Upper parts are ashy brown, forebreast slaty blue under parts tawny, deepening to bright chestnut on the belly, where all the feathers are sharply edged with black. Sides olive brown with sharp white stripes. Length 10 to 11 inches."

GROUSE

The grouse differ from the partridge or quail in having the tarsus feathered at least in part, the nostrils more or less feathered, and the sides of the toes in winter pectinate, i. e. bearing on each side a comb-like line of horny points which serve as snowshoes. These develop in September and October and are cast in April. They roost in evergreens, except during the extremely cold weather, when they burrow in the deep drifts of snow.

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DUSKY, BLUE OR SOOTY GROUSE

(*Dendragapus obscurus*).

Of the Dusky Grouse and its varieties the Sooty and Richardson's Grouse, we have certainly the latter two forms, and probably the former. They are large handsome birds, undisturbed by the presence of man, and hence so easily killed as to obtain the name 'Fool Hen' in the Rocky Mountains. They range from Arizona and New Mexico northward, the Dusky Grouse being the most southerly form, Richardson's Grouse next, and the Sooty Grouse ranging to or beyond Sitka. All belong to the coniferous forests of the Pacific coast, but are reported as brought for sale to Sault Ste. Marie as though from the Laurentides. The following are chief points in the description of Richardson's Grouse as given by McIlwraith. Back and wings blackish brown, crossed with wavy lines of slaty gray. Yellowish brown on the scapulars, long side feathers tipped with white. Under parts light slate color, mixed with white on the lower belly. Chin and throat speckled with black, enlarged white feathers on the sides of the neck. Tail brownish black veined with gray and with a broad terminal band of grey. Length 20 to 22 inches. Tail 7 inches. All three are alike in size and general appearance, the two northern forms being darker. They lay from seven to ten eggs in a very slight nest on the ground, the eggs being buff colored, speckled with chocolate brown.

CANADA GROUSE, SPRUCE PARTRIDGE

(*Dendragapus canadensis*).

This beautiful grouse belongs to eastern Canada. It is found in Newfoundland and Labrador, in Nova Scotia, Quebec and Ontario north of Ottawa, and in the forest regions of Manitoba. It nests on the ground in the spruce and tamarack forests in which it lives, and feeds on berries, leaves, and buds. Its flesh is not as well flavored as that of the Ruffed Grouse, nor is it so shy a bird. Its

EARTH SCRATCHERS

beauty will scarcely save it from extinction in all settled regions unless carefully fostered by protecting legislation.

Plumage above black, with wavy lines of grayish; black also below with white spots and bars. A bright yellow or red comb of naked skin forms the upper border of each eye. The tail is made up of sixteen feathers, black, with a rich brown bar at the ends. The throat is dark bordered with white. Legs feathered to the toes. Length 15 to 17 inches.

FRANKLIN'S SPRUCE GROUSE

(*Dendragapus franklini*).

This is a western form of the Canadian Spruce Grouse,—found throughout the wooded parts of British Columbia and the Eastern ridges of the Rockies. It shares with the Dusky Grouse the name 'Fool Hen,' from its unsuspecting nature.

RUFFED GROUSE

(*Bonasa umbella togata*).

This is the "Partridge," so dear to all healthy country boys of eastern Canada, affording a good reason for many and delightful rambles through upland and swampy forests, with no great danger of being overburdened with game. The startling rush and roar with which it rises when close to an intruder is very disconcerting to young gunners, and the remarkable speed with which it places tree tops and trunks between itself and danger, may enable it to delight several more generations with excellent sport. Wise legislation, by establishing a close season of five years, has recently permitted it to again occupy covers long ago deserted. Its custom of 'drumming' is one of the most interesting peculiarities of this fascinating bird. The male, at the beginning of the nesting season, calls the female by standing upon a slight elevation—usually a fallen log—and rapidly beating the air with his concave rounded

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wings. The result is a booming sound, resembling distant thunder. Occasionally the sound is produced in the fall. This musical performance is accompanied by struttings, with wings drooped and tail spread in first rate turkey style. The Ruffed Grouse feeds on the ground during the summer and fall, eating haws, rosehips, gooseberries, grapes and other wild fruits, as well as insects and clover leaves. In winter, when the snow covers ground food, the buds of the iron wood and white birch form a favorite supper, and towards evening the birds may be plainly seen on the slender leafless branches against a yellow western sky. They lay about a dozen eggs, in a slight nest usually under a log or close against a stump in a heap of brush. The eggs are sometimes speckled slightly with brown, but usually are plain creamy white.

The general color of the upper plumage is variegated grayish brown, with pale spots on the feathers, each spot bordered with black. A number of long erectile feathers on the sides of the neck are specially well developed in the male. Lower breast and belly pale buff marked with brown. The feathers of the back and especially of the tail vary from chestnut to gray, and upon the prevailing gray or rusty tones and the general dark or light shades of plumage, varieties have been established. The tail is long and broad, irregularly mottled and barred with black, and with a broad black band near the tip. The upper parts of the tarsi are feathered. Length about 17 inches, expanse of wings about 23, and tail 7 to 8 inches.

The range of the Ruffed Grouse is from Nova Scotia, New Brunswick and Labrador across Canada to the poplar woods of Manitoba where it merges into the gray variety. In Oregon and British Columbia another very dark form is found. These seem to be merely ecological varieties, and the prevailing tones of the foliage of the district will decide the tone of the plumage, which must be so inconspicuous as to permit its wearers to live long enough to produce offspring like themselves.

EARTH SCRATCHERS

THE PTARMIGAN

These Grouse belong to the northern regions, and come south to settled parts of Canada only in winter. They are very similar to the Ruffed Grouse in summer, but have feathers covering even their toes and put on a coat of white plumage for the winter.

THE WILLOW PTARMIGAN

(*Lagopus ptarmigan*).

This is the only ptarmigan in Ontario and Quebec, where it is found occasionally in winter as far south as Sault Ste. Marie, and Ottawa. Its breeding range is from Labrador across to Hudson Bay, and follows the spruce forest to Alaska, where it is plentiful. Its nest is in a sheltered place on the ground, and it lays from 9 to 12 eggs,—buff with heavy smears and blotches of dark brown.

In summer the plumage of the neck and head is chestnut slightly marked with black, the back and rump are black with many bars of yellowish brown, the tail is black tipped with white. The primaries and secondaries of the wings—both shafts and plumes—remain white, as do the lower breast and belly. In winter it is pure white except the black tail, which is mostly concealed by the long white tail coverts. It is distinguishable in winter from the Rock Ptarmigan by having a stout bill and no black stripe on the head. Length 15 to 17 inches. Tail $5\frac{1}{2}$.

The variety known as Allen's Ptarmigan,—*Lagopus lagopus alleni* is very similar, but has the shafts of the secondaries black. It is the common lowland ptarmigan of Newfoundland, and not known elsewhere.

THE ROCK PTARMIGAN

(*Lagopus rupestris*).

This grouse in some of its varieties is found from Greenland across Canada to Alaska and the mountains of Vancouver Island.

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It is plentiful about the northern part of Hudson Bay, and from there they migrate southward in large flocks in October, returning in May. It is not known in Ontario or Quebec unless in the newly acquired northern portions. The change of plumage occurs in April, May, and June, according to the locality, and the white is gradually assumed in September and October. Its summer plumage is blackish, coarsely marked and barred with crooked lines of dark yellow and brown. The belly and much of the wings white. In winter pure white, but with a black stripe over the eye. Length 13 to 15 inches. Tail $4\frac{1}{2}$.

An Alpine form known as Welsh's Ptarmigan,—*Lagopus welshi*—is said to be plentiful on the bleak hills and mountains of the interior of Newfoundland. It is not known elsewhere, but corresponds to the Rock Ptarmigan as Allen's Ptarmigan of the lowlands resembles the Willow Grouse. Welsh's Ptarmigan lacks the chestnut in coloration, being blackish above with fine markings and bars of white and light yellow. Tail grayish yellow, breast and sides like the back. Throat and belly white. In winter white, with yellowish tail, the central feathers tipped with white. Lores black. Its nest and eggs are unknown.

THE WHITE-TAILED PTARMIGAN OR ROCKY MOUNTAIN SNOW GROUSE (*Lagopus leucurus*).

This clearly marked form is found on the summits of the Rocky Mountains in British Columbia and Vancouver Island, and southward to New Mexico. It is a small grouse measuring only from 12 to 13 inches. In winter it is entirely snow white, but in summer the upper parts and the breast are tawny brown finely marked with black and white. The tail, wings, lower breast, belly and legs remain white. Nest on the ground, slightly made, and containing usually less than a dozen creamy eggs, finely dotted with brown.

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PRAIRIE HEN.
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EARTH SCRATCHERS

PINNATED GROUSE

(*Tympanuchus americanus*).

This is the Prairie Chicken or Prairie Hen of eastern North America. It probably ranged at one time nearly to the Atlantic coast in the United States, and was found in southwestern Ontario. It is, however, a bird of the open meadows, and now inhabits the valley of the Mississippi and Red rivers, Manitoba and southern Saskatchewan.

In Manitoba it is said to be replacing the Sharp-tailed Grouse. It is likely to survive if given reasonable protection, as it prefers cultivated fields and does not demand solitude. Even in very cold weather it usually remains in the open, reaching its food by scratching through the snow on stubble fields. It eats grain in autumn and winter, along with berries and small fleshy fruits. In early summer it lives largely on beetles, crickets and grasshoppers. They 'pack' in flocks in winter, separate in the spring, and come together only for competitive dancing and 'booming.' The latter is a vocal performance, in which the extensive bare patches of red skin between the neck tufts are distended.

The hen birds desirous of mates come quietly to these entertainments, and are claimed by the victorious males. The nests are made in long grass or stubble and from 10 to 15 eggs, yellowish or grayish olive, are laid.

The following is the description given by Coues and McIlwraith with additional particulars from Chapman's Handbook. "Above variegated with black, brown, tawny, or ochrey and white, the latter especially on the wings; below quite regularly barred with dark brown, white, and tawny; throat tawny, a little speckled or not; vent and crissum mostly white; quills fuscus, with narrow or imperfect white or tawny bars and tips. Sexes alike in color, but the female smaller with shorter neck tufts." "Sides of the neck with tufts of ten or more narrow stiffened black

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feathers, marked with buff and rufous, their ends rounded, the skin beneath these tufts bare." Length 16 to 18 inches, extent about 28 inches, tail $4\frac{1}{2}$. Legs feathered to the bases of the toes.

NORTHERN SHARP-TAILED GROUSE

(*Pediacetes phasianellus*).

This is the eastern form of the Prairie Chicken of the northwest, being occasionally found between Lake Winnipeg and Sault Ste. Marie, and very rarely in Muskoka. It is common about James Bay, and probably wanders southward and eastward, having been found at Lake Abitibi and even Lake St. John. It is thought to be spreading eastward along the line of the Canadian Pacific Railway, being able to adapt itself to the partially open forest country. "It abounds on the outskirts of the Saskatchewan plains and is found throughout the wooded districts of the Northwest Territory." Juniper scrub is the favorite home of this grouse, and it eats the buds of Juniper in winter and the berries in summer. Its nest is on the ground, and it lays in June about six creamy olive drab eggs with brown specks.

Its plumage is dark in tone, the markings being black, white and dark brown with little tawny. On the under parts the spots are numerous, blackish and V shaped. The throat is white and speckled. A bare space on each side of the neck is covered with feathers slightly longer but otherwise like the others. A number of narrow feathers form a short decurved crest. The tail is white and short, made up of sixteen feathers graduated in length toward the two middle ones which project about an inch beyond the others.

The Prairie form of the Sharp-tail differs in color tone, the markings being black, white and tawny. On the lower body the dark spots are fewer in number, brown and U shaped instead of black and V shaped. Its home is on the open plains and stubble fields, up to the foot hills, and in winter it seeks the shelter of

EARTH SCRATCHERS

broken, wooded country. Its nest is usually in the vicinity of bushes, and its eggs sometimes number sixteen, greenish to brownish with a few flecks of dark brown.

The Columbian Sharp-tail is the form of this grouse found in British Columbia east of the Coast range, but can scarcely be distinguished from the prairie form.

SAGE GROUSE, SAGE HEN, SPINE-TAIL GROUSE

(*Centrocercus urophasianus*).

Our claim upon this as a Canadian bird rests upon the fact that it is occasionally found in Saskatchewan, Alberta and British Columbia near the international boundary. "Its centre of abundance is the Artemisia (Sage brush) tracts of Colorado, Wyoming, Utah, Nevada, Idaho, eastern California and Oregon." Coues saw it in the Milk River district of Alberta. It is probably never found far from the shrubby wormwood known as Sage brush.

It is the largest of the Grouse native to America, measuring 25 to 30 inches in length with an expanse of 3 feet, and tail about 12 inches. The hen is one-fourth smaller. The upper parts are "varied with black, gray, brown and buff; below chiefly white, with a large squarish black area on the belly. Chin and throat blackish, speckled with white ends of the feathers."

The neck in front bears the naked, pallid tympanum, capable of being greatly distended during amatory displays. It is bordered by stiff filamentous feathers, and covered by soft filamentous plumes. The stiff feathers are worn down to resemble fish scales, by the birds rubbing their breasts on the ground. Their food is worm-wood tips, berries, seeds, and grasshoppers, and the flesh is not palatable at all. Strictly terrestrial. Eggs up to 17 in a clutch, greenish drab in color.

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WILD TURKEY

(*Meleagris gallopavo, variety fera*).

Once quite plentiful in southwestern Ontario, this greatest of our upland game birds is now probably extinct within our borders. They quite certainly at one time ranged as far east as Hamilton and possibly to the site of Toronto, but for years their only representatives have been restricted to forest lands in Essex and Kent counties and it is doubtful whether one individual now exists in Ontario outside the Rond Eau Government Park.

The turkey group belongs to Central and North America, and several species or varieties are, or were, found in the United States, one, the Mexican Turkey—being the form taken to Europe, where it became the ancestor of our more or less domesticated race. The Rio Grande Turkey and the Florida Turkey differ but little from the form found in the Eastern States and Ontario. The chief distinction is that the Mexican race and its tame descendants have the tail covert feathers tipped with white, while all the more northern forms wear chestnut tips. The wild birds never show such a great development of fleshy frontal protuberance, and of caruncles on the neck, as do the domestic gobblers. The most beautiful form,—rivalling the peacock—is the spurred and ocellated Central American Turkey. Wild Turkeys are gregarious, living in flocks of ten or more except during the nesting season. Probably each flock represents one brood, which numbered from ten to fifteen. They return night after night to the same roosting place if undisturbed, usually to the tops of the tall trees growing in lowlands. The “gobbling” call of the males in the early spring morning can be heard long distances, and several of them are likely to reply to the more plaintive note of the female. Then a display of charms and courage, much strutting and fierce battles, end in the capture of the hen by the polygamous sultan. The flesh of the wild birds is considered greatly superior to that of the domesticated form, and this is very difficult of explanation, as this wide ranging bird

PIGEONS AND DOVES

is never quite tame, almost invariably nests in a bit of woodland or shrubbery, and lives upon insects, acorns, beechnuts, and other wild provender for the greater part of its life, refusing to recognize his master or "his master's crib" until laboriously driven home by force, or rarely by stress of weather. Length 48 to 50 inches, and weight varying from 12 to 35 pounds.

ORDER X.—*COLUMBAE*.

PIGEONS AND DOVES

Of this very numerous race, one form of which swarmed in parts of Canada within fifty years, we have at present only two and possibly only one, representative.

The passenger pigeon is not at this date, 1914—certainly known to exist in Canada, although it is possible that some still nest in the Lake of the Woods region.

Pigeons have a moderately large head, graceful neck and strong compact body. The beak is swollen at the tip, and covered at the base by a soft skin, and in this the nostrils open. The feet have four toes on the same level, and the wings are long and powerful, except in the ground doves. Two extinct forms—the Dodo and the Solitaire were flightless. All pigeons have large *crops* which during the breeding season secrete a milky fluid to moisten the half digested food which they give to their young. In drinking, pigeons swallow continuously without raising their heads, which are thrust into the water. They have great appetites, being credited with ability to eat in a day a quantity of food equal to their own weight. They pair for life, and are thought to become deeply attached to each other. Their nests are very frail and insecure platforms of twigs, on which the two white eggs are incubated, the parents caring for them alternately. The young are decidedly altricial, requiring for some time to be fed by the parents. This is done by the parent's beak being placed well within that of the young one, into whose throat regurgitated food is then injected.

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THE PASSENGER PIGEON

(*Ectopistes migratorius*).

In south eastern Ontario large flocks of this bird were occasionally seen in 1878. A few pairs were found as late as 1883, but soon after that date they disappeared. In north-western Ontario and Manitoba they were seen in 1887, '88, and '91. Unless a few pairs survive in the Lake of the Woods region it is probable that at present the species is extinct, and no completely satisfactory reason for this can be given, although their fearlessness and their habit of nesting in colonies gave opportunity for their easy and wholesale capture and destruction.

When a boy, the writer had a young Passenger Pigeon as a pet, and it showed great capacity for affection and confidence. They nested in considerable numbers in the hardwood groves in our district, and this bird had been taken from the nest before it was able to fly. It soon became very tame and showed absolutely no fear. No attempt was made to confine it, except that for safe-keeping it was shut in a barn at night. During the day it accompanied me to my work on any part of the farm, and perched on a fence, or gathered grain from the ground, but always ready to come to my hand at a call. It flew about me as I rode on horse-back across the fields, and seemed afraid of no creature but the domestic cat. It ate raspberries and grain out of my hand, and scolded me with raised wings and voice if I closed my fingers over the food. Altogether a more delightful pet could scarcely be found.

The plumage of the upper parts is bluish slate, with olive brown on the back and shoulders, and iridescent red, golden and purple on the sides and back of the neck. The outer tail feathers are black at the base, then dull bluish with a white tip. The breast is dull purplish red, whitish on lower belly and under tail. Length 15 to 17 inches. Wing and tail each 7 to 8 inches.



FROM COL. RUTHVEN DEANE
125

PASSENGER PIGEON.
(*Ectopistes migratorius* Linn).
¼ Life-size.

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BIRDS OF PREY

THE MOURNING DOVE

(*Zenaidura macroura*).

This pigeon-shaped bird is becoming more numerous every year in all southern Canada, and as yet has not been greatly persecuted by shooters. It seems likely to replace the Passenger Pigeon, and being a famous eater of weed-seeds it may become a favorite. In shape and general appearance it resembles the Passenger Pigeon, but its colors are grayish brown instead of blue gray. A small black mark below the ear, and the brownish rump feathers, as well as the smaller size will readily distinguish it. Length about 12 inches, wing and tail each about 5½.

It nests in bushes and small trees or on the bushy fences, and even on the ground. Its mournful note can be heard about sunset,—a loud and clear, long drawn “coo”—followed by the same twice or three times repeated briefly in a much softer tone.

ORDER XI.—*RAPTORES*—THE BIRDS OF PREY.

VULTURES, EAGLES, HAWKS AND OWLS

This order of birds is distinguished by having a cere or fleshy covering on the base of the strongly hooked beak, and never having the toes in pairs,—two in front, and two behind—as found in the parrots. The fourth toe is sometimes versatile, i. e., it may be turned to the back. The claws are generally strong, the tibia and often the tarsus are feathered. The members of this group are altricial, the young being merely downy at birth. These are carnivorous birds, often of large size and great strength, and usually described as our birds of prey, but this term is quite as suitable to many other groups such as flycatchers, swallows, nighthawks, etc.

The California Vulture has been seen on the Canadian side of the boundary in British Columbia, but so seldom as to give it no title to be considered a Canadian bird.

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KEY TO THE BIRDS OF PREY

(Adapted from Coues).

In this group we have many stages of the predaceous nature. Some possess in a high degree the activity, ferocity, strength and courage which we usually associate with the idea of creatures which get their food by killing weaker living things. Others make war only upon insects and lowly forms of vertebrates, while still others live almost entirely on carrion. These latter show a lack of the adaptations which qualify other forms to overcome their swift and watchful prey.

SUB-ORDERS

1. Feet for walking, scarcely adapted for grasping, claws blunt and but slightly curved, hind toe elevated, nostrils perforate; bill long, blunt, and but slightly hooked. Head naked or nearly so *Cathartides*, Buzzards or Vulture Family, page 116
2. Feet especially modified for seizing, claws strong, sharp, contractile and curved; hind toe not elevated but long, and with a very efficient claw. Nostrils not perforate, bill short and stout with a sharp hooked tip. Head feathered entirely or nearly so.
Accipiters, Eagles, Hawks, and Owls, page 118
 - 2a. Head not unusually large, broad, nor flat in front; eyes looking sideways; nostrils entirely in the cere; no external ear-conch; outer toe rarely reversible, and not shorter than the inner one; feet in most species free from feathers, toes bare and scaly; plumage compact. Active in daylight.
 - a1. Outer toe not reversible.
Falconidae, Eagles and Hawks, page 118
 - a2. Outer toe reversible; tarsus partly feathered, scales on front small and rounded. Tail barred, but back and wings not barred. . . . Fish Hawk or Osprey, page 131
3. Head very large, broad, and flattened in front to form a face,

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which is usually outlined by a circle or triangle of radiating feathers. Eyes very large, and looking forward in all but one species; and encircled by lines of peculiar radiating feathers; bill never toothed, and having the nostrils opening at the edge of the cere. A large external ear-conch is common. Outer toe reversible and shorter than the inner one; feet usually feathered or bristly even on the toes. Plumage loose. Active birds in dim light, seldom in clear daylight.

Striges, the Owls, page 132

FAMILIES OF THE *FALCONIDAE*.

EAGLES AND HAWKS.

- A. Wing over 19 inches longThe Eagles
A1. Lower third or more of the tarsus unfeathered.
A2. Whole tarsus featheredGolden Eagle, page 125
B. Wing under 19 inches longThe Hawks, page 118

Bald Eagle, page 126

These possess the characters given above for *Falconidae*, except those peculiar to the Osprey. Coues makes the distinction that the true Falcons in general possess sharp, strong wings, with but one or a few notched quills, and on the quills are sharply defined *spots* of light color. Their prey is captured by an extremely swift and violent dash. Other hawks have round concave wings, with several notched quills, and these are marked by *bars* of light color. They catch their prey by an impetuous and persistent chase, but not by a dash. Both the above feed largely on birds. The *Buteos*—called in England Buzzards—are comparatively slow and awkward birds, feeding largely on creatures easy of capture, such as insects, frogs, reptiles, mice and moles. Most of their primaries are notched, and their light colored markings are inclined to form irregular *blotches*.

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These characteristics, with those below, serve to mark off the three groups of the Hawks:—

1. The Falcons—Upper mandible toothed; lower mandible notched; wings pointed.
2. The Accipiters—Bills without tooth or notch; tarsus about equal to tibia in length; wings rounded, and little longer than the tail.
3. The Buteos—Bill without tooth or notch; tarsus decidedly shorter than tibia; tail not forked, and somewhat shorter than the obtuse wings.

In addition to the above groups we have one form—the Marsh Hawk or Harrier—with loose owl-like plumage, and something of an ear-conch. It may always be identified by the unfailing white rump, or tail coverts.

THE FALCONS

- a. Length about 24 inches. Tarsus feathered half way down in front and on the sides, and longer than the middle toe without the claw. First quill shorter than the third.

Jerfalcon, page 127

- b. Length between 16 and 20 inches. Tarsus feathered half down in front and on the sides, and longer than the middle toe without the claw. First quill shorter than the third.

Prairie Falcon, page 129

- c. Length between 16 and 20 inches. Tarsus feathered a little in front, broadly bare behind, and not longer than the middle toe without the claw. First quill not shorter than the third.

Peregrine Falcon, page 129

- d. Length under 12 inches. Tarsus scarcely feathered above, the plates in front are enlarged, and like a double row of alternating scutella; the tarsus is scarcely longer than the middle toe

KEY TO BIRDS OF PREY

without the claw; first quill not longer than the fourth, and first and second notched on the inner webs.

d1. Back reddish, barred with black in the male, under parts white or tawny Sparrow Hawk, page 131

d2. Color same but paler.

Desert Sparrow Hawk, page 131

d3. Back slaty blue in adult, with a partial buff collar on the neck; back smoky black with buff collar in young specimens.

Pigeon Hawk, page 130

d4. Same with general blackish shade.

Suckley's Pigeon Hawk

THE ACCIPITERS.

Length 20 inches or less; tarsus feathered not more than one-third the way down, and very slender:—

a. Feet moderately stout; bare part of tarsus shorter than the middle toe; tail square; length 10 to 14 inches, extent 20 to 25 inches Sharpshin Hawk, page 119

b. Feet moderately stout; bare part of tarsus shorter than the middle toe; tail rounded; length 15 to 20 inches; extent 28 to 36 inches Cooper's Hawk, page 120

c. Length over 20 inches; tarsus feathered half way down or more; top of head blackish Goshawk, page 120

THE BUTEOS.

A. Four outer quills notched or sinuate on the inner webs.

a1. Tail of adult chestnut red, with a black bar near the end. Tail of immature birds closely barred with black and gray. No reddish on wing coverts. Wings 14 inches or more; tarsus stout; under parts whitish. . Red-tailed Hawk, page 121

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- a2. Tail of adult black, with about six white cross bars. Tail of young dark with many whitish bars; wing coverts chestnut or orange brown; wing under 14 inches; tarsus slender; under parts reddish brown with white bars.

Red-shouldered Hawk, page 122

- B. Three outer primaries notched or sinuate on the inner webs.

b1. Tail with many light and dark crossbars; little if any reddish on the under parts; no dark moustache; wing 12 inches or over Swainson's Hawk, page 122

b2. Tail blackish with about three light bands; much reddish on the under parts; a black moustache; wings 12 inches or less Broad-wing Hawk, page 123

- C. Tarsus feathered in front to the toes, reticulate behind; four or five outer quills emarginate:—

c1. Under parts white with various dark markings, but no reddish. Tail white at base, and then light and dark bars. Melanistic forms nearly uniform blackish.

American Rough-legged Hawk, page 124

c2. Under parts white, unmarked or slightly marked. Legs reddish with black bars; tail silvery gray, clouded with brownish Rusty Rough-legged Hawk, page 124

THE TURKEY BUZZARD OR VULTURE

(*Cathartes aura*).

This bird, which to the casual observer resembles the domestic turkey,—with its head and neck bare of feathers and the skin bright red, and its black plumage mottled with brown,— is probably resident in southwestern Ontario. Elsewhere in eastern Canada it is only a visitor, but it breeds in Manitoba, and probably in Saskatchewan and Alberta, as it is seen as far north as Edmonton. In British Columbia it is said to be common in the southern

BIRDS OF PREY

valleys. The description given above is sufficient to distinguish it, when taken with its measurements. Length about 30 inches, expanse of wings about 6 feet, tail short and rounded. The extreme length of wing of this bird gives it almost unrivalled power of remaining aloft and of soaring upward in spirals without any beating of the air by pinions. It has also remarkable powers of sight, enabling it to detect a dead or dying animal at immense distances. It is a voracious feeder on carrion, and in this way returns good service for the protection given it in tropical countries. Eggs usually two, creamy, spotted with brown and purplish. Their nests are variously placed, often on the ground, or in stumps, occasionally in tall trees or on rocky cliffs.

THE BLACK VULTURE

(*Catharista uruba*).

This the Carrion Crow—as it is often called—is a heavier but shorter bird than the Turkey Buzzard, and has shorter wings with proportionately inferior powers of flight. Its head is naked, but the feathers extend up the back of the neck to the head. The entire plumage, the bill and the skin of the head are black, or nearly so. The nostrils are comparatively small and narrow. The tail is short and not rounded. Length about 24, expanse about 54, and tail 8 inches.

It has the habits of the Turkey Buzzard and in the vicinity of towns, especially the tropical seaports, they became semi-domesticated, enjoying legal protection because of their great value as scavengers. Their home is the Gulf States and the Southern Atlantic States, but they stray up to Nova Scotia quite frequently, and there is a record of one having been killed near Quebec.

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HAWKS AND EAGLES

The Hawks and Eagles differ from the Buzzards and Vultures in having their heads fully feathered. From the Owls they are distinguished by having their eyes on the sides of their heads, and lacking the facial disc so notable in the latter. We have in Canada twenty-two hawks and eagles which may well be considered as related to our bird life, besides a few others that have occasionally visited us. Of all these only two are to be considered as deserving discouragement. These are Cooper's Hawk and the Sharpshin. Careful study by the Department of Agriculture of the United States, has completely proved the surprising fact that all the others do at least as much good as harm, and that most of the large hawks are among the friends of the farmer and gardener. The quantities of vermin they destroy are directly proportional to their activity and size. Our traditional hostility toward the "hen hawk" must be reserved for the small, fierce, and persevering pirates above mentioned.

THE MARSH HAWK OR HARRIER

(*Circus hudsonicus*).

This is the most common hawk of open lakeside and marshy country. They are perfectly harmless to man's property, living upon mice, insects and small reptiles, which they find by carefully searching low meadows and marshes in a slow flight. All across Canada it is found, so far north as Great Slave Lake, and in Alaska. The mature male bird is ashy blue in color when in perfect plumage, but usually wears more or less brownish or chestnut. The distinguishing mark is the white rump,—the tail coverts in all plumages showing this. The tail is bluish, with several dusky bands, the terminal one being most strongly marked. Under parts white. The female is dark or reddish, or yellowish-brown, with under parts yellowish, streaked with darker. It wears, however,

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the white rump patch. Length 17 to 20 inches, expanse 40 to 44, tail about 9 inches. Nest on the ground in marshy meadows, usually built of dry grass, and containing four to nine eggs, greenish or bluish white, with occasionally blotches of dusky.

THE SHARP-SHINNED HAWK

(*Accipiter velox*).

This, the smaller of the harmful hawks, is a resident of all parts of Canada south of 60 degrees, where trees and bushes are to be found. It nests usually in evergreens, at about twenty feet from the ground, incubation in southern Ontario being in early June. Four, five or six eggs, pale greenish or bluish with irregular brown spots, are laid in the bark-lined, well built nest. The habits of the two Blue Darters, as this and Cooper's Hawk are often called, are quite a contrast to the industrious, patient, mouse hunting of the Marsh Harrier. These live almost entirely on birds, and in their pursuit and capture show great dash and determination. Any bird not larger than a pigeon is liable to be attacked, and carried off forthwith. Chickens are favorite food and will be preyed on day after day unless the intruder be captured, killed, or well frightened. In the great lakes region the northern migration of the Sharp-shin is in April, and the southward movement in late September or October. The feathers of the upper surface are bluish gray, the primaries are barred with black; the long tail with *abrupt end* is ashy gray, barred with black, and tipped with white. Throat, breast, and sides whitish, with reddish brown streaks and bars. Immature birds have much brown coloration. The tarsus is unusually slender, and scutellate in front only, with feathers not more than one-third the way down, and separated behind. Length 10 to 12, extent of wings 21, tail 5 to 6 inches.

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COOPER'S HAWK

(*Accipiter cooperi*).

The above description, with slight modification, would do for this species except that this is decidedly the larger bird, and proportionately more destructive. These are the only true *hel* hawks and chicken hawks. Its range is the same as that of the Sharpshin, but it is usually considered as less plentiful.

The distinguishing marks are:—*a rounded white tip* to the tail, the top of the head darker than the back, and a difference in favor of this of at least two inches in length and six inches in extent of wings. Length about 16 inches, extent about 30, and tail about 8½ inches.

THE AMERICAN GOSHAWK

(*Accipiter atricapillus*).

This species, with its western form, ranges all across northern Canada, not usually common anywhere, but nesting apparently in every province. The Western Goshawk is reported from British Columbia and Alaska. The nest is placed high in hardwood trees, beech, maple, or birch, and its whitish or bluish white eggs are three or four in number. On account of its superior size, this hawk, of the same race as the two preceding, would be expected to be more injurious. Our knowledge of it at present does not bear out this, as its food seems to be at least one half rodents and other vermin. It has great boldness and strength, and goes after grouse and hens with apparently little regard for the consequences, but its good deeds are thought to about compensate for its daring at-

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tacks on poultry. Its wings are short and rounded, and tail fan-shaped.

The adult male is dark bluish gray, with blackish head and a white line over the eye. The tail is slightly barred with dark, the terminal bar much the broadest. The under parts are evenly barred with white and gray, and streaked with black shaft lines especially towards the throat. Tarsus feathered about half way down in front. Length 20 to 24 inches, extent of wing about 42, tail 9 to 10 inches.

THE RED-TAILED HAWK

(*Buteo borealis*).

This is another northern form, breeding in the maritime provinces and in Ontario and Quebec. In the wooded parts of Manitoba, Saskatchewan, and Alberta it is common, but is replaced by the Western Red-tail in British Columbia. It nests in high trees, laying two to four eggs, dull white, usually blotched with brown. The distinguishing mark of the adult is the rich chestnut red of the upper surface of the tail. Near the end of the tail is a black band succeeded by the white tip. The under tail surface is pearly white with a reddish tinge. Back, head, and throat dark brown, with gray, yellowish, and white margins to many feathers. Under parts yellowish white, which is spotted and barred with black on the sides, breast, and upper belly, but unbroken on the lower belly. A great variation of color is, however, to be found, especially in the western part of its range. Tarsus feathered about half way down. Length 19 to 23 inches. Extent about 48, tail about 9 inches. Female about 2 inches longer, and extending 3 inches further.

Less than 10 per cent. of its food is game or poultry. It lives mostly on mice, frogs, reptiles, and insects. Its tone is a long-drawn squeal in one tone "kee-e-e."

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THE RED-SHOULDERED HAWK

(*Buteo lineatus*).

This is an eastern species, found infrequently in Nova Scotia and New Brunswick, but common in Quebec, and more so in Ontario. It has been seen at York Factory on Hudsoy Bay, but is scarcely known in Manitoba, and not beyond. It nests freely in Ontario, and is said to return year after year to the same locality and to the same nest. It builds a large untidy nest in a broad-leaved tree, at 25 feet or more from the ground. The eggs are like those of the Red-tail, but somewhat smaller. Each of these species is thought to refrain from nesting in territory ranged over by the other. Its note consists of a repetition of "ke you" in two tones. General color of upper surface reddish brown, the head, neck, and entire under parts yellowish or orange brown, with whitish bars and dark shaft lines. A conspicuous shoulder patch of reddish is characteristic of the adult birds, but lacking in the immature. The lower belly is never free from markings as in the Red-tail. Length 18 to 20 inches and extent about 40. Female 20 to 22 inches long and extent 45 inches.

This is another of the farmer's friends, living almost entirely on mice, frogs, reptiles, and insects.

SWAINSON'S HAWK

(*Buteo swainsoni*).

This is the characteristic large hawk of the open prairies and park-like intervals in the mountains. Its eastern limit seems to be Ontario, where it is occasionally seen. Toward the north it ranges to the Arctic circle. Although a large bird and well equipped for slaughter, it lacks the dash and fierceness of the Accipiters, and study of its stomach contents shows that mice and gophers, with grass-hoppers as a constant appetizer, are the chief food materials obtained. They seem scarcely able to capture small

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birds or grouse, and therefore must be considered a very efficient force in the destruction of vermin. When we become sufficiently intelligent to distinguish friends from foes we shall probably protect these strong, able, and industrious assistants in the saving of our crops. They build large unfinished nests in low trees on the prairie, and lay two or three eggs, grayish white with blotches of brown. Their plumage varies from nearly black to yellowish and gray, according to age and season. The upper parts are often dark brown, with yellowish edgings to the feathers. The *three* outer primaries are notched, that is, abruptly narrowed from the middle to the tip, on the inner margins. In the Red-tail and Red-shoulder *four* outer primaries are thus notched. The tail is grayish, with several indistinct bars. The breast of the male is often covered with a reddish brown patch, while the female may wear brownish black in the same position. The throat is often white, as is the lower belly, but streaked and marked with blackish. Length about 20 inches, extent about 50.

BROAD-WINGED HAWK

(*Buteo platypterus latissimus*).

Ontario is the centre of distribution of this smaller Buteo, which is one of the commonest of the forest and lake dwelling birds of prey. It is especially plentiful in Muskoka, building in black birch tree tops, and living largely on frogs, mice, insects, and snakes. Quite harmless to domestic fowls or game, it is yet likely to suffer for being a hawk, as it will permit ignorant gunners to approach it when sitting in conscious innocence on a dead tree overlooking a stream or lake. It is not usually common in the maritime provinces, and rarely reaches Manitoba. It lays two or three greenish-white eggs, with spots and blotches of yellowish or brown.

It is dark brown above, the feathers often edged with gray or whitish. Three outer primaries narrowed and blackish from the

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notch to the end, without yellowish bars. Tail yellowish with two grayish-white bars beside the grayish tip. Under parts barred with brownish yellow. Length of male about 14, female 17 inches. Extent 33, tail 6 to 8.

AMERICAN ROUGH-LEGGED HAWK

(*Archibuteo lagopus sancti-johannis*).

As would be suspected from its feathered legs, this is a northern bird, seen in Ontario and Manitoba only in spring and fall. Its home is northern Labrador, the Hudson Bay region, and westward across the Barren Lands. Though considered rare in British Columbia it has been taken both on Vancouver Island and the mainland, and in Alaska. It nests on rocky cliffs or in trees at a height of 20 or more feet from the ground. Eggs three to five, dull white, and usually irregularly marked with some shade of brown. Its food is chiefly mice, captured by the same industrious searching as used by the Marsh Hawk. The Rough-leg seems almost a link between the hawks and owls in habits, as it is semi-nocturnal, and moves with the silent flight so characteristic of the owls. Dark forms of this species are nearly black, but usually the upper parts are dark brown with whitish edgings, the base of the tail white or buff, and with two or three grayish bars. A band made of black streaks and spots—continuous in immature birds, but broken in adults—crosses the belly, which is otherwise yellowish white. Breast whitish, with streaks and spots of black. Length 22, tail 9 to 10 inches.

THE RUSTY ROUGH-LEGGED HAWK

(*Archibuteo ferruginous*).

This is a form of the last, which seems confined to the prairie districts of Saskatchewan and Alberta, in Canada. It nests in trees or on the edges of cut banks, and lives largely on gophers. In appearance it is much more rusty in color, the tail being gray-

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ish with chestnut edges. The legs are reddish with black bars. Other underparts white with chestnut markings. It averages slightly larger than the American Rough-leg. Length 23 inches.

THE GOLDEN EAGLE

(*Aquila chrysaetos*).

While generally considered a bird of the mountains, the Golden Eagle evidently finds the Laurentian Hills satisfactory as a residence. From Ungava in northern Labrador to Montreal, and from Hudson Bay to Lake Ontario, this great northern bird is found. Seldom seen in the plains region, it is found through the Rocky mountains and foothills, and north to the Arctic, as well as in Alaska and the Aleutian Islands. Reports of its occurrence have been made many times to the writer in the vicinity of Lake Ontario, but in every case they have proved to relate to immature specimens of the Bald Eagle, lacking the white head and tail. However, two specimens of the Golden Eagle have been captured within a few miles of Lake Ontario, in the Kingston district, and are now in the Victoria Museum at Ottawa, while a splendid specimen, still in the hands of the taxidermist, was killed on Amherst Island in January of last year, 1913.

The food of the Golden Eagle consists of such small mammals and birds as it can capture, and its size and fierceness make it a formidable enemy.

No doubt rabbits are a staple food, as they are for nearly all the other carnivorous creatures. Squirrels, grouse, and ducks are captured, but any animal material that has ever had life seems welcome, as it will gladly feed on carrion and refuse, from the camps of hunters and lumbermen. Hence it frequently falls a victim to carcasses poisoned for wolves and foxes. It nests preferably on ledges of cliffs, but the tops of tall trees are used, if satisfactory cliffs are not found. Macfarlane describes a nest in the

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Anderson River districts as follows:—"It was composed of a large platform of built-up twigs and sticks, having a bed of hay, moss, and feathers in the centre." It lays two or three eggs, dull white, blotched obscurely or distinctly with brown.

The back, wings, and underparts are blackish brown, the back of the head and neck yellowish brown, the inner half or more of the tail is white, and the tarsus is *covered to the toes* with fine white feathers. Length 30 to 36 inches, extent 7 to 8 feet. The female is considerably larger than her mate. Young birds are darker than mature specimens, which become gray with age, especially increasing the white on the base of the tail.

THE BALD EAGLE.

(*Haliaeetus leucocephalus*).

This is the American Eagle, and possesses no more virtues than animal emblems usually have. It ranges across Canada, being as characteristic of the shores of lakes and large rivers as the Golden Eagle is of forested hills and mountains. Although its nesting sites are being destroyed, it is not yet uncommon in the neighborhood of the Great Lakes, being seen yet (1914) many times every summer about the bays near Kingston. The islands forming the western members of the Thousand Islands group seem to be a favorite breeding ground, as at least five nests have been seen, or authentically reported to the writer, from Wolfe Island and its smaller companions. The larger lakes of the Rideau are also haunted by this great bird. All through Canada year after year these birds return to repair and enlarge the nest of the previous year, unless persistently disturbed by intruders. The killing of an eagle is still a triumph to the "green" gunner, but remorse usually follows, and nature study is creating a sentiment more worthy of a civilized people. Its almost harmless habits entitle it to protection, while its value as a scavenger along our

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shores is very considerable. Fish form no doubt its chief food, although it is known to capture wild ducks, geese, and gulls. It is able to catch for itself only such living fish as float near the surface of the water or become embayed in tide or storm pools. It forms at times, however, parasitic relations upon the skill and activity of the Osprey, which it robs systematically day after day, striking down at the fish-hawk until it drops its prey, which is caught by the eagle before it can reach the water. It nests in tall trees, lining the hollow in the great platform with hay, moss, hair and feathers. Its eggs are usually pure white, two in number.

Mature birds are easily identified even at a distance by the bright white head and tail, but the young are brownish black, more or less mottled with white, and can be distinguished satisfactorily from the Golden Eagle only by noting that the lower part of the tarsus is unfeathered. Length 32 to 36, extent 80 to 90 inches.

FALCONS.

All the hawks we have yet to consider belong to the Falcon family, except the Osprey or Fishing Eagle. Falcons are readily distinguished from other hawks by the notch and sharp tooth or two teeth near the tip of the upper mandible. The tip of the lower mandible is cut off squarely, and has a notch near the end. Their talons are very sharp and strong and the middle toe is very long. All are fierce and dashing in their attacks and will often strike prey quite equal to themselves in weight. To this family belonged the birds so highly prized for hunting a few centuries ago.

THE WHITE JERFALCON—ICELAND OR GREENLAND JERFALCON (*Falco islandus*).

This is a bird of the northern ocean coasts, common in Iceland and Greenland, Hudson Strait and Bay, and northern Labrador, taken near Quebec, Montreal and Toronto, but here only accidental

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wanderers. Seen in migration in Newfoundland, Nova Scotia and New Brunswick, and occasionally found on the Pacific Coast also. Its food is said to be water fowl and northern grouse captured on the wing. Nest on rocky cliffs.

The adult birds are about the same color as the Snowy Owl, the head and under parts sometimes snowy white, but often like the back, wings, and tail, more or less marked with dusky bars, and streaked with black. The tail is usually nearly pure white except a few central feathers.

Length of male about 22, female 23 inches, tail 9 to 10 inches. Three other forms are known in Canada, differing from the above chiefly in color, which is a doubtful basis for distinguishing species.

THE GREY JERFALCON

(*Falco rusticolus*).

This has been taken near Ottawa, and is believed to occur in Labrador and Newfoundland. Instead of a ground color of white, this bird is bluish gray with dark bars and spots. The crown is lighter than the back, while the tail is well marked with bars, and the lower surface is decidedly dusky.

THE BROWN JERFALCON

(*Falco rusticolus jerfalco*).

This is a darker form of the above, similar in size and markings but the top and back of the head are darker than the back, and the tail is closely barred with light and dark bands of about equal width. It is less confined to northern coasts, but yet is chiefly found about Hudson Strait and Bay, and the valleys of the Mackenzie, also the Pacific coast and Alaska.

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THE BLACK JERFALCON

(*Falco rusticolus obsoletus*).

This form is still darker than the above, almost entirely dusky, and extreme cases are solidly black. Its home is northern Labrador. At Fort Ohimo it is said to be abundant. One was taken at Long Point, Lake Erie, and two are recorded from Manitoba. The characters of the White Jerfalcon will, except in color, describe the others.

THE PRAIRIE FALCON

(*Falco mexicanus*).

This bird seems confined to the prairie region near the southern boundary, extending its ranges southward to Arizona. It nests on the faces of cutbanks, and preys on gophers, grouse, and water fowls.

The upper surface is grayish brown, the feathers with lighter borders. Top of the head and nape lighter. Tail brownish gray with white tip. Lower parts whitish, marked with gray and brown. Length about 18 inches, extent about 40.

Its smaller size distinguishes this from the Jerfalcons, and its lighter color from the Duck Hawk.

THE DUCK HAWK

(*Falco peregrinus anatum*).

In southern Ontario we see this beautiful and spirited hawk only in the fall, but it breeds in northern Ontario, as well as Quebec and the maritime provinces. It is common about Hudson Bay, and nests regularly in Manitoba and northward to Edmonton and Alaska. In British Columbia it seems more plentiful inland than on the coast. The Peregrine was the most highly prized of the trained hawks, and still exhibits its powers at the ex-

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pense of our wild ducks and shore birds. These it follows in their southward migration.

Upper parts bluish slate color, black on the cheeks and downward, creamy throat, and breast spotted and barred below with black. Tarsus feathered only at top. Toes long and powerful. Length about 19, extent 45, tail 7 inches.

A still darker form is described from British Columbia. Eggs laid on rocky ledges or in cavities in high trees.

THE PIGEON HAWK

(*Falco columbarius*).

Distributed across Canada from Newfoundland to the Rocky Mountains, and north to the Arctic Ocean, this fierce little falcon nests throughout most of its range, though preferring wooded to prairie districts. Its nests and eggs have been taken in Muskoka, Manitoba, and from near the Arctic Coast. Like its larger relative the Peregrine it follows the flocks of migrating birds in autumn, and levies toll on all it can master, and some of these may be quite equal to itself in weight. Beside birds, it captures mice and insects. Its common name is given because of its dashing and pigeon-like flight, as well as its pose when perching.

In plumage it closely resembles the Peregrine of which it is almost a miniature. Length about 12 inches, extent 26, tail 5 to 6.

THE BLACK MERLIN

(*Falco columbarius suckleyi*).

This is a dark form of the above, common on Vancouver Island and in the lower Fraser River Valley, also in Washington and Oregon.

The general color is almost black above, and strongly marked with brownish black below. The light bars and spots of the Peregrine and Pigeon Hawk, can scarcely be noted on the wings and tail. Size same as last.

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AMERICAN KESTREL OR SPARROW HAWK

(*Falco sparverius*).

This is a small but well marked and well known hawk. Its habit of hanging or hovering over an object which it is examining, and then suddenly pouncing upon it, has given it, or its representative in England, the name "Windhover." It is common from ocean to ocean, breeding in woodpeckers' excavations in the dead tops of trees, often quite near to frequented roads. Its eggs are nearly spherical, creamy white, and usually four or five in number. It should be protected and encouraged because of its beauty and beneficial character. Its food is almost altogether grasshoppers, and mice, both of which we can spare to it. The male is blue gray above, the tail having a white tip following a broad black band. Dark shaft lines mark the top of the head, while the back and nape are chestnut spotted with black. The female is mostly reddish brown with black streaks. Length about 12 inches, tail about 6½.

In British Columbia the larger and lighter colored form, known as the Desert Sparrow Hawk, is found spreading northward from New Mexico and Arizona.

THE OSPREY, FISH HAWK OR FISHING EAGLE

(*Pandion halietus carolinensis*).

The Osprey is found in every province, and as far north as the Arctic Circle, but more plentiful where forests and lakes abound. It is still to be seen following the gentle art of fishing on many of our small inland lakes north of Lake Ontario. It works industriously to supply the hungry mouths which may be seen reaching above the edge of the large nest, itself often a very conspicuous object. The common location of the nest in Ontario is the top of a tall dead pine stub.

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On the seacoast it is said to nest in colonies, and often on rocky ledges. He has no regard for the close season on any fish he can catch, but as McIlwraith says, "In Ontario I feel sure that the vote would be to let him take all he requires, in consideration of the additional attraction his splendid presence gives to the scenery of many a lake and river."

Plumage dark brown, with some white on the head and nape; tail gray with six or eight obscure bars; under parts mostly white. Tarsus naked, feet very large, toes all of same length and scaly below, claws very efficient. Length about 24, tail 8½ inches.

THE OWLS—*STRIGES* THE BARN OWLS—*STRIGIDAE* AMERICAN BARN OWL

(*Strix pratinicola*).

A few records exist of visits of this southern bird to Ontario, —at Sault Ste. Marie, Hamilton, Toronto, and Kingston, and as it may visit us again a description of it is given below. The writer has just seen a beautiful specimen that was killed at Kingston Mills, a few miles from the city, in December 1911.

It is rare in the northern United States, its home being in the south west, although it breeds as far north as Massachusetts and southern New York. This is the kind of owl which is most likely in America to haunt towers and ruined chimneys, as do its near relatives in Europe. Hollow trees, and even holes in the ground, are also utilized for nesting places. Its food is chiefly vermin, mice, rats, and gophers, and so it deserves—as do most of its family—our protection and encouragement. Instead of this the Owl race have for centuries been the object of superstitious fear and dislike, probably from the association of their unpleasant cries and silent flight with the churchyards they often frequent.

Plumage of delicate texture, tawny and blackish brown above, finely clouded and mottled with gray and white, and spotted with black; several bars of spots on the wings and tail. Lower surface

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whitish, or tawny, or even blackish, mottled with small black spots, facial disc usually dark and triangular or cordate. Length about 16 inches. Extent about 44.

THE HONED OWLS, EARED OWLS AND HOOT OWLS—

BUBONIDAE

AMERICAN LONG-EARED OWL

(*Asio wilsonianus*).

Like most—though not all—of the owls, this species does not thrust itself upon our attention, and so may occur unnoticed in many districts. It hunts only at night, and spends the day usually in dark evergreen thickets, in which it hopes to be unseen. It is widely distributed, being found from Newfoundland to British Columbia, and probably breeding throughout the forested part of this range, as well as in all the remainder of temperate North America. "It frequents the shores of Hudson Bay in summer." For nest it is usually satisfied to use the deserted homes of other birds, such as crows, hawks, and magpies. Like the other owl, eggs are nearly spherical and white in color. Small birds are usually eaten by it, but rats, mice, frogs and insects are its chief food. Its upper plumage is dark brown with some yellowish, all finely mottled with buff and white. Below, less of the dark brown but in large markings and streaks. Eyes in the centres of circular discs, which are nearly complete, and mostly yellowish brown with blackish border. The ear tufts are long and of 8 to 12 feathers. When raised they stand vertically above the eyes.

Length about 15 inches, extent nearly 40, tail 5 to 6.

SHORT-EARED OWL

(*Asio accipitrinus*).

This can scarcely be claimed as an American bird, being very like the Short-eared Owl of Europe and Asia. It is a more northerly species than the last, and though breeding all across southern

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Canada, it is more plentiful in autumn during the migration. It might well be called a marsh owl, as it is very commonly seen over wet meadows and marshes, and even nests in such places. It is an expert killer of mice which it hunts both by day and night, and for this useful habit it should be protected. Its nest is poorly made,—on the ground, in or near a marsh, and the eggs number from four to seven, laid usually in the first half of May, in southern Ontario, in June in the north.

Plumage above dark brown or yellowish brown, the feathers having creamy or yellowish margins. The lower surface is lighter, but broadly streaked with brown on the breast, and more finely on the belly. The ear tufts are few feathered, and inconspicuous. The facial disc is pale and unmarked, except by minute dark speckles and a dark patch behind the ears.

Length 15 inches, extent 40.

THE BARRED OWL

(*Syrnium nebulosum*).

This is a large bird but so retiring as to require search to find it in the day time, in evergreen thickets. It is becoming less common, as thick swampy growths are being destroyed near the settled parts of Ontario, but is still found in the lake, rock, and thicket districts so common on the crystalline rocks of the Laurentian plateau. It nests in Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario,—especially Muskoka and Algoma,—and as far north as Hudson Bay, also in Manitoba, but rarely. Its chief range is rather to the south than to the north of the Great Lakes and St. Lawrence. Its food is found on investigation to be chiefly mice, shrews, moles, squirrels, rabbits, and smaller owls, but very seldom grouse or poultry. It may be heard more frequently than any other hooting owl and its loud and clear voice—especially on cool bright nights—is audible for a half mile or more. It nests usually in hollow trees, but will sometimes make use of an old nest of hawk or crow.

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Feathers of upper surface grayish brown, each barred with white or buff. Breast and belly paler, with similar bars on the breast, but streaks on the belly. No ear tufts; eyes deep brown or nearly black.

Toes feathered to claws. The disc around each eye of alternately light and dark concentric rings. Bill yellow. Length about 19 inches, extent about 44.

THE GREAT GRAY OWL

(*Scotiaptex cinerea*).

This is a very northern form, occasionally coming south in winter to the maritime provinces, Ontario, Quebec, and the southern edge of the forested portions of the prairie provinces. It is a common resident of Alaska, and is seen in British Columbia in winter, but is always considered scarce. Southern migrations of these birds occasionally occur, and for the one season they will be quite plentiful, but may not again be other than rare for many years. Its nest is said to be built in high spruce trees, of twigs and moss. Eggs two or three, white.

Plumage very loose, almost shaggy, giving it the appearance of great size. It is in fact the largest in measurement of our Canadian owls, but its body is notably smaller than would be expected from the appearance of its plumage. In weight also it must yield place to both the Snowy and Horned Owls. Ashy brown, with wavy white lines on back, tail, and wings, breast paler and streaked, belly and sides barred, legs and feet hidden in feathers. Bill and eyes yellow, length 24 to 30 inches, extent about 60 inches.

RICHARDSON'S OWL

(*Nyctala tengmalmi richardsoni*).

As this bird breeds only in the far north, and migrates southward to a less distance than even the Snowy Owl, it must be con-

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sidered our most northerly owl. It has been seen rarely in Nova Scotia and New Brunswick, more frequently in Quebec and Ontario, having been taken at Ottawa, Kingston, and Toronto. In Manitoba it is a regular and common fall and winter visitor. It nests on the Magdalen Islands, and from Great Slave Lake northward especially in Alaska. Nest in hollow tree or woodpecker's hole. Back, wings, and tail brown with white spots, these spots forming almost a collar on the nape and bars on the wing coverts. Under parts white, thickly streaked with brown. Legs and feet heavily feathered. Length about 11 inches, extent 20.

THE SAW-WHET OWL

(*Nyctala acadica*).

This is a widely distributed little owl, found in the wooded portions of all the provinces, but scarcely plentiful anywhere. Its note is unpleasant and penetrating, and heard most frequently in spring. It seems to move toward the southern boundary of Canada during severe winter weather, at any rate its presence is more frequently noted at such seasons, as it comes to barns and sheds of lonely farms, when food becomes scarce in its usual haunts. Specimens have been obtained by the writer in the neighborhood of Kingston. There is little doubt that it breeds throughout the southern as well as the northern part of its range, but being active only at night it is not readily studied. While likely to be shot by the ignorant, the Saw-whet has a right to our protection in consideration of the large numbers of mice and insects it destroys. Its nest is usually a hole in a tree, sometimes those made by the Flicker are used. Five to seven eggs are laid and incubation is going on about the 20th of May in southern Ontario. A very dark form of this is known as the Northwest Saw-whet Owl. It is found in southern British Columbia.

Head and back yellowish brown, the former streaked, the latter spotted with white; tail marked but scarcely barred with light;



SAW-WHET OWL.
; Life-size.



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under parts pale but thickly streaked and dappled with buffy brown. A dark ring around each eye, then a white disc bordered with black. Bill black. Legs and feet clothed with yellowish unmarked feathers. Length 7 to 8 inches, extent 17 to 18.

THE SOREECH OWL

(*Megascops asio*).

This misnamed little owl is more likely to be seen and heard by city dwellers, than any other of our native nocturnal owls. It is not averse to human neighbors, nesting in orchards and on thickly planted lawns, preferring a cavity—natural or artificial—in a tree. The range of the Little Horned Owl or Gray Owl, as it is often called, is confined to the eastern provinces, especially Ontario, as it is rare in Nova Scotia, New Brunswick and Quebec, and extends westward or northward not much beyond the Great Lakes.

Its cry is a quaint and melancholy ululation often ascribed in error to the raccoon. I have frequently heard it from the trees in the parks of a great city, and from the orchards of farm houses. It occasionally nests in a hole in the wall of a building. No sentiment but good will should exist for this quaint, little, night wanderer, because its food is very largely mice, insects and frogs, with occasionally a small bird, or crayfish. It lays from four to eight eggs, usually early in May. The writer had a pair of young birds of this kind in captivity for some time, and found them very entertaining pets, after they had overcome their initial terror. Earthworms were welcome food, and were seized with an amusingly ferocious manner.

While a general gray coloration is common among the birds of a district, there are at times and "among those of the same brood" (Chapman) bright rusty, reddish, specimens perhaps outnumbering the gray ones. All gradations between the two colors are found and the shade is not related to locality, season, age, or sex.

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The ear tufts—placed above the eyes,—are one inch long and conspicuous; upper-parts finely dappled brownish gray, with small and irregular streaks of black. Shoulder and wing bars of white and black. The facial disc is finely mottled and bordered with black. Under parts white with black shaft lines and wavy bars of black. Feet not heavily feathered. Length about 9 inches, extent about 22. Three slightly different forms are reported from British Columbia.

THE GREAT HORNED OWL, CAT OWL

(*Bubo virginianus*).

This is the most respected and detested of the Owl tribe throughout eastern Canada, but in a region infested by rabbits, gophers or field mice its great ability and enthusiasm in destruction are virtues. And a "valuable ally" to the western farmer it is considered in several states and provinces. Lacking the length and extent of the Great Gray Owl, this species far surpasses the other in weight, strength, and ferocity, and must be classed with our greatest predatory birds. In plumage varying with the region, it is found in all parts of Canada as well as throughout the United States. It is our only representative of the Eagle Owls, of which some form is found in every continent except Australia. In Ontario it visits the poultry house with disastrous results, as it has the malignant habit of killing more than it requires, and merely eating the heads. Hens, ducks, geese, and turkeys are taken, and the next night is very apt to find it returning for another supply. This often proves its undoing. The farmers have learned that a post ten or more feet high in the vicinity of the poultry yard is very likely to be used as a perch while it decides its method of attack. On such a post a trap is set and attached to a pole, which will yield but cannot be carried away. This arrangement is often successful. One instance of this, within my knowledge, resulted in

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the trap with chain and drag being carried bodily away. The drag was lost, but for a month the rural population was terrified by the frequent trailing of a chain over the roofs of their houses in the night. At the expiration of this period the persevering robber was caught in another trap well fastened, while trying to carry away a dead turkey placed as a bait. I cannot agree with Venner in describing this as a thoroughly nocturnal species, having seen it abroad and quite at its ease long after daylight. In the full glare of day it is doubtless at a disadvantage, as is seen by its retreat before a mob of crows and other smaller birds, which never fail to point to this arch enemy. Of wild creatures serving as its food there is abundant evidence, as mentioned by McIlwraith, that it often attacks skunks, several skins that I have preserved bore reminiscences of such an encounter. Mice, rats, muskrats, rabbits, grouse, wild ducks, crows, and hawks, in fact any bird less powerful than an eagle may fall a victim if found on its roost by a hungry *Bubo*. It nests in holes in trees, in clefts in rocky banks, in old nests of hawks or crows, and probably in nests of its own construction, but nearly always in a place difficult of access. Its eggs number seldom more than two, and are laid in February or March, being occasionally frozen by a return of severe weather. As no other species of similar size wears ear tufts, a detailed description of its plumage is unnecessary.

The distinction of being called 'horned' rather than 'eared' is probably due to the fact that its ear tufts are considerably wider apart than its eyes, appearing to rise from the sides rather than the top of the head. The plumage of this bird is subject to variation, and these with slight differences of size have led to unnecessary splitting off of three subspecies as follows:—(1) The Western Horned Owl—a grayish prairie form. (2) The Arctic Horned Owl, approaching whiteness, sometimes as light in color as specimens of the Snowy Owl. (3) The Dusky Horned Owl,—the type of which belongs to the dark, moist woods of Oregon and British

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Columbia. Specimens of this large dark form have, however, been taken near Toronto and Montreal, and in Labrador.

Another revision by Oberholzer makes six subspecies for Canada.

GREAT WHITE OWL, SNOWY OWL

(*Nyctea nyctea*).

All the southern parts of Canada are visited irregularly by this denizen of the northern plains. The stress of winter brings it within our range at times, occasionally in large numbers. The winter of 1880 and '81 was notably one of these occasions at Wolfe Island, near Kingston. The preceding summer had witnessed a plague of field mice,—their runways seemed to cover every foot of meadow and marsh, and the harvesters strung dozens of them on the tines of their pitchforks as they walked to and from the barns. By some 'wireless' method the Snowy Owls learned of the harvest awaiting them, and promptly responded. In driving along the roads I frequently counted the owls to be seen quartering the fields on each side, and found that on cloudy days an average of about three to the mile were usually to be seen. Sunlight, however, was not sufficient to incapacitate them, although probably causing some inconvenience. At any rate I successfully stalked one from the west near sunset, as he returned again and again to his perch on a tree after excursions across a meadow. His mounted skin decorated an office in the County Court House for several years. Many others were shot, I am sorry to say, because the boy with a gun can scarcely decline a safe chance at any large wild thing.

The food of this large, active, and fierce owl is said to be mice and lemmings almost entirely, but as it is able and willing to capture birds, it is quite certain that the many forms of water and shore birds which nest in the north furnish in themselves and their eggs good hunting for this strong marauder. Its nest has been

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taken only on the Arctic coast, four to seven eggs being found in well lined hollows on a knoll or other elevated ground.

It is without ear tufts, and in color varies from nearly pure white to grayish yellow or brown. Usually the white is barred freely with grayish brown. The eyes are yellow and the legs and feet are fully feathered. Length about 24, extent 55 to 60 inches.

THE AMERICAN HAWK OWL

(*Surnia ulula caparoch*).

Sometimes called the Canadian or Hudsonian Owl, this species seldom wanders south of the boundary line except into Maine and along the Rocky Mountains. It is found from coast to coast, and up the Mackenzie River to the Arctic Ocean. In Newfoundland it is reported the commonest owl, or most frequently seen, because of its regular habit of daylight hunting. Elsewhere in eastern Canada it cannot be said to be common except locally and at very irregular intervals. In northern Ontario and Manitoba the same conditions prevail, but in northern Saskatchewan and Alberta it is frequently seen. Its food is said to be small rodents, but it has shown great courage and fierceness in attacking a man who approached its nest.

Its eggs are laid in cavities in trees, the nest being merely chips of wood mixed with feathers from the mother's breast and belly.

No ear tufts; eyes lateral instead of frontal as in other owls. Upper parts grayish brown, with white spots on the head and neck and bars on the wings, back and tail. The tail is long and rounded. The face is ashy gray bordered with black. The throat is whitish, streaked with dark, the remaining under parts closely and finely barred with white and black. Feet and legs well feathered. Length 15 to 16 inches, extent of wings 33, tail 7 inches.

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THE BURROWING OWL

(*Speotyto cunicularia hypogaea*).

This remarkable owl seems to be spreading northward into Canada, being found now in suitable places in Manitoba, Saskatchewan, Alberta, and British Columbia. Its home is a deserted burrow of a badger, fox, or gopher. The latter, with rabbits and other small rodents and insects form its chief food. Its nest is placed at the end of the burrow, and usually is formed of buffalo chips i. e. dried cow dung. From 6 to 9 eggs are laid. The bird is able to excavate cavities in loose soil, and the Florida variety does so. Its legs are nearly naked, and are long for an owl, and its feet well adapted for walking and digging. Habits diurnal. It has no ear tufts. Upper parts are dull grayish brown, plentifully spotted with white, which tends to form bars on the wings and tail; chin and throat white; other lower parts except thighs regularly barred with brown and white. Length about 9, extent 23 inches.

THE PIGMY OWL

(*Glaucidium gnoma*).

This with its darker variety—*californicum*—are found in southern British Columbia and are most interesting and bold little hunters. They prey upon birds, attacking some as large as themselves, such as robins, grosbeaks, and towhees (Coues). Insects and small mammals also are captured. Their note is a low cooing sound, and they nest in woodpeckers' holes in trees. Several species of the Gnome are known in tropical America. The tail, back, wings, and head dark brown, marked only by round dots of white. Throat and collar whitish; a band of mottled brown crosses the breast; the remaining lower parts white streaked with brown. Iris bright yellow. Length 7 to 7½ inches, extent 14 to 15.

CUCKOOS AND KINGFISHERS

ORDER XII.—*COCYGES*.

CUCKOOS AND KINGFISHERS

Between the birds of prey and the singing birds are several groups not closely resembling each other, but in habits bridging over the gap. These are the Parrots, Cuckoos, Woodpeckers and Goat Suckers. No parrots reach Canada, except in captivity.

The Cuckoo family is very numerous in tropical countries all round the world, and many of them have unusual nesting habits. The British Cuckoo is thoroughly parasitic on other birds for incubation, and rearing her young. Her eggs are laid in the nests of other birds, and a remarkable feature of this process is that the eggs are often adapted in color to those with which they are placed. This means that a certain bird has adopted some species of smaller bird to be the foster parents of her young, and lays eggs so like theirs as to have them pass unchallenged. In India an instance occurs of a young Cuckoo wearing plumage closely resembling that of the young of its foster parents, but not at all like that of its own parents. Besides this enslaving of other birds to rear their young, Cuckoos are believed to destroy the eggs and the young of birds whose nests they wish to use. All the kinds live on animal food.

The two Canadian species are of somewhat better habits than those of other countries, usually building a nest, although a poor one, incubating, and feeding their own young. Instances are known, however, in which they have laid their eggs in the nests of other birds. Dr. C. K. Clarke observed in the vicinity of Kingston one nest of the Yellow Warbler and two of Chipping Sparrows thus invaded by the Black-billed Cuckoo. Needless to say the young of the foster parents are always ejected from the nest or starved to death, through the greed of the much larger adopted bird. The Ami,—a cuckoo of the West Indies,—is communistic; many lay their eggs in one nest and take turns at incubating them.

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THE YELLOW-BILLED CUCKOO

(*Coccyzus americanus*).

This is the more southern of our species, and seems to be extending northward from the United States. It is known to us chiefly in Ontario, being rare elsewhere. Like the others, it is a shy bird, heard frequently but seldom seen. It slips from tree to tree in orchards, flying near the ground, but in passing between groves it rises high above the trees. Its gurgling note—from which it takes its name—is heard most frequently before rain. If its morals were better it would be a bird to be encouraged, because it is almost unique in its fondness for the tent caterpillars, gorging itself with them whenever possible. It has also been known to feed greedily on the larvae of the potato beetle. It nests in a low tree often among vines, laying three to seven pale greenish eggs. Its upper plumage is a beautiful satiny 'quaker gray,' with yellowish brown on the wings. The side tail feathers are black, with large white tips and white outer edge. Throat, breast, and belly pure white. Bill yellow below and on the sides. Length about 12 inches, extent about 16.

THE BLACK-BILLED CUCKOO

(*Coccyzus erythrophthalmus*).

This is a summer resident from the Atlantic coast across southern Canada to Saskatchewan. Like the Yellow-billed Cuckoo this species seems plentiful nowhere, but its softer note is heard regularly about the time of plum blossoms, in all parts of its range. Plumage above satiny olive gray; below pure white. The lateral tail feathers have small tips of white, the wings have no reddish yellow and the bill is from almost, to completely, black. Size about the same as the other, and nest and eggs similar.

OUCKOOS AND KINGFISHERS

THE BELTED KINGFISHER

(*Ceryle alcyon*).

This is the only Kingfisher known in Canada, over which it is widely and plentifully distributed. A few other forms are known along the southwestern borders of the United States, while many others belong to tropical countries, especially to the islands of the East Indies. In Canada the Kingfisher is found along every considerable stream, and even some so small as to furnish only 'fingerling' trout. Every lake border, large or small, hears his peculiar note, to be described only as 'rattling.' He is an excellent guide for a holiday, leading the way to the quietest, most peaceful retreats of trees and water in association. His food is chiefly fish, captured by pitching into shallow water from ten to twenty feet above, where he had poised with rapidly beating wings. He seldom misses his aim, and whether successful or not utters his loud call as he flies to his perch,—a dead branch overhanging the water. He is said to eat frogs, snakes and insects, and at times to live far from water. They nest in burrows in cutbanks of earth or sand, the excavation being usually their own work, although they may enlarge the holes made by swallows. The eggs may be within two feet of the entrance, but are usually as many yards away from it, and the nest—if it deserve the name—is a small handful of fish bones and scales. Its feet are small and zygodactyl, that is—the outer and middle toe are joined, having a common sole. Grayish blue is the general coloration of the upper parts, and forms a band across the upper breast. The tail is spotted and the wing feathers slightly speckled with white. Throat, band about neck, lower breast, and belly, white. A narrow loose crest. Bill long, sharp, black. Female with chestnut band on belly.

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ORDER XIII.—*PICI*.

WOODPECKERS

This group serves to connect the perching birds with the birds of prey. Like the kingfishers and cuckoos, the Woodpeckers are not guiltless of destroying other vertebrates, although usually confining their attention to insects. They live chiefly on animal food but occasionally eat largely of berries and cherries. Woodpeckers are found in all wooded parts of the world except Australia and the Pacific Islands, and it is doubtful whether our northern forests could successfully withstand the attack of their insect enemies were they not garrisoned by efficient and industrious Woodpeckers of all sizes.

Their feet are zygodactyl, two toes directed forward and two backward, and their bills are long, strong, and chisel pointed. The tongue is flattened and barbed, and attached to a greatly elongated hyoid bone which curves around the skull behind and passes forward to near the eye. By decreasing the size of the curve of this bone the long tongue can be projected. The tail is short, of stiff elastic feathers acuminate at the tips. With their peculiar equipment they are able to walk up and down the trunks of trees, chisel away the bark and wood to uncover the larvae of insects, and explore the tunnels with their barbed and sticky tongues.

THE HAIRY WOODPECKER

(*Dryobates villosus*).

This, with its larger northern and smaller southern forms, is distributed from Texas to Lake Athabasca and the Yukon, and from Nova Scotia to British Columbia, in wooded regions. The upper parts are black with a red band across the back of the head in the male, and a white stripe down the middle of the back.

White spots form bars on the wings, and the outer tail feathers are white. A white stripe above the eye and a longer one below





WOODPECKERS

it. Under parts all white. Length from 9 to 11 inches, extent 16 to 18, and bill $1\frac{1}{4}$ to $1\frac{1}{2}$ inches. The form of this known as Harris' Woodpecker is found in British Columbia and southward. It has fewer white spots, and the under parts are smoky gray instead of white. Otherwise exactly as in *villosus*.

THE DOWNY WOODPECKER

(*Dryobates pubescens*).

Our most familiar tree woodpecker. This little bird frequents orchards and lawns, excavating its nests within a few paces of our buildings. It may seem wrong to imply that one pair excavates more than one nest, but it is true that more than one excavation is made by a pair, and that an excavation is equivalent to nest, as a few chips and feathers are the only additions to the cavity. These different holes are often within a few inches of each other, and one is thought to be occupied at night by the male bird while his mate is incubating. Apple trees are carefully searched by the Downy Woodpecker, but this investigation does no harm, but always good, except to the insect inhabitants of the trees. All wooded parts of Canada are familiar haunts of this friendly, harmless, little bird. Both *Dryobates* signal to each other by tapping separately on a dry resonant branch. This form produces a long continuous roll. The plumage of the Downy is practically the same in coloration and texture as that of the Hairy Woodpecker. They are readily distinguished by their difference in size. Length of this form less than 7 inches, extent under 12, bill about $\frac{2}{3}$ of an inch.

The Gairdner Woodpecker is exactly like the Downy, except that it has fewer wing spots, and its under parts are grayish instead of white. It is a Pacific coast form.

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The Batchelder Downy Woodpecker occurs in the interior of British Columbia, and differs from the type only in the lack of white spots on the wings.

The Nelson Downy Woodpecker is the northern form, slightly larger and more inclined to be grayish, in place of jet black.

THE WHITE-HEADED WOODPECKER

(*Xenopicus albolarvatus*).

This woodpecker, of unique coloration, is found only in the mountains of California, Oregon, Washington, and southern British Columbia. Its plumage is uniformly black except a white patch on each wing, and the completely white head. The male has a red patch on the back of the head. Length about 9, extent 16 inches.

THE ARCTIC THREE-TOED WOODPECKER

(*Picoideus arcticus*).

This is a resident bird in Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario north of Ottawa, northern Manitoba and the Rocky Mountains. In southern Ontario a few are seen nearly every winter, and I have received it from several places near Kingston. It is generally called the "Black-backed Woodpecker," by those who notice it. Its flight is a series of deeper waves than usual even with woodpeckers, and its cry is loud and piercing. Eggs four to six, laid in May or June.

Its plumage is strikingly marked, the male has a golden yellow patch on the crown. Both sexes have a white stripe across the forehead in front of the eyes. Otherwise the upper parts are entirely glossy black. The sides and the undersides of the wings are barred white and black. The lower parts are white from chin to tail. Toes two in front, one behind. Length about 9½ inches, extent about 16.





YELLOW-BELLIED SAPSUCKER.
] Life-Size.

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WOODPECKERS

THE AMERICAN THREE-TOED WOODPECKER

(*Picoides americanus*).

This is a more northern form than *arcticus*, being found in all wooded parts of Canada, and occasionally coming in winter into southern Ontario. Its home seems to be the districts where fire has killed the pine and spruce forests. Here it lives upon the insects that infest the dead trees. It is frequently called the Ladder-backed Woodpecker. The male has a yellow patch on the back of the head. The back is black except a white stripe down the middle, and this is regularly barred with black. Wings with paired white spots. The four middle tail feathers black, others pure white. The following varieties of this are distinguished:—the Alaskan Three-toed Woodpecker has more white in the middle line of the back. Confined to the Rocky Mountains and Vancouver Island. The Alpine Three-toed Woodpecker has a clear white stripe down the middle of the back. It is also a Rocky Mountain form.

THE YELLOW-BELLIED SAPSUCKER

(*Sphyrapicus varius*).

Found all across Canada in wooded parts, from Nova Scotia to the Rocky Mountains. The Sapsucker is more plentiful in northern Canada than in southern Ontario, but some remain and nest in the Kingston district, being found all through the summer in certain favorite localities. They are, however, much more plentiful in spring on their way northward, and at that time their attention to maples, white poplars, rowan trees and others on our lawns is apt to excite unkind acts on our part. They deliberately drill a series of holes through the bark, to the cambium which they eat. These holes are sometimes vertically above each other, or they may be in horizontal lines. A number of trees are thus tapped, then the bird goes its rounds sucking the sap from one little cavity after

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another, incidentally capturing insects, especially ants, that try to share its treat. The trees thus opened continue to yield sap for some weeks, and are thereby weakened by the loss of food required for growth. Probably more serious is the break in their protective armor against infection by fungus spores. Certainly many young rowan trees are killed, and other kinds injured in this way. Where the Sapsucker establishes itself for the summer among white poplars—*Populus alba*—this process goes on all the season, and in at least one instance the Ruby-throat Hummingbird is a constant though unwelcome visitor at the same fountains. I have counted six Sapsuckers and four Hummingbirds feeding day after day in this way on a group of four large poplars. The Sapsuckers seemed stupefied by their drink, at any rate it was possible for me to knock them down from their feeding places with a short pole. The food they supply to their young under the above conditions, is probably ants, as these are very numerous on the same trees, and were found in the stomachs of those killed.

Their note is an easily recognizable "cheer, cheer," somewhat hoarsely delivered.

The crown of both male and female is scarlet, the throat black, but enclosing a crimson patch in the male, and a white one in the female. Back barred with black and white, or yellowish. Wings black with white spots on the quills, and a large white patch on the coverts. White lines from the eyes backward meet on the nape. The black of the chin, throat, and breast is bordered by white. Belly yellowish. Tongue not very extensible. Length about $9\frac{1}{2}$, extent 15 to 16 inches. Two varieties of this species are found in Canada. The Red-naped Sapsucker has a band of scarlet on the back of the neck behind the crown patch. The red throat patch is larger, and the yellow of the belly is whitish. Its range covers the foothills and the Rocky Mountains in Alberta and British Columbia.

The Northern Red-breasted Sapsucker. In this form "The whole head, neck, and breast is carmine or crimson, in which the

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markings of *varius* are more or less completely dissolved" (Coues). The range of this is confined to the coast from southern Alaska to lower California.

PILEATED WOODPECKER

(*Ceophloeus pileatus abieticola*).

This is the largest woodpecker found in Canada, and is properly named Log-cock. It is distinguished from the great Log-cock, of the Southern States, by its black bill and less size. Formerly it was resident in all the heavily timbered parts of Canada, but now it is seldom seen south of Muskoka in Ontario. Its great ability as an excavator in wood, the persistence with which it will cut a tree into pieces, and its loud call note make it notable even in a family of enthusiastic and noisy carpenters. Nest usually high in a dead tree. Eggs five or six.

Whole top of the head covered by a scarlet crest, lengthened toward the back. A narrow white line below this is succeeded by a broad black line from the eyes to the nape. Then a white line widening from the forehead and passing down the neck is yellowish in front of the eyes. A scarlet stripe on the cheek is lacking in the female, which also has the front of the crest black. Back brownish black; wings partly white; under parts blackish with some yellow. Length about 18, extent about 27 inches.

THE RED-HEADED WOODPECKER

(*Melanerpes erythrocephalus*).

Although rare in the eastern provinces, this is a common resident in Ontario, but rarely spends the winter, except in the southwestern peninsula. It is found in all the provinces, but does not go very far north. It should be able to make itself at home in every part as it is very adaptable to its environment.

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While apparently able to capture wood borers as well as do the other woodpeckers, this bird may often be seen catching flying insects in the manner of the Kingbird, and every owner of cherry trees will testify to its ability as a fruit eater. It nests high, in large trees usually, and lays its eggs in June.

Observed from the back, its plumage is a bright sequence, of one-fourth, i.e., head and neck—crimson; the next fourth—back and shoulders—glossy black; the next fourth—rump and wing coverts—pure white; remaining fourth—ends of wings and tail—black. Chin, throat, and upper breast crimson; lower breast and belly white, sometimes tinted with pale red and yellow. Length about 9 inches.

THE RED-BELLIED WOODPECKER

(*Melanerpes carolinus*).

This is thought by many to be the handsomest of our woodpeckers. The south-western part of Ontario is the only part of Canada in which it nests, as far as known. It is said to occur in south-eastern Quebec, and to visit Montreal occasionally, and one specimen was taken near Kingston. My only capture of this was made near Ingersoll, in Oxford County, in 1890. Its range stretches southward to Texas and Indian Territory. Back and wings regularly and closely barred with black and white—zebra color. White spots on bases of primaries. Top of the head and nape bright scarlet in the male, some scarlet with grayish in the female. Sides of head and under parts ashy gray, becoming red on the belly. Length 9 to 10 inches, extent 16 to 17.

LEWIS' WOODPECKER

(*Asyndesmus torquatus*).

This is a remarkable woodpecker, unlike any others in plumage, but somewhat resembling the Flicker in size and shape of bill,

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and attitude on trees. Its Canadian range is the interior of southern British Columbia, thence it extends southward in the pine forests of the Rockies. It catches insects on the wing, as do the Flycatchers, and flies steadily by regular wing beats, instead of tracing a festoon in its path as do most others of this family.

"Upper parts, including wings and tail, flanks and crissum, green black, with intense bronzy lustre, especially on the back. Face dark crimson in a patch around bill and eyes. Distinct collar, around back of neck and breast, hoary bluish gray, gradually brightening behind to intense rose-red. Feathers of under parts and collar bristly, hard, and loosened. No white on wings or tail. Length 10 to 11, extent 20 to 22 inches" (Coues). Eggs 5 to 9. Nest found near Similkameen River, B.C., June 15th, in a live poplar tree about five feet from the ground. It often nests in conifers.

FLICKER, YELLOW HAMMER, HIGHOLDER

(*Colaptes auratus*).

The above common names, and over thirty others, indicate that this bird is noticed by many people in widely separated districts. This is in fact the best known and most popular of our woodpeckers, as well as the most plentiful in southern Ontario. It is abundant in the southern parts of all the provinces east of the Rockies, its place being taken in British Columbia by the Red-shafted and North-western Flicker.

Forests are not necessary to the Flicker, as he obtains much of his food on the ground, his especial business being the reduction of the population of ant hills. In this he is highly successful, and deserves his popularity for being both ornamental and useful.

Back and wings grayish brown with black bars; rump white; tail black above. Wings and tail quills golden yellow in under. A scarlet band on the nape, and a black pectoral crescent in both sexes. Black moustaches in the males. Chin, throat, and breast

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like the sides of the head, grayish brown. Under parts brownish with black spots. Length about 12, extent 18 to 20 inches.

RED-SHAFTED FLICKER

(*Colaptes cafer collaris*).

This is a western Flicker, very like *auratus*, except that wherever a yellowish tint is found in the eastern form it is replaced by reddish in the western. The under surfaces of the wings and tail are thus orange or vermilion. It is found on Vancouver Island and southern British Columbia.

NORTH-WESTERN FLICKER

(*Colaptes mexicanus saturior*).

This is a dark form of the Red-shafted Flicker and is common in British Columbia.

Hybrids of the Golden-winged and Red-shafted Flickers wearing all sorts of combinations of their ancestors' color peculiarities are found in the prairie provinces, and even as far east as Toronto two were captured, one of which had half the tail orange red.

ORDER XIV.—MACROCHIRES

GOATSUCKERS, SWIFTS AND HUMMINGBIRDS

THE GOATSUCKERS

The large fissirostral mouths of these birds, and their habit of flying close to the ground in pastures in chase of their insect prey, have no doubt led to the accusation which is expressed in the name. They all live on insects captured on the wing; the great gape of their wide open bills, aided in some forms by stiff surrounding bristles, enables them to take in even large moths. Many species are tropical in range, some are closely related to dark forests, while others are quite at home over cities and treeless plains.

GOATSUCKERS, SWIFTS AND HUMMINGBIRDS

CHUCK-WILL'S WIDOW

(*Antrostomus carolinensis*).

A specimen of this bird was taken in Nova Scotia and another at Point Pelee, Lake Erie. Its home is from North Carolina southward, and it is merely accidental in the northern states.

Its plumage is completely mottled and streaked with black and yellowish brown, with chestnut bars. An incomplete whitish band crosses the upper breast. The stiff bristles which grow around the base of the bill have hair-like branches on the basal half. Length 12, extent about 25 inches.

THE WHIP-POOR-WILL

(*Antrostomus vociferus*).

This bird of the dusk and early dawn is frequently heard, but rarely seen except by those searching for it. During the day it sometimes is to be seen perched lengthwise on a shaded branch, crouching close to the wood. It avoids the sunlight, and when disturbed slips with silent and bat-like flight into thicker woods. The clear loud call—which is well represented by its name—is heard only during the breeding season. It builds no nest, but lays its eggs on the leaves in dark swampy forests, and trusts for concealment to the harmony between its own colors and those of the surrounding objects. The eggs are dull white with grayish markings. In colors it closely resembles those given for Chuck-Wills-Widow, but with less chestnut. The white throat bar is narrow but complete. No hairlike branches are found on the bristles about the beak. This difference and the smaller size distinguishes the two forms. Length 9 to 10 inches, extent 16 to 18.

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THE NIGHTHAWK

(*Chordeiles virginianus*).

Throughout Canada this well known and much observed bird nests, and raises its young on the Barren Lands of the extreme north, on burnt hills of the forest region, on bare plains, or among the pebbles on the flat tops of lofty houses in the centre of great cities.

On summer evenings, when all the world possessing doorsteps sit about them to enjoy the cooler air, the Nighthawk performs his graceful airy evolutions. We do not quite understand his meaning, but all enjoy watching him, and tolerate his unmusical and persistent cry. During the nesting season, the bird—probably the male—after emitting his cry more frequently than usual as if to call attention to himself—shoots almost vertically downward, but checks himself and glides upward again after coming quite close to the earth. Just as his course curves to avoid his dashing against the ground, a peculiar booming sound is produced, no doubt by the vibration of the air through the stiff wing and tail feathers, which check and change his motion. The flight of desirable insects and not the sunlight seems to time the Nighthawk's hunting. Moths and such insects as fly on cloudy days or during the morning and evening twilights seem to be the food desired, and we have every reason to think the Nighthawk a successful pursuer. As stated above, they nest anywhere in unfrequented but open places, making no nest, but depositing their two grayish mottled eggs on a flat surface. I have found the bird incubating on flat, hot limestone rocks in a bushy pasture. Plumage much the same as that of the Whip-poor-will, but the white bar is across the throat rather than the upper breast. There are no bristles about the beak, and there is a large white spot on the five outer primaries at about mid length. This shows from below like a hole through

GOATSUCKERS, SWIFTS AND HUMMINGBIRDS

the wing. In the female the white marks are merely whitish. Length about 9 inches, extent about 23.

The Western Nighthawk is a variety of the above, belongs to the prairie regions, and like other prairie birds is more grayish or even yellowish in tone than the eastern or northern forms. It is found in Saskatchewan, Alberta, and British Columbia.

Nighthawks move southward in late August in large, loose, leisurely flocks, hawking as they go, and return to southern Ontario early in May.

THE SWIFTS

These are fissirostral birds, as are the Goatsuckers—that is, the mouth extends back far beyond the horny beak. They are also characterized by their very long wings and small feet, being evidently adapted for catching their insect prey on the wing, and not for walking or perching. In some the tail feathers are stiff, and end in firm bristles, which aid them in clinging to the vertical walls on which they nest. They secrete large quantities of glue-like saliva, which is used in nest building, either for cementing together the twigs composing the nest; or forming practically the whole nest, as in the East Indies, where the edible birds' nests are obtained for the Chinese.

THE CHIMNEY SWIFT

(*Chaetura pelagica*).

Very often called Chimney Swallow in this country, the common Swift is familiar to all, ranging from the Atlantic as far west as British Columbia. They have adopted the structures of man as preferable to those provided by nature, and now are more plentiful in the neighborhood of houses and in cities than in forest or plains regions. They nest in colonies at times in unused or seldom used chimneys, often in the middle of cities. Old chimneys of

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burned houses in the country are favorite locations, and the inner walls of lofts or attics, in barns or houses are frequently used. The nest is roughly like one-half of a hollow hemisphere, the straight side fastened by their dried saliva to the vertical wall. The materials of the nest are slender dry twigs, broken from the trees by being grasped by the bird's feet as it dashes downward upon them. These are glued neatly and strongly together, forming a bracket or shelf-like structure about four inches wide and projecting about three inches. Little or no lining is used. They lay four or five white eggs, and return year after year to the same nest, or at least similar Swifts use a nest during successive years. In flight, food, twittering notes, and location of nests they closely resemble the swallows, but in structure they are related to the hummingbirds. Being entirely harmless in their habits, and very useful as insect destroyers, Swifts should be encouraged and protected everywhere. If not desired in a chimney, a screen of wire may be easily adjusted, and will be perfectly efficient, as vertical walls alone in dark secluded situations are the only places satisfactory to Swifts for nesting. They reach Ontario early in May, and go south early in September. Plumage brownish black with a greenish gloss above and paler below. Throat grayish. Wing as long as the body—about 5 inches. Extent about 12.

In British Columbia two other Swifts are occasionally seen. The Vaux Swift (*Chaetura vauxii*), is thought to be resident. It resembles the Chimney Swift, but is smaller and paler, the rump lighter than the back and the throat is white. Length 4½ inches.

The Black Swift (*Cypseloides niger borealis*), has been seen in numbers near Douglas, British Columbia, and is thought to nest there. It is much like the others, but has a grayish forehead and belly, and measures 7 inches or more in length.

GOATSUCKERS, SWIFTS AND HUMMINGBIRDS

THE HUMMINGBIRDS

(*Trochilidae*).

These—the most minute of feathered creatures—all belong to America, but most of the 450 or more species are found only in Mexico, Central and South America. Only five species are known to reach Canada, and of these but one occurs east of the Rocky Mountains.

They are as a family readily distinguished by their very small size and brilliant coloration. The bill is awl-shaped and usually longer than the head, while the tongue may be protruded much beyond the tip of the bill. With these instruments they collect insects in or about the flowers, and often the nectar of the flowers. (See under Sapsucker). The wings are long, narrow, and pointed, and in the smaller species vibrate so rapidly as to produce a buzzing sound, and to be only indistinctly visible. Their feet are very small, but are armed with long sharp claws. Some are said to have a little song, but usually their only vocal production is a weak unmusical chirp. In temper they are very irritable as well as courageous, attacking an eagle as readily as they do one of their own kind, which they suspect of evil designs on their nest. They are quite fearless of humanity and will eat sugar from the fingers if not offended by careless attempts at capture. Their nests resemble knots on the upper side of branches, and are beautiful little hollowed cushions of down, covered outside with lichens. Two pure white eggs are laid. The young are said to be fed by regurgitation, as are young pigeons.

THE RUBY-THROATED HUMMINGBIRD

(*Trochilus colubris*).

This is the only hummingbird commonly known in Canada, ranging from the maritime provinces and Labrador to Saskatche-

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wan. It nests throughout its whole Canadian range, and in favorable places is quite plentiful. It arrives about the middle of May in southern Ontario, and remains as long as large deep flowers are open—say the middle of September. The sexes differ in lustre and in brilliance of coloration.

The male is lustrous green above with metallic violet on the crown and purplish on wings and forked tail. Throat and sides of neck brilliant, lustrous, ruby-red, other under parts grayish green. Female entirely greenish above, no red, but whitish on throat, and otherwise green and white. Length $3\frac{1}{4}$, extent about 5 inches.

THE BLACK-CHINNED HUMMINGBIRD

(*Trochilus alexandri*).

British Columbia alone of Canadian territory is visited by this relative of the Ruby Throat. Its range is the Pacific coast from Lower California northward into Canada.

The male has the tail doubly rounded but not forked, while the female has a simply rounded tail. In plumage and size it closely resembles the Ruby Throat, but the gorget is velvety black in front, and blue, green and violet on the sides of the neck.

THE RUFOUS HUMMINGBIRD

(*Selasphorus rufus*).

The most plentiful hummingbird of British Columbia is this species of the Lightning Hummers. It is commonly called the Red-backed or Nootka Hummingbird. Throughout the Rocky Mountains region from the foothills in Alberta to the Coast, and well up into Alaska it is found, as well as on Vancouver Island. It nests early in April while the nights are still frosty. It is the most northern as well as the most extensively distributed species of the west.

GOATSUCKERS, SWIFTS AND HUMMINGBIRDS

The tail is wedge shaped, neither rounded nor forked. The central tail feather is broad and tapers abruptly. The next on each side are notched on the inner web near the end. The color of the plumage in general both above and below is cinnamon-red, deepening to purple on the ends of the tail feathers. Some greenish shades may be seen on the back and whitish on the belly. The gorget is glossy copper red, and almost becomes a ruff. The female has no gorget, and the cinnamon color is overlaid largely with greenish. Length $3\frac{1}{2}$ inches.

THE ALLEN HUMMINGBIRD

(*Selasphorus alleni*).

This form is closely related to the last, but may be distinguished by the tail feathers and gorget. The central tail feather tapers gradually, the next pair are not notched, and the outer pair are almost awl shaped. The back is golden green; the belly and sides cinnamon; and the gorget brilliant red, edged below with white. The female is like that of the preceding species in colors. Length $3\frac{1}{4}$ inches. This species has been taken near Revelstoke, Sicamous, and Penticton, British Columbia.

THE CALLIOPE HUMMINGBIRD

(*Stellula calliope*).

This is the smallest bird known in Canada. It ranges from the southern part of British Columbia south into Mexico, in the mountain regions. In appearance it is unlike the other forms described.

The tail is doubly rounded. "The crown and back golden green. All tail feathers dusky, with rufous at base, and slightly pale tips. Gorget of violet or lilac tips of feathers set in snowy white. Sides of throat, and crissum white. Below white, glossed with green on the sides." (Coues). Length $2\frac{3}{4}$ inches.

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ORDER XV.—*PASSERES*

THE PERCHING BIRDS

The order *Passeres* is by far the largest group of birds placed together because of similar characters. Some of these characters we shall mention. The feet are adapted for grasping, by the fact that the hind toe is always present, and so placed and developed as to be readily opposed to the other toes. The hind toe never turns forward or sideways, and none of the front toes turn backward. The bill is variable in form, but always,—either largely or altogether—hard and horny. They are altricial, the young being hatched weak and naked. They are nervous and sensitive creatures, with rapid respiration and circulation. They reside above the earth, in the air and amongst the plants, and they include the song birds of the world. Few are cosmopolitan, except the snow birds which pass between the continents in the northern polar regions. Taken in all their characteristics, they represent the highest grade of development reached by the feathered race.

The first family to be noted is that of the

FLYCATCHERS

TYRANNIDAE

This is an American family of birds, usually considered songless, as their vocal organs are less highly developed than in the other families. Some of them, however, produce loud and fairly musical notes. They are very numerous in the tropics, about 350 species being known. Only about sixteen of these reach Canada. They are distinguished from *Passeres* by having the tarsus rounded and not reticulate behind; a bill hooked at the tip, and with bristles at the base.

PERCHING BIRDS

THE SCISSOR-TAILED FLYCATCHER

(*Muscivora forficata*).

Although a bird of the Southern States, this beautiful flycatcher has wandered into Canada and may do so again. It has been reported from New Brunswick, Ontario, Manitoba, and York Factory on Hudson Bay. In the first and last two instances specimens were secured. It must be considered accidental however north of Missouri.

General color ashy, becoming almost white below. A crown patch is scarlet; the sides at the bases of the wings are deep red; and the under parts and crissum are often tinged with the same. The wings and tail are blackish, with white or red edgings. The tail is very deeply forked and over 12 inches long.

THE KINGBIRD

(*Tyrannus tyrannus*).

The Kingbird is known also as the Tyrant Flycatcher from its habit of fiercely attacking any other bird, no matter how large, which comes near its nest. It builds usually in a hawthorn tree, making a substantial, deep nest, compactly woven of all sorts of fibrous matter, with little attempt at concealment. The eggs, usually four in number, are whitish or creamy with brown dots and splashes on the larger end. From its favorite perch on the top of a mullein stalk the bird darts for passing insects, of which it destroys great numbers, among which may be an occasional honey bee. Its note during the breeding season is not unpleasant, while its value as a sentinel against crows and hawks, at that time, is undoubted. The colors of the Kingbird are not striking, except a flame colored patch on the crown, usually hidden except when the bird is in warlike mood. The crown, beak, and tail are black, the latter being broadly tipped with white. The wings

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are dark with white edgings, while the breast is gray. Length about eight inches. It nests throughout southern Canada from coast to coast. The Arkansas Kingbird is found from Saskatchewan to Vancouver, associating with the eastern form, and having similar eggs and nesting habits.

THE CRESTED FLYCATCHER

(*Myiarchus crinitus*).

The shrill note of this active bird is heard in all the provinces from the Atlantic as far west as Manitoba. It should scarcely be called common, although a few may be seen in almost any district visited. Their calls may be heard in May in the Lake Ontario district, and the bird may usually be readily found standing at attention, with crest raised, on the topmost branch of a dead tree. All their motions are full of suppressed energy. They build a new nest in a hole in a tree, and seem to always use a discarded snake skin as a prominent part of the arrangement.

Their eggs are three or five in number, and bear the unusual distinction of lengthwise markings of brown on the ground color of yellowish. While living through the summer on insects almost entirely, they are known to eat berries and other small fruits in autumn.

The back and wings are light brown with olive green shades. The tail mostly light chestnut. The throat and breast are pale gray, while the belly is bright yellow. The loose crest feathers of the crown are brownish. Length about 9 inches, extent about 13.

THE PHOEBE

(*Sayornis phoebe*).

Central Canada from Montreal to Manitoba, but especially southern Ontario, seems to be the favorite Canadian range of this

PERCHING BIRDS

Phoebe. It has been found about Edmonton and northward along the Athabasca River. Probably of our native birds no other is so common about our dwellings in southern Ontario except the Robin, the Song Sparrow, and the Chipping Sparrow. It makes its home of moss and mud and grass under our cornices, on the gables of our houses, or in verandas, sheds and outhouses, also very commonly under bridges, on the beams supporting the floor. Its eggs number four or five, usually white, but sometimes slightly spotted with brown. While not musical, the note of the Phoebe tells of quiet and home, and is welcome among the earliest spring migrants returning to their previous haunts.

A monotonous, plaintive reiteration of "pee-wee" is the usual utterance, but occasionally one is heard to produce the same sound very rapidly as if bubbling over with joy beyond ordinary expression. Its food is insects, captured very expertly—but with little display—on the wing. The back, wings, and tail are olive brown, the head blackish, the under parts are whitish or yellowish, darker toward the head. The length about 7 inches, extent 10 to 12.

OLIVE-SIDED FLYCATCHER

(*Cantopus borealis*).

This flycatcher belongs to the wooded rather than the open country, and is found from Cape Breton to Vancouver Island, being uncommon in southern Ontario. Like the Crested Flycatcher this bird frequents the top of the tallest trees to be found. They are said to live among the conifers and to build their nests high on the evergreen branches. Eggs usually three, creamy, and spotted with reddish brown, especially at the larger end. Back dark greenish brown, wings and tail blackish brown. Throat white, and a narrow white line down the middle of the breast. Other under parts streaky with blackish. A yellowish white tuft of loose downy feathers on each flank. Length about 7½ inches.

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SAY'S PHOEBE OR FLYCATCHER

(*Sayornis saya*).

In Alberta and the open parts of British Columbia this is the bird which takes the place of the last described. Its nesting habits are much the same, utilizing the beams and walls of houses and bridges where possible, but also fastening its nest against the moist walls of cliffs. Its note is of one syllable. Plumage similar to the last, except that the tone of the upper parts is grayish brown, and of the lower surface cinnamon brown, paler toward the head. Length about 7½, and extent 11 inches.

WESTERN WOOD PHOEBE

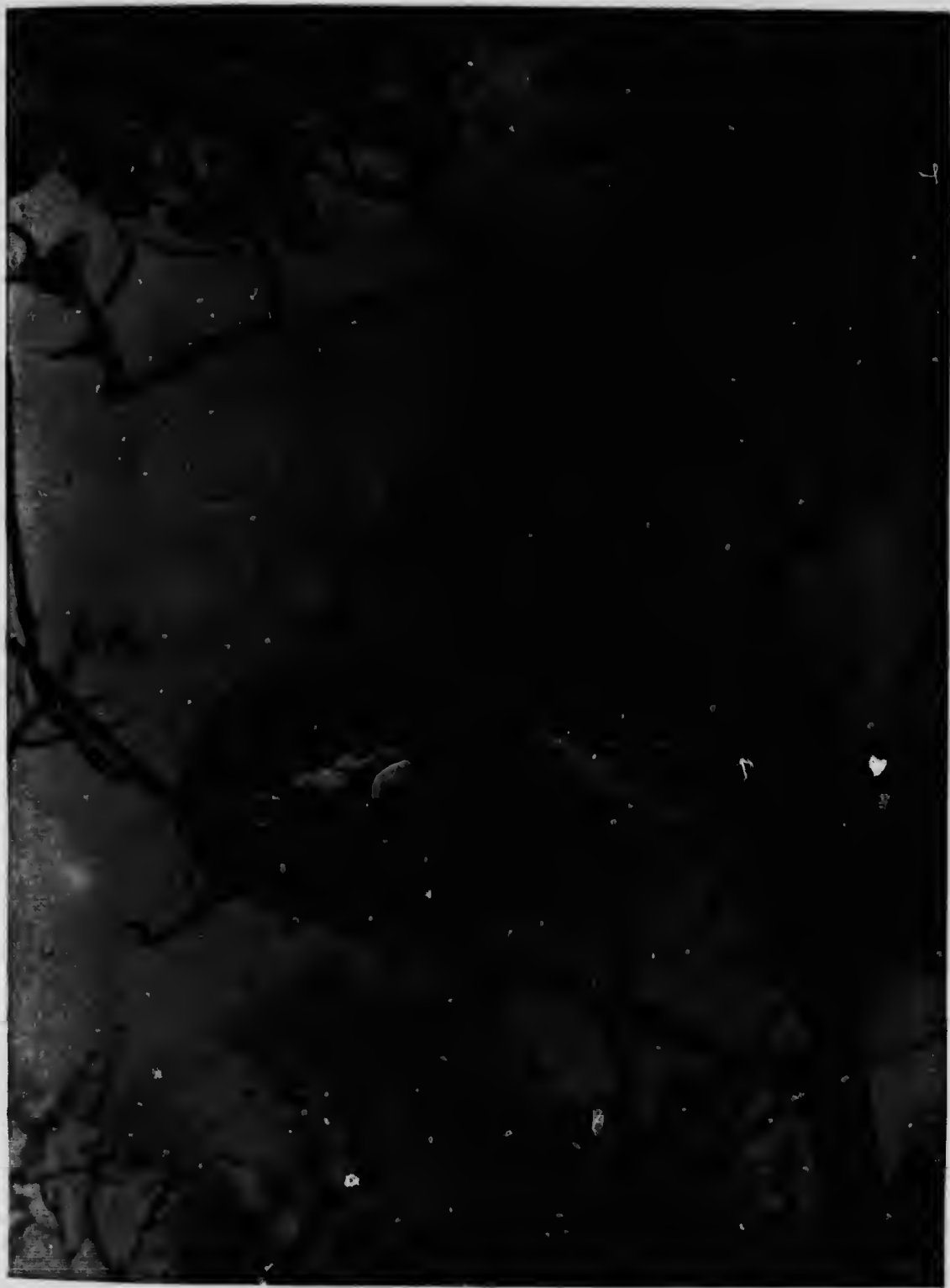
(*Cantopus richardsoni*).

This form takes the place of the last from Manitoba to the Pacific, but favors thickets rather than the dense woods. It has been found in Alaska, but is not common there. Its note is said to be more abrupt than that of the last, and its nest is placed usually among small forking branches, rather than saddled on a large limb. In appearance it is so like *Cantopus virens* and *Sayornis saya*, that the one description does for all, except that this is somewhat darker both above and below. Size the same and eggs not distinguishable from those of the Wood Phoebe.

THE WOOD PHOEBE

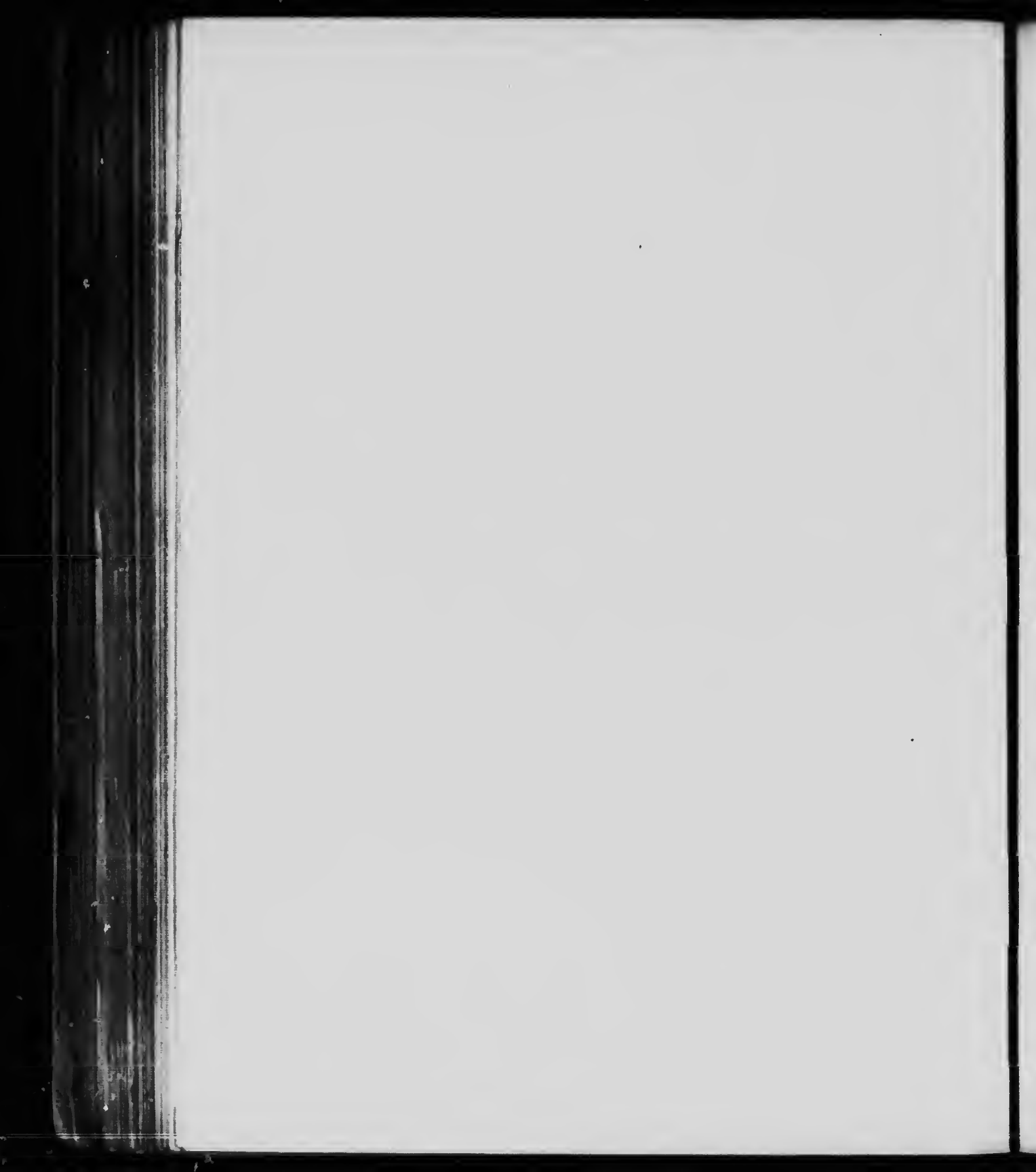
(*Cantopus virens*).

Found in Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and Manitoba, probably most common in southern Ontario. It frequents hardwood forests, and places its beautiful lichen covered nest often on the upper side of a branch. It lays usually three eggs, creamy, with brown markings especially at the larger end. Its note is less abrupt than that of the common



WOOD PEWEE.
] Life-size.

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PERCHING BIRDS

phoebe,—sounding more like “pee-a-wee,” and to us very plaintive. Like the Olive-sided Flycatcher its wings are longer than its tail, and when standing erect it does not usually keep them closely folded to the body, but hanging as though especially ready for another dash after insects.

In coloration it is extremely like the common phoebe, but in length does not exceed $6\frac{1}{2}$ inches, and extends under 11. The tarsus is not longer than the bill, while the wing is about one half inch longer than the tail. The toes and tarsus are very slender.

THE YELLOW-BELLIED FLYCATCHER

(*Empidonax flaviventris*).

Found in Newfoundland, Nova Scotia, New Brunswick, rarely in western Quebec or southern Ontario, but occasionally in the northern parts and Manitoba, plentiful nowhere.

Nest on a mossy log in a damp thicket, eggs four, creamy white, with reddish brown blotches.

Plumage clear olive green above, paler on the sides, and bright yellow on the belly. Breast yellowish olive green. Length 5 to $5\frac{1}{2}$ inches.

TRAILL'S FLYCATCHER

(*Empidonax trailii*).

This and the next form are so much alike that only experts can with certainty identify a single bird. Its range is chiefly from Manitoba to the Pacific, in moist woodland, especially willow thickets. Its nest is built among the forked twigs of shrubs, and is not very compact but deep. Eggs three or four, blotched creamy white.

Plumage dull olive brown above, darker toward the head. Below whitish with olive on the sides and across the breast. Length $5\frac{1}{2}$ to 6 inches, extent 9 to $9\frac{1}{2}$.

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THE WESTERN YELLOW-BELLIED FLYCATCHER

(*Empidonax difficilis*).

This is a British Columbia form very like the Yellow-bellied Flycatcher, but the coloration is not clear olive green above and bright yellow below, but dingy on both surfaces, the belly being buff or ochre colored. Size same as *flaviventris*.

THE ALDER FLYCATCHER

(*Empidonax traillii alnorum*).

This is the eastern form of the last described, and is to be distinguished only by its brighter plumage. Its range is from Newfoundland to British Columbia, where it probably merges with the preceding. Size, nest and habits the same.

LEAST FLYCATCHER

(*Empidonax minimus*).

This is a common little bird from Newfoundland to the Rocky Mountains, and it goes north to Fort Simpson on the Mackenzie River. The haunts of man are not objectionable to it, and the orchard and shaded city streets are often visited. Its nest is built in an upright fork, and the eggs are usually four, white and creamy and unspotted. Its note is written "che-bec" and its nature is much more lively and sociable than that of its relative the Phoebe.

Its plumage is very like that of Traill's Flycatcher, but more grayish than brown above. Sides and breast with a tinge of yellowish. Length 5 to 5½ inches, extent about 8.

HAMMOND'S FLYCATCHER

(*Empidonax hammondi*).

This is the western form of the Least Flycatcher, its range being western Alberta, British Columbia, and Alaska. The chief

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distinction is that its coloration is olive gray both above and across the breast, the belly yellowish, the bill very small and narrow, and the tail decidedly forked. Length under 6 inches.

THE LARKS

(*Alauda*).

About 100 species of larks are known, but in Canada we have only one of these species, with, however, many interesting varieties.

THE HORNED LARK

(*Otocoris alpestris*).

This is the type, of which most Canadian larks are varieties. It occurs from the Atlantic to the western part of Ontario, but is rare in southern Ontario west of Kingston. It is common in Labrador and about Hudson Bay and is occasionally taken about Ottawa and Georgian Bay. Horned Larks are plentiful in winter and spring along the north shore of Lake Ontario, but I believe all that I have seen to be the prairie form,—variety *praticola*. In winter they associate with the Snowbirds, but in spring they are usually in pairs flitting along the roads, gleaning from dropped seeds and from wayside weeds. They are not alarmed by the approach of horses or men, and often run for some distance just ahead of a team, then rise and swing back to their interrupted feast.

The crown, neck, back, rump and wings are grayish brown with a pinkish tint, especially on the nape, wing coverts, and rump. The throat patch and a line over the eye are sulphur yellow. A black band crosses the breast; there is also a black patch below each eye, reaching from the bill to the side of the neck, and a black bar across the forehead extending backward as erectile horns over each eye. The lower surface is white with brownish on the sides. The

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bill is short, the hind claw long and nearly straight. Length 7 to $7\frac{1}{2}$ inches, extent 13 to 14, wing $4\frac{1}{4}$ to $4\frac{3}{4}$.

The following varieties are separated by systematists but are found to grade into each other. Pallid Horned Lark—*Otocoris alpestris arctica*. This form belongs to Alaska and British Columbia, but may not be confined to those regions. Prairie Horned Lark. *O. a. praticola*. This is the commonest form in southern Ontario and differs from the type in the lighter tone of the plumage. The upper parts are gray rather than brown, and the yellow patch is pale or replaced by white. In size it is slightly smaller than the type; wing under $4\frac{1}{2}$ inches. It nests with us very early in spring, as soon as the ground is bare in March, and the first lot of eggs may suffer freezing. The nest is of grass and fairly well hidden on the ground of a meadow or pasture. The eggs are bluish or greenish white, evenly speckled with brown. Like the Skylark the Horned lark sings when flying upward, but more usually when perched on a lump of earth or a knoll. Its song is seldom heard in Ontario, but quite frequently on the prairies. The Desert Horned Lark is a still paler form with less black about the head and more white. Its range in Canada is along the boundary of the United States from Manitoba to the prairies. The Dusky Horned Lark—southern British Columbia and the forested regions south of it are the ranges of this darker and smaller form. The hair-splitting divisions of which the varieties of the Horned Lark, are a type, may have some value to the professional ornithologist, but certainly none to the general student and bird-lover.



PERCHING BIRDS

THE CROW FAMILY

Corvidae.

This well known family includes the magpies, jays, crows, and ravens. All have loud and unpleasant voices, and most of them are persistent in uttering their calls. In general intelligence they rank high among birds, and some show considerable courage and adroitness in stealing food. They all possess long, sharp, strong bills, and are omnivorous feeders.

THE AMERICAN MAGPIE

(Pica pica hudsonica).

Although occasionally wandering as far east as Montreal, the magpie is, as yet, a bird of the western plains. It seems more numerous in Alberta than further east, and is described as a common resident in British Columbia and in Alaska. No clear distinction seems possible between this and the European form. They nest usually in a thicket or low tree, the structure being about as large as a bushel basket and built of strong sticks. A roof of sticks is also provided, the entrance to the cup-like clay nest itself being from the side. Eggs from six to ten, greenish or gray. Like the other members of the family they are blamed for carrying away for food the young of other birds. They eat carrion, insects, mice, and seeds as well as fruits. Plumage glossy black, with green and blue lustre, especially on wings and tail. Lower part white from the breast to the tail, also a patch on each shoulder, grayish on throat and middle of back. Bill black, wings short and round, tail nearly a foot long, of graduated feathers. Length 18 to 20 inches, extent about 35 inches. Female like the male but slightly smaller.

THE BLUE JAY

(Cyanocitta cristata).

Like the others of the Crow family, the Blue Jay resides in considerable numbers through all the year in southern Canada,

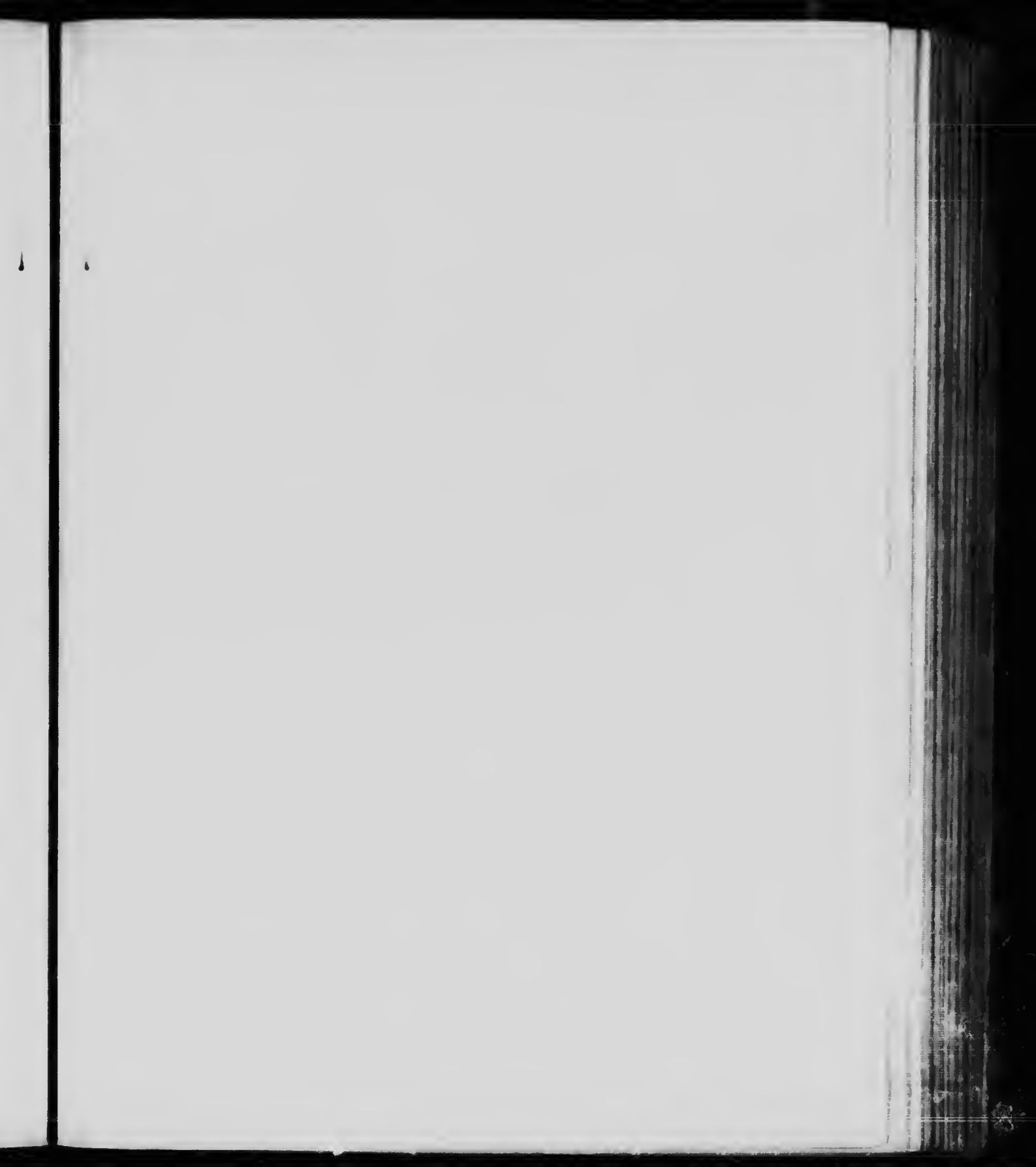
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any migration that may occur being to a region but slightly south of the nesting district. This species ranges from the Atlantic to the plains of Alberta. Among the mountains, even in Alberta, Steller's Jay is more likely to be seen. Wherever found the Blue Jay is the same noisy, busy thief, quiet enough, however, when actually robbing you. The eggs and the young of other birds are likely to suffer from his appetite, the nuts of oak and beech, the fruit of hawthorn and domestic cherry tree are all welcome to him, while the corn crib or a piece of exposed meat will always claim his attention. His beautiful coloring, his reckless manner when not feeding, and his presence through the winter give him, however, a strong claim on our sympathies. Jays frequently travel about in small bands and seem to greatly enjoy worrying owls and hawks. Their notes are very loud, clear and varied, and some even claim for them powers of mimicry and ventriloquism. A nest which I saw in the spring of 1912 occupied by the bird, was on a horizontal hemlock bough about twelve feet from the ground. The tree stood on the edge of a swamp in Frontenac County, and within a mile of Lake Ontario. The nest was made of sticks, moss and mud. They lay four or five eggs, gray with brown markings. Wings and tail rich blue with white tips and black bars. Back grayish blue, lower surface bluish gray, almost white on belly and crissum. A black collar crosses between throat and breast and reaches on the hind head up to the crest which is dark at the base in front. Tail rounded. Length 11 to 12, extent 16 to 18 inches.

STELLER'S JAY

(*Cyanocetta stelleri*).

This bird belongs to the Rocky Mountain region from California to Alaska being especially related to the Coast Range, although I saw one in Crow's Nest Pass on the Alberta side of the summit. Color soft black on head, neck and back, but passing into dull blue towards the rump. Tail and wings dark blue with black





CANADA JAY.
(Perisore canadensis)
Life-size.

PERCHING BIRDS

bars. Size about that of the eastern Blue Jay. The variety of Steller's Jay known as the Black Headed Jay shows whitish patches about the eyes, and bluish streaks on the forehead, such as characterize the Long-crest Jay of Wyoming and Mexico. It may be a hybrid.

CANADA JAY

(*Perisoreus canadensis*).

All of Canada east of the Rocky Mountains and as far north as the forest extends is the home of the "Whisky Jack." It nests in Alberta in March, the young being hatched sometimes while the temperature is below zero. The nest is thick, deep and well-lined, placed in either evergreen or broadleaved trees. The eggs are four or five, pale green or gray, dotted with brownish. The notable characteristic of the Canada Jay is its fearlessness. The camp fire of the lonely traveller is visited apparently in a spirit of comradeship, but no opportunity of taking food is allowed to slip. The notes of the bird are in many tones but few of them are musical. Its food is varied, nuts forming the staple. The plumage of this northern bird is very fluffy and fur-like, not at all close fitting but almost shaggy; the front of the head is white, the back of the head and neck black. The back, wings, and tail are gray, as are the under parts except the neck, which is white. Length 11 to 12 inches.

THE ROCKY MOUNTAIN JAY OR WHITE-HEADED JAY

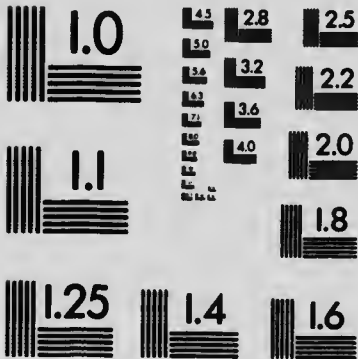
(*Perisoreus canadensis capitalis*).

This is a variety of the Canada Jay found throughout British Columbia. It is said to be easily distinguishable from the eastern form by the lead gray instead of ashy gray color, with blackish wings and tail, the feathers tipped and edged with whitish. Lower surface paler, shading into whitish on breast and neck. The front of the head distinctly whitish. Length 12 to 13, and extent 17 inches.



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THE ALASKAN JAY

(*Perisoreus fumifrons*).

This is a darker form of the Canada Jay, found only in the coast region. It has little whitish on the head, while the wings, back and tail are slaty black.

THE LABRADOR JAY

(*Perisoreus nigricapillus*).

This is a form said to be locally common in northeastern Labrador, breeding at Ungava Bay, and also resident in Newfoundland. It is distinguished by the greater contrast between the white of the forehead and neck and the black of the head which comes forward to the eye.

All other parts tend to be dark slate rather than ashy gray. The nests and eggs of the varieties are not distinguishable from those of the type.

OREGON JAY, OBSCURE JAY

(*Perisoreus obscurus*).

Southern British Columbia shares with Washington, Oregon and northern California in entertaining this smaller jay, which differs from the Canada Jay in having a brownish rather than lead gray cast. The back feathers have white shaft stripes and the lower surface is altogether whitish. Hood black, forehead white, Length 10 to 11 inches.

GRAY CANADA JAY

(*Perisoreus griseus*).

This variety is said to be common in some districts of British Columbia, and to be distinguishable as being like the last but mouse gray instead of brownish, the under parts grayish white, not brownish white.

PERCHING BIRDS

NORTHERN RAVEN

(*Corvus corax principalis*).

The Raven ranges from the Atlantic to the Pacific and Arctic, but is seldom seen in southern Quebec or Ontario. It breeds in the far north as well as in northern Labrador and British Columbia. Its nest is described as well made of sticks and weeds, lined with grass, hair and wool. It is usually placed on an inaccessible ledge of a cliff, but may be built high in an evergreen. Whenever possible its food is of animal nature, and it is believed to attack any young or weak creature, such as young reindeer, poultry, etc. It robs traps of the bait or the captured animal, and so is heartily hated by the inhabitants of the far north. The croak of the raven is well known, but like others of the race it is able to produce a variety of loud, harsh sounds. Color entirely black with blue reflections. Throat feathers, long, stiff and pointed; length of bill along culmen three inches, depth at base 1 inch, length from 22 to 25 inches, expanse 50 inches.

AMERICAN CROW

(*Corvus americanus*).

From the Atlantic to the Rocky Mountains the crow is found, but not much farther north than York Factory, Hudson Bay. In southern Canada they are very plentiful, breeding in trees sometimes within ten feet of the ground, but more often up twenty feet or more. The nest is strong and well made, and they lay in March or April five or six greenish eggs, thickly marked with dots and splashes of brown. They are decidedly sociable before and after the nesting season, roosting in flocks in some quiet evergreen grove. I have counted in August 609 crows flying towards their roost from one particular direction, and as other flights centred toward the same point, there must have been several hundred birds in that rendezvous. In autumn, every morning sees a large de-

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tachment directing their flight toward a certain hunting ground, where they do excellent service in destroying crickets, grasshoppers, mice, and other vermin. Just before sunset they straggle home for the night, the flight lasting about an hour. Apparently about ten per cent. of them remain about the north shore of Lake Ontario during the winter, visiting the garbage dumps from abat-toirs, the edges of open waters, and every place that carrion or other refuse may be had. Although willing to raise seed corn, if anyone will plant it for him, also willing to eat chickens and other young birds, and in fall to strip away the husks and gather corn from the ear, we must confess that the mischief done is confined to only a few weeks of the year, while during all the remainder he works untiringly for us in the destruction of small rodents and harmful insects. We agree that the crow is not decreasing in numbers, but is well able to care for himself. Plumage entirely black, with blue or purplish reflections. No lengthened feathers on the neck. Length about 19 inches, bill under 2 inches.

THE NORTHWEST CROW

(*Corvus caurinus*).

This small Fish Crow belongs to the Pacific Coast from the Columbia River north to Alaska, being especially plentiful on Vancouver Island. In the interior of British Columbia it is less common. Eggs 4 or 5, like those of the common crow but smaller. Its food is chiefly fish, and the eggs and young of such birds as nest on the shores and cliffs.

Plumage black as in the common crow. Length 14 to 16 inches, bill $1\frac{3}{4}$ to 2 inches along the culmen. Tarsus under 2 inches.

PERCHING BIRDS

CLARK'S CROW OR CLARK'S NUTCRACKER

(*Nucefrage columbiana*).

Throughout British Columbia this crow takes the place of the form common in the east. It is distinguished by its color which is gray, almost white on the head, and with black and white wings and tail. The bill is more slender and acute than that of the eastern crow. Its home is among coniferous forests, and its food is largely derived from the pine cones. Its nest is built on a horizontal branch of an evergreen, of sticks with strips of bark and fibrous grasses. The eggs, 2 or 3 are grayish green, blotched with brown. Length of bird about 12½, extent about 22 inches.

THE BLACKBIRDS, ORIOLES, AND MEADOWLARKS

(Family *icteridae*).

This group resembles the *Fringillidae* or Finch family in many particulars, such as angulated commissure,—that is the inner angles of the opening of the beak are drawn down,—also in possessing only 9 primaries. In beaks, however, they are more like the Crows, the bill being not strictly coneshaped, but usually as long or longer than the head, tapering to an acute point, and extending up on the forehead. The feet are large and strong, and fitted for walking on the ground. The Bobolink is most like the Finches, and the Grackles most like the Crows.

THE BOBOLINK

(*Dolichonyx oryzivorus*).

The range of the Bobolink is that of a bird whose home is chiefly to the south of our boundary. It is not plentiful in Nova Scotia except in the southwest, but abundant in New Brunswick, southern Quebec and Ontario, the prairie districts of Manitoba, and southern Saskatchewan. Rare west of that province. It is

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very abundant in every clover field and meadow along the Lake Ontario shore, nesting freely, and making the June atmosphere jingle with its joyous overflow of song. The female is careful to run some distance before rising, so that the nest is not very readily found. Eggs 5 to 7, grayish with brown blotches. Although eating seeds, it is not considered destructive in the north, but when the young are full grown, and the male has adopted the quiet plumage of the female, it returns to the southern states where it becomes the "reed bird" and attacks the rice and oat fields in flocks, doing much damage. Becoming fat on this good fare, it attracts the attention of epicures, and is killed in great numbers for the table. Served as "reed birds" or "ortolans" it is considered a delicacy.

The plumage of the male in spring is very different from that of the female or young, or of the male during late summer, autumn, and winter. The head and under parts are black, the back of the neck light yellow, the middle of the back striped black and buff, the shoulders and lower back whitish, the tail black with pointed tips. The female is olive brown above, streaked with black, below brownish yellow. The crown is dark with a central stripe of brownish buff. Young similar. Length about 7 inches, extent about 12.

THE COWBIRD

(*Molothrus ater*).

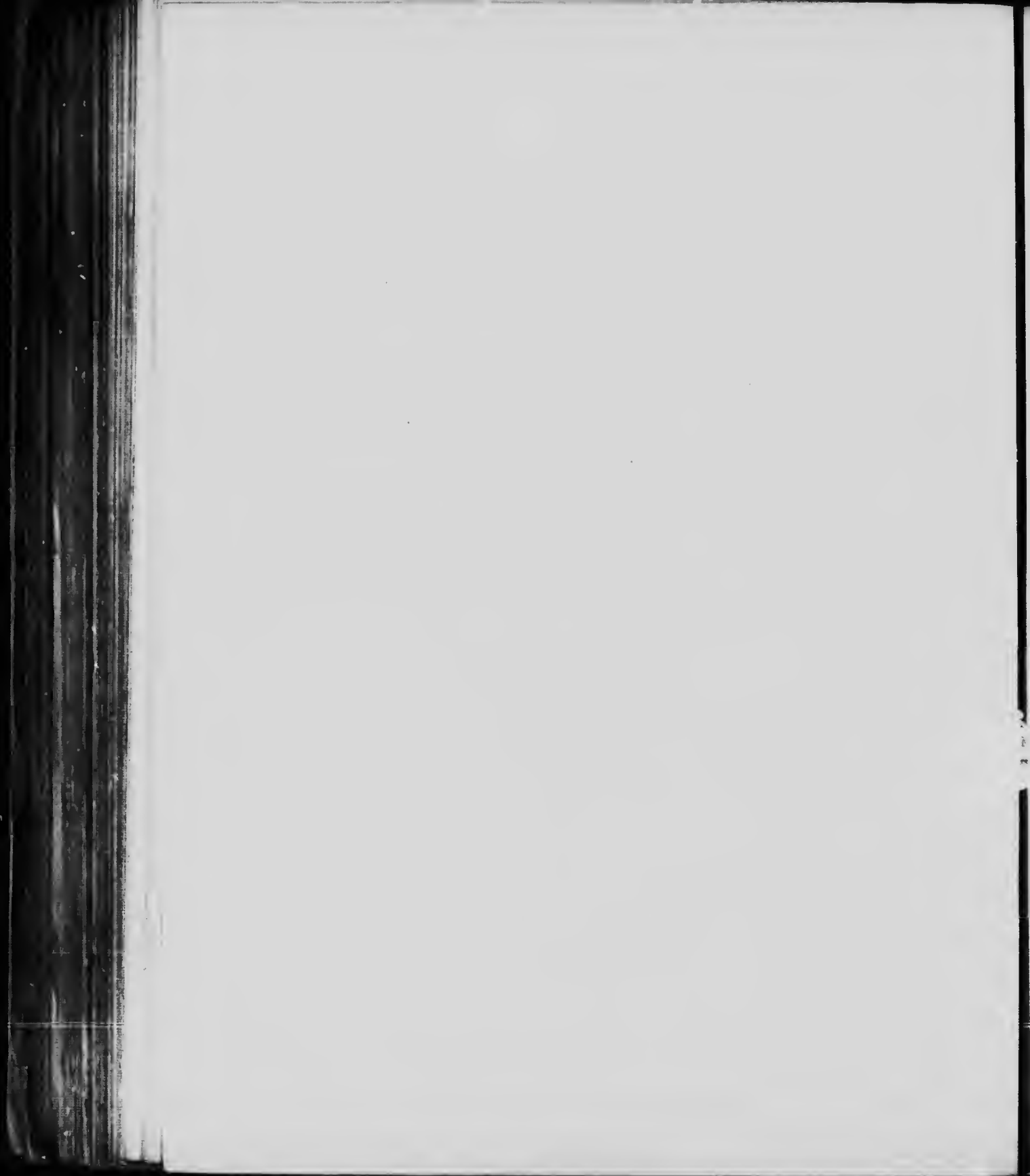
From New Brunswick westward into British Columbia we have records of this reprehensible bird, but it seems not to visit the far east nor the far west of Canada. Through southern Quebec, Ontario, Manitoba, and Saskatchewan it is plentiful, arriving from the south in early April, and in small groups they are soon exploring the meadows and pastures, apparently for insects. So far as known these birds do not pair, but the female accepts the



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COW BIRD.
1/2 Life-size.

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PERCHING BIRDS

attention of any convenient male. With an equally debased moral sense, she builds no nest, but sneaks away from her companions only long enough to drop an egg into the nest of any smaller bird that can be found. This is a case of true parasitism, the hosts being called upon to incubate and feed the changling offspring, almost always at the cost of their own whole brood. The young intruder hatches earlier, grows faster, makes greedier appeals for food, and usually monopolizes their entire efforts.

In this way large flocks of these Cowbirds are reared, because, with uncanny knowledge, the foster parents are deserted by the young when no longer needed, and their own kind is recognized as proper associates for the autumn months of plenty. A long list could be made of the names of birds known to be the victims of the parasitic habit of the Cowbird. Davie lists several Warblers, the House Wren, the Vireos, Indigo Bunting, Sparrows, Goldfinch, Phoebes and other Flycatchers, Bluebirds, Orioles, Tanager, the Kingbird, Towhee, Horned Lark, Thrushes, Red-headed Woodpecker, and Mourning Dove. The facts are not well known concerning all of these, but it is certain that many birds of many kinds waste their paternal care to increase the numbers of this "acknowledged villain" in feathers. Eggs various, but usually dull white with brown dots or blotches. The male is glossy black, except the head and neck, which are brownish. The female is smaller and brownish gray, paler below. Length $7\frac{1}{2}$ to 8 inches, extent $13\frac{1}{2}$.

YELLOW-HEADED BLACKBIRD

(*Xanthocephalus xanthocephalus*).

From Manitoba to the interior of British Columbia the Yellow-head is found, being most abundant in southern Saskatchewan. Accidental stragglers have been taken near Toronto. Its habits seem to be much like those of the Red-winged Blackbird, with which it often associates. Its nest is hung among the cat-

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tails and rushes, which are woven together to form it. While light in structure it is well able to carry the eggs, usually four or five in number, grayish or greenish white, speckled obscurely with brownish.

Plumage of the male black, except a white patch on each wing, and the whole head, neck, and breast which are bright yellow, approaching orange. The belly is also yellowish. A black ring around the eyes. The female is dark brown, with no wing patches, only dull yellow on the breast, throat, and a line over the eye. In length the male is 10 to 11 inches, extent about 17, while the female is only 8 to 9½ inches long, with extent of 14 or less.

THE RED-WINGED BLACKBIRD

(*Agelaius phoeniceus*).

Rare in Nova Scotia, but plentiful from New Brunswick, through Quebec and Ontario, and especially numerous in all the marshes near Lake Ontario, the Redwing is one of our most welcome harbingers of spring. The males arrive in small flocks as soon as the ice begins to loosen from the shores of the bays, and from then until July these are the most numerous and conspicuous inhabitants of our marshes. Three calls are readily noted—a short “chuck,” “chuck”; a high-pitched expression of suspicion “chee-e-e-e,” as he flies about warning off intruders, and a satisfied long-drawn “o-ke-lee” or “con-ker-ee-e,” from a treetop when the danger has passed away.

The females come later than the males, and during early May nest-building and housekeeping are the order of every day. The nests are usually built in the bushes bordering or among the reeds. The eggs, three to five in number, are pale bluish or greenish, with blotches and scrawls of blackish. Upper wing coverts scarlet, lower coverts yellowish or whitish. Otherwise the plumage of the male is black. The female is blackish brown with paler streaks,

PERCHING BIRDS

below whitish with black streaks. Wings blackish, with yellowish and sometimes reddish on the coverts. Length of male about 10, of female 9½ inches.

THE MEADOWLARK

(*Sturnella magna*).

This bird, belonging to the blackbirds, not the larks, is rare from Montreal eastwards, and extends its range but little north of Ottawa and Lake Huron. It is very common in southern Ontario, and occasionally winters here. Few meadows near lakes Ontario or Erie are without one or several pairs of Meadowlarks during the summer, and its peculiar flight—a few rapid wing beats, then a long glide, to be repeated until with a curve to right or left it alights again on the ground—singles it out from all our other field birds of eastern Ontario. This is the method of the Bobwhite and the Ruffed Grouse, but the Meadowlark entirely lacks the speed with which the game birds dash away for safety.

Its earth-loving habits are shown by the awkwardness with which it alights on a fence or treetop, often nearly falling forward as it strikes the desired perch. The nest of the Meadowlark is built in a tuft of grass or weeds, woven of stalks and leaves of the surrounding grasses, and often arched over, even for some distance from the eggs. These latter number four to six, white, speckled with reddish brown or purple. Its food is largely of animal origin—grasshoppers, beetles, spiders, moths, snails—as well as grain and weed seeds.

The plumage of the back is black, but each feather is bordered with yellowish, and tipped with reddish brown. The neck feathers are of the same pattern but finer, the crown has a central buff line, on each side of which is a dark line; outside of these again is a light stripe over each eye and ear. The throat, breast, and upper belly are bright yellow, with a large black crescent on the breast.

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The sides and lower belly are light yellow with black streaks. The female is similar, but with smaller black and yellow. Length of the male 10 to 11 inches, the female 1 inch less.

THE WESTERN MEADOWLARK

(*Sturnella magna neglecta*).

This variety of the Meadowlark is the form found from Manitoba to Vancouver Island in all the open country, but does not extend its range north of the Saskatchewan.

The nest and eggs are said to be indistinguishable from those of the eastern form. Its note is, however, very loud, clear, and sweet, and may be heard from the tops of trees and telephone poles in well within the sub-divisions fringing the western cities. Like the typical form the parents share with each other the duties of incubation, and are very faithful and gentle, industrious, timid, stupid, and harmless, like good average citizens.

In color the blacks and reddish browns of *Sturnella magna* are reduced to grays, the yellow of the breast extends to the cheeks, and the bars on the wings and tail are blackish and gray alternately.

THE ORIOLES

(*Icterus*).

The Orioles are a bright colored race, and we are glad to have in our somewhat sombre northern trees such brilliant flashes of color and music as are furnished by the three species that come to us.

THE ORCHARD ORIOLE

(*Icterus spurius*).

This, the dullest in color, is a most excellent musician, and a very generous songster, as are all the Oriole family. It has been taken in New Brunswick and Maine, and reaches south-western





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Ontario regularly, but its home is Kansas, Nebraska and Texas. I have seen it only near Ingersoll, in Oxford County. Its nest is said to be a masterpiece of weaving, in which both birds participate, using the long stalks and leaves of grass, which remain greenish for some time, and so assist in concealing the structure. The nest is not always completely pensive and is fastened generally within fifteen feet of the ground. The eggs are usually five in number, bluish white, spotted and blotched especially near the larger end with blackish.

The male has the head, throat, neck, and upper back black, the rump, shoulders, breast, and belly deep chestnut, wings and tail black, with white edges. The female is yellowish olive above, dull yellowish below, wings and tail brownish with white edges. Length about 7, extent about 10 inches, bill slender and very acute.

THE BALTIMORE ORIOLE

(*Icterus galbula*).

The centre of abundance of this beautiful songster is Ontario and Manitoba. It is found somewhat rarely in the maritime provinces and eastern Quebec, but from Montreal to Edmonton it is plentiful, apparently extending its range into northern Ontario.

Throughout southern Ontario few birds are more plentiful or readily seen and heard, the elm trees of lawns, parks, and roadsides being very frequently the sites of the sacklike nest. Hung from slender tough branches, twenty or more feet up, the young orioles are literally rocked "in the treetop" by every wind, and are quite safe from cats and boys whose attention might be drawn to the noisy youngsters. The usually five eggs are white, spotted or blotched, and always scrawled with tracings in black. This is a very useful bird to the farmer and gardener, destroying probably more caterpillars than any other bird except possibly the cuckoo. Beetles, bugs, and grasshoppers are added to its good re-

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cord, and these very far outweigh the brief attacks it makes on berries, peas, and grapes.

The head, neck, throat, upper back, and wings are black; the breast, belly, rump, and upper wing coverts reddish orange; a little white on the edges of the wings; the outer tail feathers orange, middle one partly black. Female, olive black and dull orange. Length about $7\frac{1}{2}$ inches.

E. T. Seton has found that a nest will support a weight of 30 pounds.

BULLOCK'S ORIOLE

(*Icterus bullocki*).

Alberta and British Columbia are the only Canadian provinces in which this bird is at home, but specimens are known to have wandered much farther east. Its habits, manners, nest, and eggs are very like those of the Baltimore Oriole. Like the others it lives among trees wherever possible. Its colors are orange and black, like the last, but the orange extends over the neck, forehead, and sides of the head. The middle and greater wing coverts are white. The female closely resembles that of the Baltimore. Size somewhat greater than the last, the length averaging 8 inches.

RUSTY GRACKLE

(*Scolecophagus carolinus*).

As a migrant in spring and fall this bird is common from Nova Scotia to Edmonton in Alberta. Its breeding ground is, however, in the north—Labrador, Magdalen Islands, Fort Churchill, Mackenzie River at Fort Good Hope, and Alberta near Edmonton, are localities where its nests have been found. It builds in bushes or low trees, often over water, and lays four to six grayish green eggs, marked with blotches of reddish brown. In autumn it associates with our Red-winged Blackbirds and Cowbirds, and





BRONZED GRACKLE.
! Life-size.

PERCHING BIRDS

feeds on wild rice and the gleanings from grain fields. It is the most northern of our blackbirds, and doubtless collects insects for its nestlings, but lives as a seed and worm eater while south of its nesting range. The adult male in early summer is lustrous black, with green metallic reflections, the head similar to the other upper parts. Iris creamy to lemon yellow. In fall the adult male is glossy black, with brown edges on the under feathers. The young male, like the female, is rusty brown above and grayish brown below, with a light line over the eye. Length 9 inches, extent $14\frac{1}{2}$.

BRONZE GRACKLE, CROW BLACKBIRD

(*Quiscalus quiscula vaneus*).

Though rare in Newfoundland and Nova Scotia, the Bronzed Grackle is abundant in New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, and Alberta, and extends its breeding grounds north to Hudson Bay and Lesser Slave Lake. This is so prompt an arrival in March, after a few days of warm sunshine, that one must think them waiting anxiously for signs of the retreat of winter. They take possession of city parks and lawns, as well as country districts, building in vines and cornices about railway stations, churches, and all other kinds of large buildings, and here their creaking notes are heard all day long. The nests are of mud and vines, lined with horsehair or other fibrous waste. Eggs bluish or greenish, with purplish tracery and blotches, and generally five in number. The Bronzed Grackle will apparently eat anything that contains nourishment, and certainly attacks the eggs and nestlings of smaller birds.

Adult male in spring with shining bronzy black body, head, neck, throat and the upper breast steel blue, while the wings and tail are purplish black without iridescent bars. The iris is sulphur yellow. The female is duller, with brownish on the back and belly. Length about 13 inches, extent about 18.

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BREWER'S BLACKBIRD

(*Scolecophagus cyanocephalus*).

From the Red River westward to the Rockies this is the common and characteristic blackbird, and in the open districts of British Columbia it is quite frequently found. Its northward distribution seems to reach not further than the Saskatchewan River. It nests on the ground, and on logs or in low bushes, usually near a pond. The eggs number five or six, and are of the common blackbird type—grayish green with brown spotting and blotching, sometimes resulting in a nearly brown egg.

In food and habits it closely resembles the Rusty Grackle.

The adult male is glossy greenish black, with blue and purple reflections on the head. Iris creamy to lemon yellow. Length averaging 10 inches, extent about 16.

FINCHES, GROSBEAKS AND SPARROWS

(*Fringillidae*).

The large number of species and the intergrading forms in this family, together with the regional, seasonal, and sexual differences in plumage, make it a very difficult group to analyze. The following key is largely an adaption of Ridgeway's Key, with omissions of southern forms, and additional characters where it seemed possible to make the distinctions more definite. The bill, feet, and other parts not readily changeable are used as far as possible in describing the genera.

KEY TO FAMILY.

1. The mandibles both strongly curved, and crossed at the tip.
Crossbills, *Loxia*, page 194
2. Mandibles not crossed at tip:—
 - 2a. Head with a high crest; bill reddish, very large, with strongly curved upper ridge; plumage red, or red and gray.
Cardinal Grosbeak, *Cardinalis*, page 190

KEY TO FAMILY—FRINGILLIDAE

- 2b. Head not crested; bill greenish yellow, very large, as deep as long; plumage yellow, white, and black.
Evening Grosbeak, *Coccothraustes*, page 191
- 2c. Head not crested; bill less in length than length of hind toe and claw:—
3. Length over 3 inches; nasal tufts covering basal third of upper mandible Pine Grosbeak, *Pinicola*, page 192
- 3a. Length under 8 inches; nasal tufts absent, or covering much less than one-third of mandible:—
4. Gonys with curved profile; plumage streaked above, but not below; no red, no yellow or blue, but black throat and white wing bar Domestic Sparrow, *Passer*, page 193
- 4a. Gonys with almost straight profile:—
5. Primaries longer than secondaries by the length of the tarsus:—
6. Wing five or more times as long as the tarsus:—
7. Wing more than $3\frac{1}{2}$ inches long.
- a. Length of bird 8 inches; plumage chocolate brown with red, especially on the tail coverts, tail feathers without white, head black or ashy Rosy Finches, *Leucosticte*, page 196
- b. Length of bird under 8 inches; plumage mostly white; no red, hind claw nearly as long as the bill.
Snowflake, *Passerina*, page 200
- 7a. Wing less than $3\frac{1}{2}$ inches long; tail forked:—
- 7a1. Nasal tufts nearly one-third the length of the bill; tail feathers without white or yellow; crown red in adults.
Redpoll, *Acanthis*, page 197
- 7a2. Nasal tufts short or wanting; tail feathers with white or yellow, adults with much yellow but no red.
American Goldfinch, *Astragalinus*, page 198
and Pine Siskin, *Spinus*, page 199
- 6a. Wing not five times as long as tarsus:—
- 6a1. First (developed) primary not shorter than the fourth:—

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6b. Depth of bill at base about equal to exposed culmen; nostrils with small tufts; plumage streaked above and below; male reddish, no yellow, no white on tail; female olive, brown, and white. . . . Purple Finch, *Carpodacus*, page 192

6b1. Depth of bill at base less than length of culmen; plumage without red, but with white on tail:—

6c. Middle tail feathers shorter than outer, and narrow and pointed at the tips; hind claw long and nearly straight:—

6c1. Gonys shorter than hind toe without claw; male with chestnut collar, and oblique white spots on tail.

Lapland Longspur, *Calcarius*, page 200

c2. Gonys longer than hind toe without claw, bill swollen; no collar; transverse white spots on tail.

Black-breasted Longspur, *Rhynchophanes*, page 202

d. Tail rounded, middle feathers not narrow and pointed, but white tipped; hind claw not long nor straight.

Lark Sparrow, *Chondestes*, page 203

6a2. First (developed) primary shorter than the fourth; bill very stout; male with rose or orange breast; females with yellow under the wings.

Rose-breasted Grosbeaks, *Habia*, page 190

5a. Primaries but little longer than secondaries:—

5a1. Tail feathers narrow, middle ones sharp-pointed:—

5b. Middle toe with claw shorter than tarsus; outer tail feathers white, bend of wing chestnut.

Vesper Sparrow, *Pooecetes*, page 203

5b1. Middle toe with claw not shorter than tarsus; outer tail feathers not white; bend of wing yellow:—

5c. Breast, edge of wing, and line over eye, yellow; throat with black patch or stripes Dickcissel, *Spiza*, page 225

5d. Breast without yellow; throat without black, bill somewhat slender.

Beach and Grasshopper Sparrows, *Ammodramus*, page 205

KEY TO FAMILY—*FRINGILLIDAE*

- 5a2. Tail feathers not narrow nor sharp-pointed:—
- b. Hind claw decidedly longer than hind toe:—
 - b1. Bill tapering rapidly to an acute tip; nostrils concealed by feathers; plumage streaked above and below.
Fox Sparrows, *Passerella*, page 219
 - b2. Bill tapering gradually to an obtuse tip, nostrils exposed; plumage mostly black, chestnut, and white, but not streaked Towhees, *Pipilo*, page 221
 - c. Hind claw scarcely longer than hind toe:—
 - c1. Inner secondaries nearly as long as any of the primaries; large white wing patch.
Lark Bunting, *Calamospiza*, page 226
 - c2. Inner secondaries not nearly as long as the longest primaries:—
 - d. Outer tail feathers white, plumage slate or ashy, not streaked Snow Sparrows, *Junco*, page 215
 - e. Outer tail feathers not white:—
 - e1. Lower mandible much deeper than the upper; male blue or greenish . . . Indigo Bird, *Cyanospiza*, page 224
 - e2. Lower mandible not deeper than upper; plumage not blue, but streaked above:—
 - f. Tail forked somewhat; plumage without yellow and not streaked below . . . Chipping Sparrows, *Spizella*, page 211
 - f1. Tail rounded or slightly doubly rounded:—
 - g. Primaries longer than secondaries by more than length of bill; head chestnut in young, but striped with white in adults; plumage not streaked below.
Crowned Sparrows, *Zonotrichia*, page 209
 - h. Primaries longer than secondaries by not more than length of bill; crown chestnut, or the plumage streaked below; no yellow anywhere . . . Song Sparrows, *Melospiza*, page 216

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GROSBEAKS

This is a name applied to a number of birds which have larger and more heavily built beaks than those of our ordinary seed eating birds. They belong to the *Fringillidae* family, along with the Sparrows, Finches, Buntings, and Crossbills, all of which have strong beaks with the gape turning down at the inner angle. In length they vary from seven and a half to nine inches.

CARDINAL GROSBEAK

(*Cardinalis cardinalis*).

The Cardinal Grosbeak, or Cardinal Bird, or Red Bird, is the most brilliantly colored of these found in Canada. It is common in Kentucky and Ohio, and occasionally crosses to Ontario, where it may nest, but where at present it must be considered only a casual visitor. The beautiful cardinal red plumage of the male, his proud attitude with erect head and crest, and especially his loud, clear, rolling notes, make him a most attractive and desirable neighbor. The female is grayish, with yellowish shades and lighter below. Length $8\frac{1}{2}$ inches, extent 11 to 12.

ROSE-BREADED GROSBEAK

(*Habia ludovicianus*).

The Rose-breasted Grosbeak, with his black head, back, tail, and wings, clear white rump, wing bars, and under parts, and exquisite rose red breast and under wing coverts—is also a bird to catch the eye. His song is remarkably clear, loud and sweet. The female and young are less decidedly black and white, while saffron yellow takes the place of carmine. Although usually feeding on seeds, berries, and small nuts, this species is known to eat freely of the Colorado Beetle or Potato Bug, and thus has another claim upon our gratitude. It inhabits the United States and southern









EVENING GROSBEEK.
1/1 life-size

PERCHING BIRDS

Canada from New Brunswick to the Rocky Mountains, reaching Ontario early in May, and migrating southward about September first. Its nests are found along the wooded banks of streams, in bushes and low trees, and the eggs are dull greenish with dark brown markings. Length about 8 inches, extent about 12½ inches.

THE BLACK-HEADED GROSBEAK

(*Habia melanocephala*).

The Black-headed Grosbeak is found from Saskatchewan to Vancouver Island, breeding throughout this range in woodlands. It migrates to Mexico in winter. Its head, back, wings, and tail are black, but the back often has brownish shades, and the wings and tail have clear white spots. The neck, the rump, and the under parts are orange brown, changing to yellow on the belly and under the wings. Size about that of the Rose-breasted, of which this is the western representative. It builds a poorly constructed nest in trees, and lays three or four greenish blue eggs, spotted and blotched with brown.

THE EVENING GROSBEAK

(*Coccothraustes vespertina*).

This is a bird of unusual coloration for our northern regions. Its crown, wings, and tail are black; the inner wing coverts white; the forehead, a line over the eye, the rump, and under parts behind clear yellow; while the back and breast are a dark greenish yellow. The beak is very large, being about three-quarters of an inch both in length and in depth, and clear greenish in color. Length 7½ to 9 inches.

Its food is the seeds of maples and coniferous trees, and its home the evergreen forests of north-western Canada and the United States. It is frequently met with in maple groves in

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Saskatchewan. Occasionally a few small flocks are found in winter in Ontario and Quebec, but its usual line of migration is the valley of the Red River. A western form occurs in British Columbia. The nest of the Evening Grosbeak has been found only in California—a slight structure in a low tree, containing three brownish green eggs.

THE PINE GROSBEAK

(*Pinicola enucleator*).

The Pine Grosbeak is peculiarly Canadian, nesting so far north that little is known of its breeding habits. In the winter it retreats from Labrador and Mackenzie River to Nova Scotia and all across southern Canada to the Rockies. At that season small flocks of them are irregularly found feeding on mountain ash berries, beechnuts, and buds of trees. Length 8 to 9 inches. Its song is sweet but not loud or brilliant. The adult male is a beautiful bird, the outer feathers being suffused with carmine, paler below and streaked with dusky on the back. The females and young males are slate gray tinged with brownish yellow. Rocky Mountain, Alaska, and Kadiak forms are distinguished from this type.

THE PURPLE FINCH

(*Carpodacus purpureus*).

The Purple Finch is closely related to the grosbeaks, and to the bull-finches of Europe. Its length is from five to six and a quarter inches, and the beak is less than half an inch long. In color the adult male is rose red, lighter on the lower parts, and darker on the back toward the tail. The females and young are greenish brown with dark streaks, brightly olivaceous on the rump. Their song is very sprightly and pleasing, being heard in Ontario mostly in May. They are then preparing to pass to the north, where the majority of them nest, although a few breed in the

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southern parts of Canada. Their nests are built in trees and bushes, and their eggs are pale greenish marked with brownish. It associates with the Pine Grosbeak, with which it is said to hybridize. The range of the Purple Finch extends from the northern United States to Labrador on Lake Athabasca. During the spring migration it destroys buds of fruit trees. The California Purple Finch, and Cassins' Purple Finch, both resembling the above, but less brilliant in color, are found in British Columbia.

THE HOUSE SPARROW

(*Passer domesticus*).

This European bird was brought into the United States first about 1850, and other importations during succeeding years were so successful that it now is familiar from the Atlantic to the Pacific. In Canada it has reached nearly to the Rockies, and will soon be in every town and village. Like other assisted immigrants it has prospered amazingly, and for some years there were grave fears of its proving an uncontrollable pest. I believe, however, that in the eastern provinces there is now little danger of its becoming more than a persistent, troublesome, non-musical, house-haunting bird. The native sparrows, bluebirds, and swallows are possibly less plentiful near our homes, and the nesting of the Purple Martin is undoubtedly less common in southern Ontario, but the House Sparrow is no longer dreaded as an invading army. An equilibrium seems to be gradually approaching, and this adaptable old-world form seems likely to find its place—no doubt a large one—among the birds living under the conditions of our civilization. As well said by Coues, "It nests anywhere about buildings, uses any rubbish as materials, and constructs a bulky untidy object, in which it lays from five to nine dull whitish eggs marked with olive brown sparingly or plentifully." During the nesting season it gathers insects of the grasshopper and cricket

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race chiefly, to the extent of more than one-half the food of the nestlings while the latter are young. Soon, however, the partially digested grain gathered from the droppings of horses are the chief food of the birds, and the adults are proved to live almost entirely on grain and weed seeds. The upper parts of the male are ash gray, streaked on the back and shoulders with bay and black. A reddish brown extends from behind the eye to the side of the neck. A white bar bordered with black marks the brown wings. Tail plain dull brown. Chin, throat, and upper breast jet black, breast and belly grayish. Bill stout, blue black. Length about six inches. Female slightly smaller, with no black throat patch, no gray on the head, but streaked brown above, and brownish white below.

AMERICAN CROSSBILL

(*Loxia curvirostra*).

This, the Red Crossbill, is very erratic in its home-making habits, having apparently little attachment to any particular region. It is found all across Canada, from Nova Scotia, Newfoundland, and Labrador to Vancouver Island and Alaska, but it can scarcely be said to make its home regularly in any known region. It has been found nesting in southern Nova Scotia, and in Labrador, but it seems satisfied to make its nest and rear its young wherever the breeding season finds it, so long as coniferous trees are plentiful. McIlwraith says that it nests from Georgia to Alaska. In Ontario it is usually only a winter visitor, but its wanderings at this season take it along the mountain ranges far to the south. Plentiful during one season, it may not be seen again in that locality for several years, then may return in flocks. They lay their eggs—in southern Canada—while the snow is still on the ground. The tips of the mandibles are crossed, and this peculiar shape of the bill,—which seems a deformity,—is apparently of service to

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them in cutting away the scales of the pine cones and extracting from them the seeds which form their chief food. In the spring, the adult male is brick red in color, with blackish wings, and tail without white markings. Lower belly grayish. Females and young are greenish olive, yellower on the rump and head, but much mixed with gray and brownish. Eggs three or four in number—pale greenish with maroon markings. Length about 6 inches.

WHITE-WINGED CROSSBILLS

(*Loxia leucoptera*).

These resemble the Red Crossbills in habits, but are known to breed in large numbers in Alaska. Their range seems to be the same as the last named, and they have the same erratic manner of coming in flocks to a locality, and then remaining away from that district for years. About Kingston they have been seen and captured quite frequently, but it is not possible to be sure of finding them in any particular year. In sugar-making time—usually the middle of March—they are to be noted, if present, on spruces and hemlocks, singing a gentle little song resembling that of the American goldfinch. They flit busily from tree to tree investigating the cones and scattering the scales on the snow. Their nests are made in Alaska in low spruce trees; "of spruce twigs externally, and of a black lichen internally, closely felted and with a scanty mixture of feathers and bits of grass." The eggs are described as "bluish white, spotted at the larger ends with brown of various shades, black and lilac gray." Their flight is undulating, like that of the American Goldfinch. The characteristic feature is the beak, of which the tips are crossed. This condition is not complete till the birds are mature. The male is dull pink or rose red, with white bars across the wings, and whitish on the belly. The female is olive green, yellow on the

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rump, gray on the belly, and blackish on the head, with white wing bars. Young, like the female, or partly red. Length about 5 inches.

THE ROSY FINCHES

(*Leucosticte*).

These are sparrow-like birds, with small conical acute bills; sexes somewhat dissimilar; coloration usually brownish, with more or less rose or carmine; terrestrial and highly gregarious; laying pure white eggs in nests on the ground.

ALEUTIAN LEUCOSTICTE—BRANDT'S ROSY FINCH

(*Leucosticte griseinucha*).

The Canadian range of Brandt's Rosy Finch is the Coast Range of British Columbia. This finch is liver brown from the neck and back of the head, both above and below as far back as the rump. The rump and under tail coverts and the primaries are carmine red. The forehead is black, while the sides and top of the head are grayish ash. Sexes nearly alike. Length about 7 inches.

GRAY-CROWNED LEUCOSTICTE—SWANSON'S ROSY FINCH

(*Leucosticte tephrocotes*).

A native of the higher parts of the Rocky Mountains, this finch occasionally wanders as far east as Manitoba. They breed on mountains above the timber line as far west as Lake Okanagan. The plumage is as given above for the Aleutian, but that the ashy band across the head is narrow, not descending below the eye. Length about $6\frac{3}{4}$ inches. A variety with wider ashy band is known as the Hepburn's Rosy Finch. It is known in Alaska and Vancouver Island and the mainland.

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REDPOLL

(*Acanthis linaria*).

This is another northern bird, leaving its customary haunts only when the snow of winter covers its food. It evidently has not learned to fear mankind, as it visits not only the meadows and pastures, where it feeds on the grass and weed seeds above the snow, but also comes into gardens and lawns in the cities, eating freely of the remains of vegetation remaining unburied. The temperature of our latitude seems kindly to it, as to the Snowflake, and our snowstorms are often enlivened by the passage of flocks of these little gray-coated waifs. They remain till early spring. All the country from Newfoundland and Labrador to Vancouver Island is likely to be visited at irregular intervals. They breed in Labrador, the Magdalen Islands, and about Hudson Bay, as well as Alaska. Their nests are built near the ground, of roots, grass stems, and lichens, and lined with feathers and plant down. Eggs pale blue with brown speckles. The male has the throat, lores, and forehead soft black, crown bright red, the entire foreparts below are sometimes tinted with red over whitish with brown streaks. Upper parts brown, streaked with pale yellow. The rump lighter and likely to have rosy tints. The female with yellowish instead of red below and on the rump. Length about 5½, extent about 9 inches.

A variety of this called Holboell's Redpoll is found in Labrador and northern Quebec. It reaches 6 inches in length, and has a longer bill than the common form.

HOARY REDPOLL

(*Acanthis hornemanni axilipes*).

This Redpoll occurs from southern Ontario to Labrador, Manitoba, and Alaska, and so may be considered to visit all of Canada east of the Rockies. It is only a winter visitor through-

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out most of the region, nesting along the Arctic Ocean, and in Alaska. These are sociable birds even during the nesting season, building their nurseries in numbers in the same thicket of willows and alders. They lay four or five eggs, pale blue, with scrawls and irregular markings of purplish and brown. The plumage of this is somewhat like that of *linaria*, but paler, whitish rather than pale yellow forming the edgings of the feathers. The rump is snow white and rosy, unstreaked, in the adults. Bill and feet very small. Length about $5\frac{1}{2}$, extent 9 inches.

GREATER REDPOLL

(*Acanthia linaria rostrata*).

This is a form of the common Redpoll, apparently differing only in size, which occurs in flocks of *linaria* visiting Ontario and Manitoba. It nests in Labrador and Greenland.

THE AMERICAN GOLDFINCH

(*Astragalinus tristis*).

From the Atlantic to the eastern foothills of the Rockies, and extending its range to the northern boundaries of the provinces, may be said to be the Canadian territory known to the Goldfinch. In southern parts—Prince Edward Island, Nova Scotia, and Ontario—some of them often remain over winter, making the thick arborvitae and spruce swamps their homes. They are familiar and welcome birds about houses, lawns, and pastures, cheering us with their sweet clear notes and bright plumage, and destroying for us the seeds of some of our worst plant enemies, especially attacking the thistle. Their nests are built sometimes in bushes or low trees, broad-leaved or evergreen, in other cases twenty or more feet from the ground. The nest is a well made structure, and the eggs are three or four in number, pale bluish white, usually unmarked.





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The male has a black crown patch and black wings with white edges, and white or yellowish bars. The back and under parts are bright sulphur yellow. The female is grayish or greenish brown above without the black cap. The under parts are pale yellow shading to brown. The male wears this plumage during the winter. Length about 5 inches, extent 9. A paler variety is found from Manitoba to British Columbia.

THE PINE SISKIN

(*Spinus pinus*).

This inconspicuous little yellowish brown bird is seldom noticed except by bird-lovers, and so it may be more frequent in any particular part of the country than our records show. So far as my observation goes, it is an irregular winter visitor along Lake Ontario. I have seen them in flocks among the cedars early in April, but never after the middle of that month. It is reported as common and resident in Nova Scotia; a migrant in Newfoundland; rather common in New Brunswick and eastern Quebec; a winter visitor in Ontario at many points, and resident at a few. In Manitoba, Saskatchewan, Alberta, and British Columbia they are seen in such numbers and at such times as to imply their nesting, but except in British Columbia we have no breeding records from the west. Their nests are described as made of dark "moss," probably a lichen, and placed on the upper side of a branch of spruce or balsam near the outer end. Eggs four, pale greenish speckled with brown. Bill very acute. Plumage yellowish brown, streaked all over with black, but yellow is more prominent in the spring. Bases of quills and tail feathers sulphur yellow. Length $4\frac{3}{4}$ to 5 inches.

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THE SNOWBIRD, SNOWFLAKE, SNOW BUNTING

(*Passerina nivalis*).

This is the true Snowbird of all parts of Canada, seldom appearing in autumn until accompanied by a snowstorm, through which it frolics in evident enjoyment. While with us the snowbirds are always in flocks, sometimes of great numbers, but usually of about twenty to thirty. They came to us only because their food of weed seeds has been buried by northern snow, while our comparatively mild latitude furnishes them with plenty of projecting spikes, enabling them to be always fat and jolly. As soon as the snow wears thin, they carefully precede its retreating margin northward, as though aware of being too conspicuous in a dark landscape. On the islands of the Arctic Sea, and of Hudson Strait, and in Greenland, they breed in great numbers. The nest of moss, grass and plenty of feathers is usually built on the ground close against a hummock or boulder. The eggs are pale greenish or bluish, variously marked with brown.

The spring plumage of the male is very beautiful. The head and body are pure white, with the back, wings, and middle of the tail variegated with black. The winter plumage has the white clouded with brown to a greater or less extent. Female similar. Length $6\frac{1}{2}$ to 7 inches, extent 12 to 13.

THE LAPLAND LONGSPUR

(*Calcarius lapponicus*).

Like its neighbor and associate, the Snowbird, this species seldom does us the honor of wearing for us its finest suit. That is reserved for the courtship, which is usually postponed until they have returned from our too warm regions to the bleak western shores of Hudson Bay, Hudson Strait, Greenland, and the Barren Grounds bordering the Arctic Ocean. They come southward only under stress of hunger, caused by the deep snows of the northern



SNOWFLAKE.
(*Plectrophenax nivalis*.)
Life-size.

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PERCHING BIRDS

winter. As soon as the breast of mother earth is again bared to them they haster northward. Their range may be considered circumpolar, as they are known in Europe, as here, during their winter migration. From Newfoundland to the Rocky Mountains they are fairly common in winter, and are reported as very plentiful on the open plains north of the forest regions during summer. Nest of grass on the ground. Eggs greenish, shaded over with brownish. The male in breeding plumage has the head and throat black, bordered by a line of white or buff beginning above and passing down behind the eye, thence down the side of the neck and in front of the wing and merging with the white of the sides and belly. The sides and breast are streaked with black. A broad chestnut collar separates the black head from the black and yellowish streaked back. In winter the male is similar to the female in summer; little decided black, but brownish, and with the chestnut collar dull. The hind toe nail is as long at least as the toe, and together they are longer than the middle toe and claw. Length about $6\frac{1}{4}$ inches, extent $11\frac{1}{2}$. The Alaskan variety is known to visit Vancouver Island.

SMITH'S LONGSPUR

(*Calcarius pictus*).

Occasionally this bird is plentiful as a migrant in Manitoba and is recorded from Saskatchewan, but is apparently not so common as any of the other Longspurs.

The collar and under parts are bright fawn color, the crown and sides of the head black, bounded below by a white line. A white spot on the top of the head and white line over the eye and ear break the black, and relate it to the strongly marked back and wings, which show white, dark yellow, and black. Outer tail feathers mostly white, others unmarked. Legs pale or flesh colored. Length $6\frac{1}{2}$, extent $11\frac{1}{2}$ inches.

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CHESTNUT-COLLARED LONGSPUR

(*Calcarius ornatus*).

In this species we have a resident bird of the prairies, from Manitoba to the mountains, and as far north as Slave Lake. They rear at least two broods between the middle of June and the end of August, and go south as far as Mexico in winter. The nest is of grass, in a depression under a tuft. Eggs four to six, grayish white, clouded with bluish or purplish. They sing while soaring. The belly is bright glossy black, the collar bright chestnut. The crown is black, with a white spot on the nape, a white line over the eye, and another bordering on the collar. Wings white in under, brown above. Tail with outer feathers white. Length 5½ to 6 inches.

BLACK-BREASTED LONGSPUR

(*Rhynchophanes mccownii*).

This is another prairie species, confined in its Canadian range to southern Saskatchewan and Alberta, reaching the foothills. It may be extending its nesting area, but at present it seems to be somewhat more westerly in distribution than the Chestnut-collared Longspur, with which it associates in the middle region, but it seldom reaches the valley of the Red River in Manitoba. Except in breeding plumage, the two species are much alike in appearance, but this is the larger, and is also distinguished by the rectangular white area on the tail, and the lack of chestnut on the nape. "Upper parts slate gray, streaked with dark gray and light brown, no chestnut collar, but a patch on the wings. Crown jet black, bounded by a white superciliary line. Throat white, bounded by black maxillary stripes. Breast jet black in a broad crescent, shading behind into slate color, then gradually into pure white. Lining of wings white. All tail feathers white except the middle pair and the bases and tips of the intermediate ones, the

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white area ending squarely across both webs. The female and the male in winter have little chestnut on the wings; the crown and the breast crescent are slate gray, and there are no maxillary stripes." Length about 6 inches, extent 11 or more.

GRASS SPARROWS

These are inconspicuous little brownish gray birds, living in open fields or prairies, nesting on the ground, feeding on weed and grass seeds, and in many instances are sweet singers.

VESPER SPARROW, GRASS BIRD, GRAY BIRD

(*Poocetes gramineus*).

This familiar little songster is found in southern Canada in summer, from Nova Scotia to British Columbia, singing to us from the top of a fence post or of a low tree, and showing its two white outer tail feathers as it flits away. With the Song Sparrow, and the Chipping Sparrow, this forms a trio of the best known and best loved of our native sparrows. Its dainty warble at sunset, its grass loving habits, and its modest gray plumage, give it the names by which it is known to all country dwellers. It builds a strongly made nest of grass stalks and rootlets, which it usually lines with horsehairs. This is well hidden in a hollow, screened by grass or weeds. The eggs are grayish-white, clouded or spotted with reddish brown.

Upper parts brownish gray, streaked with black and a little buff. The bend of the wing chestnut; tail grayish brown, the outer feathers mostly white and the next with some white. Under parts buff to whitish, streaked with black. Length about 6 inches, extent a little more than 10. The western Vesper Sparrow is found from the Red River to British Columbia. Its nest and habits are as above, but it is paler and grayer with narrower streaks, the bill more slender and the tail averages longer.

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IPSWICH SPARROW

(*Passerculus princeps*).

This is an interesting bird, breeding—so far as known—only on Sable Island, off the coast of Nova Scotia. Its distribution is limited to the Atlantic coast, from Nova Scotia to Georgia. It resembles a long pale Vesper Sparrow. The upper parts are grayish with sandy brown stripes, a little chestnut on the wings, a white superciliary line, and a yellowish white maxillary stripe. Below white, changing to ashy on the flanks, and with narrow streaks of sandy brown on the breast and sides. Length 6½ inches, extent 11 inches.

SANDWICH SPARROW

(*Passerculus sandwichensis*).

This is a bird of the Aleutian Islands, but is also found on the British Columbia coast and Vancouver Island. It is similar to the Savanna Sparrow, but its bill is thicker and the upper plumage grayer.

SAVANNA SPARROW

(*Passerculus sandwichensis savanna*).

As the Sandwich Sparrow is a western form, this belongs to the east, nesting from the northern and New England States to Hudson Straits and Bay. It is not found west of Lake Huron. It breeds throughout Newfoundland, New Brunswick, Quebec, and Ontario, nesting on the ground, and having the habits of the Vesper Sparrow. Eggs bluish white, marked or washed by reddish brown. The plumage above is everywhere thickly streaked. The general tone is brownish, the centres of the feathers being black, which shades at the edge to gray. Wings blackish brown, without chestnut, but with the edge of the wing yellowish. A yellowish line over the eye. Tail feathers narrow, pointed, dusky, and with

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whitish edges on the outer webs. Under surface whitish, streaked with black spots edged with chestnut. The spots run in chains on the sides, and are wedge shaped on the breast. Length about $5\frac{1}{2}$, extent $8\frac{1}{2}$ to $9\frac{1}{2}$ inches.

A paler form, found from Manitoba to the foothills, is called the Western Savanna Sparrow.

BAIRD'S SPARROW

(*Passerculus bairdii*).

This is another grass sparrow of the prairies, especially favoring the flat alkaline plains, with discontinuous wiry grass. From the Pembina mountains to Calgary, and from the Saskatchewan to Nebraska, and to New Mexico in winter, is the range of this inconspicuous little bird. The plumage, colors and marks of these gray birds are so much alike as to make their distinction by descriptive terms almost an impossibility.

Baird's Sparrow resembles the common Savanna Sparrow. The top of the head is streaked with black and brownish yellow on the sides, with pale yellow as a median line and on the nape. The back is gray streaked with brownish black, and with chestnut edgings on the wings. Lower parts pale yellowish white, with sharp dusky streaks on the breast, and forming vague parallel lines from the angle of the bill downward. In autumn the plumage is darker with more chestnut; the spots on the neck are larger and closer together; tail dusky with slight edgings of white. Upper mandible mostly dark, lower one pale. Length about $5\frac{1}{2}$, extent rather over 9 inches.

THE BEACH AND GRASSHOPPER SPARROWS

THE GRASSHOPPER SPARROW

(*Ammodramus savannarum passerinus*).

These are very shy little birds, haunting the weedy edges of the meadows and marshes, rising only when closely approached,

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and quickly pitching into the grass again, where they hide with great skill. Their feet are adapted for clinging to reeds and grass stems. "It has a peculiar chirping note like the stridulation of a grasshopper, which made me give the name Grasshopper Sparrow to the group" (Coues). In Canada this species is known to occur in the south-western counties of Ontario, and probably further east. It is resident in the southern States, and must be considered a wandering immigrant when it comes within our territory. The type is found in Jamaica, while on the mainland we have the two varieties. This one is sometimes called the Yellow-winged Sparrow, while the other variety, *perpallidus*, or Bleached Yellow-wing, is found on the plains of the south-western United States.

The upper parts are black, gray, and yellowish brown in short streaks and specks. The edge of the wing is yellow, and the wing coverts greenish yellow; a yellow loreal spot, and a light yellow line over the eye. Back of the neck and the rump chestnut and gray. Bill stout and brownish. Length about 5 inches, extent 8 to 8½ inches. The nest of grass is built on the ground, and is often arched over. The eggs are pure white with flecks of reddish brown or black. The western form is grayer in tone with less brown, and the yellow is paler. Size and habits the same. Another doubtful variety is reported from British Columbia.

HENSLOW'S SPARROW

(*Ammodramus henslowii*).

This is another little and very shy sparrow, which has been noticed so seldom in Ontario that we know of its residence in only a few places, and elsewhere we have no records.

It belongs to the eastern United States, wintering in the Gulf States and spreading northward barely into southern Ontario and probably Quebec, and as far westward as the edges of the prairies.

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The head and neck are olive gray, with a greenish yellow tinge; sides of the crown black, breaking into fine streaks on the back of the neck. The back is chestnut brown, with narrow, black, wedge-shaped, central streaks in the feathers. The bend of the wings pale yellow. The tail feathers are very narrow and sharply pointed, the outer ones much shorter than the middle. The whitish under surface is marked with pale yellow, and streaked with black on the breast and sides. Length 5, extent $7\frac{1}{2}$ inches.

LECONTE'S SPARROW

(*Ammodramus lecontei*).

Like most birds which live on the ground in marshy places, this little sparrow shows a great tendency to run and hide among the sedges rather than fly away. Its range is southern Manitoba, Saskatchewan, and Alberta and southward on the plains to Texas and Florida. Occasionally it wanders to New York and Ontario. It breeds in marshy places in the northern part of this range. It has no yellow on the bend of the wing or before the eye. The bill is slender. A broad yellowish line over the eye, and a buff central line on the blackish crown. The nape and back feathers have black centres and chestnut to buff edges. Tail grayish brown, of narrow, sharply pointed feathers, the lateral feathers much the shorter. Underparts yellowish white with black streaks on the sides fading to white on the belly. Length 5, extent 7 inches.

NELSON'S SPARROW, OR NELSON'S SHARP-TAILED FINCH

(*Ammodramus nelsoni*).

This and the eastern variety are frequently known as Sharp-tailed Finches. Nelson's Finch has been found from Peace River Landing and Edmonton to Winnipeg, and a few more are recorded from near Toronto. It has the thin voice which is associated with

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the Grasshopper Sparrows. The nest is built in a tussock of marsh grass near water. The type form is the Sharp-tailed Finch of the salt marshes of the Atlantic and Gulf States.

The general color of the plumage is olive gray, sharply streaked on the back with black and white, the rump having no white. The crown is darker than the nape, with brownish black streaks. The sides of the head rich buff or orange brown, with olive gray auricular feathers, and no yellow loreal spot. Below white, the neck, breast, and sides tinged with yellowish brown, and sharply streaked with dusky. The tail is brown with wavy cross bars. The tail feathers are narrow and acute. Bill short and slender. Eggs three to five, grayish white, evenly marked with brown.

The Acadian Sharp-tailed Finch is found in Prince Edward Island, Nova Scotia, New Brunswick and southern Quebec, and differs but slightly from the above. It is described as paler, grayer, with less conspicuous streaks, a longer bill, and slightly greater size. Its habits and song are very modest, and the bird itself is noticed only by those looking for it.

THE LARK SPARROW

(*Chondestes grammacus*).

While as yet reaching only south-western Ontario, being confined to the counties along the shores of Lake Erie and Ontario, it is to be hoped that this well marked songster may extend its range and become a familiar bird with us. It is known to nest at Toronto, and occasionally near London. Probably if other observers as earnest and knowing as J. H. Fleming and W. E. Saunders were available in other parts of Ontario, we should soon be able to add much to our knowledge of the birds. The range of the Lark Sparrow is from Texas to Ontario, in the Mississippi Valley, and occasionally as far east as Massachusetts. It sings sweetly, nests in the grass, using hair as a lining, and has many of the ways of our

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Vesper Sparrow. Its eggs are white with scrawling zigzag lines of purple or black. The crown is chestnut, with a median white stripe, and one over each eye. Forehead black, a black line through the eye, and another below the eye, enclosing the chestnut auriculars and a white border under the eye. A black maxillary stripe separates the white of the neck from that of the chin and breast. A small black spot in the middle of the breast. Upper parts grayish brown; under parts white shaded with brownish. Tail very long. Outer feathers with white tips. Length $6\frac{1}{2}$. Tail about 3 inches.

The Western Lark Sparrow is exactly like the above, except for the usual paleness or dinginess of the prairie forms when compared with those haunting the woodlands.

THE CROWNED SPARROWS

(*Zonotrichia*).

“These are our largest and handsomest sparrows, with rounded wings and tail, sexes similar, nest on or near the ground, peculiar to America” (Coues). Some of them are very pleasing singers.

HARRIS' OR BLACK-HOODED SPARROW

(*Zonotrichia querula*).

The Mississippi Valley, the Red River Valley, and northwest and westward, is the district in which this well marked sparrow is found. It has been found nesting at Crescent Lake, Saskatchewan, and at Great Slave Lake, and as far north as the forest extends. Its nest is described as “made of grass and fine bark, lined with dry grass,” and placed at the foot of a small tree. The eggs are polished, creamy white, spotted at the larger end chiefly with brown and lilac. The bird itself is the largest of our sparrows, reaching to $7\frac{1}{2}$ inches, with an extent of 11 inches. Crown, face,

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and throat jet black, sides of the head ash, with a dark line around the dark ashy auriculars. Under parts pale ashy in front, then pure white, and brownish behind. Sides with dusky streaks; back with long streaks of blackish and reddish brown. Female similar, but less black on head and throat. Both in autumn with crown grayish black, chin pure white edged with rusty black.

WHITE-CROWNED SPARROW

(*Zonotrichia leucophrys*).

This is a common summer resident in Labrador, Newfoundland, New Brunswick, and northern Quebec. It is a migrant from Montreal westward to the Rockies, but nests about Hudson Bay abundantly. In southern Ontario we expect to see and hear it about the middle of May. Its song in the very early morning is sweet but plaintive, well repaying the effort sometimes necessary to reach a park or grove at the chosen hour. The nest is usually on the ground, made of fibrous weeds, grass, and rootlets. Eggs variable, but usually pale greenish blue with brown cloudings and spots. It is distinguished by having no yellow or white in front of the eye, nor on the bend of the wing, and by having a broad white stripe on the centre of the crown, bounded in front and on the sides by a black stripe of about equal width. A white line starting above the eye passes backward. Back grayish brown, streaked with chestnut, wing coverts tipped with white. Below pale ash, lighter on chin and belly. Length $6\frac{3}{4}$, extent 10 inches.

Gambel's Sparrow resembles the above, of which it is a variety. The lores is gray or ashy, not black, and the streaking of the back is sooty black. The edge of the wing is yellow. Its range is from the eastern foothills of the Rockies to Vancouver Island and both northward and southward in the mountains.



WHITE CROWNED SPARROW.
(*Zonotrichia leucophrys*).
Life-size.

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GOLDEN-CROWNED SPARROW

(*Zonotrichia coronata*).

This bird belongs to the Pacific coast from Alaska to southern California, nesting in the north of its range—Queen Charlotte Islands and perhaps Vancouver Island, certainly in Alaska. Its head markings differ from those of the White-crowned in having the front of the crown patch dull yellow, and the back ashy gray. A yellow spot over the eye, and yellow on the edge of the wing. Below ashy, becoming white on the belly and brown on the flanks. Length a 7 inches or more, tail over 3.

THE WHITE-THROATED SPARROW

(*Zonotrichia albicollis*).

From Newfoundland to the Rockies and as far north as latitude 66°, this beautiful sparrow is found, and it breeds throughout the northern part of this Canadian range. It reaches the Great Lakes about the middle of April, and passes northward after a stay of a week or more, but some remain in dark cool swamps to nest. Its song—"peabody, peabody," is welcome to all lovers of birds and spring. The bend of the wing is yellow, and there is a yellowish line in front of the eye. The centre of the crown is a narrow white line, with a wider black line on each side. Throat with a squarish white patch. Back reddish brown with streaks of black and white, under parts grayish, shading to white on the belly. Length about 7, extent 9½ inches.

THE CHIPPING SPARROWS

(*Spizella*).

This group consists of small sparrows, between five and six inches long, having long forked tails, made of broad feathers. They have no yellowish anywhere, and when adult the under parts are

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without streaks. The sexes are alike, the young more streaked. The nests are usually built in low bushes.

THE TREE SPARROW, WINTER CHIPPY

(*Spizella monticola*).

With the habits of the Snowflakes and Redpolls, this little sparrow comes to southern Ontario in October, and some remain here all winter, while others go further south to Carolina and Kentucky. In March they go north again, nesting from Hudson Strait to Great Slave Lake, and in the shrubs of the Barren Grounds. From Nova Scotia to Alberta they are known as winter migrants, but nest only in the northern part of the range. Sometimes before they leave for their nesting grounds they give us specimens of their honeymoon music, and this is described as finer, sweeter, and not so loud as the song of the canary. Eggs pale green, evenly speckled with brown. Nest of grass and weeds, lined with feathers. Crown chestnut, no black on the forehead, the chestnut bordered by a grayish white line from the lores over the eye. A chestnut line from the eye across the auriculars. Back streaked with chestnut, black, and pale buff. Rump brownish gray. Wing coverts tipped with white. Breast grayish white with a small black spot in the centre, sometimes indistinct. Sides pale grayish brown; belly white. Length about six inches, extent about nine and a half.

From Indian Head, Saskatchewan, to the Pacific Coast and northward into Alaska, the variety known as the Western Coast Tree Sparrow is found. It migrates south in winter as far as Texas. It is paler above, with fewer and smaller streaks than the type.

CHIPPING SPARROW, HAIR BIRD

(*Spizella socialis*).

This sociable little sparrow is found from the Atlantic to and among the Rocky Mountains, and as far north as Moose Factory

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and Oxford House. Wherever possible it attaches itself to man, to the extent of living near buildings, residing in the ornamental shrubbery, and using the hairs of his horse to line its nest. It trustfully gathers crumbs at the door, and sings its plaintive and monotonous "Chippy" song close to the household activities. The House Sparrow has been a factor in making this and other native birds less common about our homes. The forehead is black, the crown chestnut, the bill black, and the feet pale. A white line over the eye and a black one below it through the eye and across the auriculars. The back is streaked with black, dull chestnut, and grayish brown. Under parts unmarked grayish. Two inconspicuous white wing bars. In the winter the crown is striped and not chestnut. Length 5 to 5½ inches, and extent 8 to 9.

THE WESTERN CHIPPING SPARROW

(*Spizella socialis arizonae*).

This variety is common in southern British Columbia, and between the mountains and the coast southward, and differs from the adult *socialis*, but resembles the immature birds of the species. Instead of black, the streaks on the back are grayish; the crown is streaked with gray and brown, but with some chestnut; bill brown above, pale below. Size same as the type.

CLAY-COLORED SPARROW

(*Spizella pallida*).

The scrubby parts of the prairie from the Red River to, and among, the foothills of the Rockies, and southward into Mexico are the regions in which this "Chippy" is to be found. It nests as far north as it reaches, that is Great Slave Lake. It builds in a low bush or at the foot of a shrub, often in the wild rose bushes. Like the common Chippy it uses horse hair as a nest lining wherever possible, but sometimes lacks it. The four or five eggs are

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light dull green, sparingly and unequally speckled with different shades of brown. The crown and back are yellowish gray, streaked with black. The nape is ashy and less streaked, while the rump is a grayish brown. A pale median stripe on the crown; a white line over the eye, and a white breast; and the belly washed with clay color. Wings like the back, with white tipped coverts. Length $5\frac{1}{4}$, extent $7\frac{1}{2}$ inches.

BREWER'S SPARROW

(*Spizella breweri*).

This is like the above, but paler and duller, with indistinct markings, continuous from head to tail. It is found in British Columbia and southward, especially in Arizona and New Mexico.

FIELD SPARROW

(*Spizella pusilla*).

From Nova Scotia to Lake Huron—but not certainly west of Ontario—is the Field Sparrow known. It is recorded from near Kingston, Toronto, Ottawa, and London, and may be resident elsewhere, if qualified observers were present to investigate the matter. It is of the size of the common Chipping Sparrow, but its plumage resembles rather the Tree Sparrow. Its chief distinction is its bill, which is pale reddish. The top of the head is reddish brown, nape slightly gray, back like the crown, but finely streaked with black and ashy, wing coverts tipped with white, forming bars. The lower surface is white unmarked, but tinged with pale brown on the breast and sides. A gray line over the eye, but no black nor white about the head. Feet very pale. Length $5\frac{1}{2}$, extent 8 inches.

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THE SNOW SPARROWS, JUNCOES

These are beautiful little sparrows without spots or streaks, but with definite areas of solid colors. The bill is white or yellow with a black tip, and the lateral tail feathers are white.

SLATE-COLORED JUNCO

(*Junco hyemalis*).

This is another of the sparrows found from Cape Breton to British Columbia, but not reaching the Pacific Coast. Its breeding range includes Nova Scotia, New Brunswick, Newfoundland and southern Labrador, northern Quebec, and Ontario, the Hudson Bay region as far north as Fort Churchill, and the prairie provinces and North-west Territories so far north as the limit of trees. It is also known in Alaska. As an early spring and late autumn migrant, it is common in southern Ontario and Quebec, where some stay all winter. In fact it is often called the Snow-bird here, being associated with the first fall of snow of the winter. The Juncoes are sociable and fearless of man, coming close to our buildings in country or city to gather crumbs or waste. They nest usually on the ground, and preferably with some large object as a shelter—a stump or log or broken treetop. Grass roots and stems with a lining of hair are the important materials of the nest. The eggs—three to five—are white or very pale bluish, evenly speckled or spotted with reddish brown. The bill is flesh color. The upper parts, with the throat and breast, are grayish slate color, with a brownish cast. Belly white; tail blackish, the two outer feathers white, and part of the third also. Length $6\frac{1}{4}$, extent $9\frac{3}{4}$ inches.

OREGON JUNCO

(*Junco oreganus*).

This is a Pacific coast form, especially common west of the coast range, and on Vancouver Island. "The head, neck all

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around, and the fore breast are sooty black, ending sharply against white on the breast, with a rounded outline; middle of the back dull reddish brown; feathers of the wings much edged with the same; below abruptly white, tinted on the sides with pinkish brown. Bill white, black tipped" (Coues).

SHUFELDT'S JUNCO

(*Junco hyemalis connectans*).

This form connects the two former, and is found from Edmonton through the mountains to Vancouver Island, nesting throughout its Canadian range. In plumage it may have the reddish back of *oreganus*, with the ashy sides of *hiemalis*, but oftener it has the ashy black of the latter and pink sides of the former. The coloration is less vivid than in *oreganus*, but in general resembles the latter. Wrongly named *shufeld* and *montanus*.

SONG SPARROWS

(*Melospiza*).

These are sparrows of middle size, with short rounded wings and long rounded tail of wide feathers. No clear yellow is found in the plumage of the group, and brownish yellow in one species only. There are no bright colors, and no solid masses of colors, but the upper parts are all thickly streaked, and the lower parts streaked across the breast, and usually along the sides. The most common of them, and one of our most popular birds, is the Song Sparrow.

THE SONG SPARROW

(*Melospiza melodia*).

Common, and nesting from Nova Scotia to the Rocky Mountains and as far north as James Bay. While often nesting on the ground, it is not confined to this situation, but frequently builds

SONG SPARROW.
A LIFE-SIZE.





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in low shrubs. The nest is of the usual sparrow type, of grass, roots, and other fibrous material, lined with fine grass and hairs. The four eggs are grayish or greenish white, spotted with brown and other shades. Coming to us as soon as the rigor of winter yields even temporarily to the sun's rays, singing sweetly even in chilly and showery weather, this little sparrow well earns for itself its titles—"Everybody's Darling" and "Silver Tongue." Moreover it seems to enjoy the society of mankind, and builds and sings close to his dwellings, rather than seeking seclusion in forests and fields.

Crown dull chestnut, with an ashy central line and one on each margin over the eyes. The streaks on the back are black, with chestnut and ashy edges. The nape and rump are grayish brown with few chestnut streaks. Wings like the back; tail pale yellow brown and longer than the wings. Under surface white, shaded with brownish on the flanks and crissum, and streaked on the breast and sides. In the centre of the breast the dusky streaks form a characteristic blotch. Length $6\frac{1}{4}$ inches, extent 9, tail 3 inches.

Among the varieties of the Song Sparrow, the following forms have been recorded in Canada:—

MOUNTAIN SONG SPARROW

(*Melospiza melodia montana*).

This has been found along the international boundary in southern British Columbia. It differs in being of a grayer tone, the streaks having less black in their centres, and more brown, with paler gray edgings.

RUSTY SONG SPARROW

(*Melospiza melodia morphna*).

This is also called the Oregon Song Sparrow. In British Columbia it is very common west of the Coast range and extends in-

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land as far as Revelstoke. Its peculiarity is that the streaks are of dark reddish brown, without black or gray, and are almost confluent, giving a ruddy tone to the plumage. It also averages larger than the type.

SOOTY SONG SPARROW

(*Melospiza melodia rufina*).

This is a larger and darker form of the Rusty Song Sparrow, found along the British Columbia coast and southern Alaska to Kadiak. "The tone of the upper parts is sooty or smoky brown; streaking very dark. Length $6\frac{1}{2}$ or more" (Coues).

DAKOTA SONG SPARROW

(*Melospiza melodia juddi*).

The distinctions between this and the type are very slight indeed. It is the form found in southern Saskatchewan, and can be separated from the common eastern Song Sparrow only by specialists, and with great effort.

LINCOLN'S SONG SPARROW

(*Melospiza lincolni*).

This little song sparrow is notable for shyness, and because of this we have to report it as not common anywhere except along the foothills of the Rockies from the Yellowhead Pass southward. This lack of records is no doubt due to lack of observers, because its range is from Cape Breton to Vancouver Island. It remains mostly on the ground and creeps along more like a mouse than a bird. Its notes are a sharp chirp, and occasionally a peculiar sound "suggesting the bubbling guttural notes of the House Wren combined with the sweet rippling music of the Purple Finch." Its nest is built on the ground of grass and rootlets, and lined with

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fine grass. Eggs four or five, pale green or white, thickly spotted with reddish brown. The plumage of Lincoln's Song Sparrow is streaked on upper parts with black, gray, and grayish brown. The lower parts are white, finely streaked with black. A broad band of yellowish brown crosses the breast; the sides and a stripe on each side of the throat are tinged with the same buff. The tail feathers are narrow and pointed, the outer ones shortest. Length $5\frac{1}{2}$ to 6 inches, extent 8. Fall specimens show more of the buff or grayish brown.

SWAMP SONG SPARROW

(*Melospiza georgiana*).

The Canadian range of this sparrow is from Cape Breton to Great Slave Lake. It is to be found in the marshes of all the provinces east of the Rockies, but is seldom noticed except by bird students and sportsmen. Its nest may be in the grass of a tussock or in a low bush. The eggs, 3 to 6, are grayish white, speckled with reddish brown.

In perfect plumage, the crown of the male is bright dark chestnut, but is often somewhat streaked, especially in young birds. The forehead is black with an ashy line over the eye and a dark brown patch behind the eye, otherwise the sides of the head are ashy. This color spreads over the breast and under parts, with white on the throat and brown streaks on the sides and flanks. Back and rump brown, with black and gray streaks. Wings strongly marked with chestnut, as is the tail also. Length about $5\frac{1}{2}$ and extent $7\frac{1}{2}$ to 8 inches.

THE FOX SPARROWS

(*Passerella*).

These are large, handsome sparrows, reddish or slate colored, with the lower surface marked with streaks and triangular spots.

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While all the true sparrows are to a great extent ground birds, these are notably adapted for scratching away leaves, etc., in their search for food, their feet and claws being unusually developed. The bill is strictly conical. They nest on trees, or in shrubs, or on the ground, and lay speckled greenish eggs.

EASTERN FOX SPARROW

(*Passerella iliaca*).

This is another bird which ranges in Canada from the Rocky Mountains to the Atlantic. It is known in Alaska as far north as Circle City, and in the North-west Territories to the sixty-eighth parallel. In eastern Canada it passes northward quickly and quietly, being heard in its beautiful song only for one or two days, and only by those who seek for it in remote shrubby pastures, and the southern edges of groves, just when frogs begin to "peep." Its nesting has been difficult to study, but it has been found breeding on the Magdalen Islands in the Gulf of St. Lawrence, and on the Barren Grounds, and the delta of the Mackenzie River. Most of the nests were found in trees, but some on the ground, made of grass, coarse and fine, and lined with deer hairs and soft moss. The eggs are described as greenish white, speckled and blotched with rusty brown.

The general color of the plumage is rusty red, the feathers are, however, bordered by a grayish brown. The rump, wings, and tail are bright ferruginous red. The middle of the belly is white, but all other under parts are heavily streaked and spotted with reddish brown on the white background. Two whitish wing bars. This is a large bright sparrow, not closely resembling any other found in eastern Canada. Length 7, and extent about 11 inches.

A number of varieties of the Fox Sparrow are recognized.

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TOWNSEND'S FOX SPARROW

(*Passerella iliaca townsendi*).

The Pacific coast, from northern California to Alaska, is the range of this variety, but its nests have not yet been found. Its plumage is a ruddy olive on the back, becoming foxy or rusty red on the rump, wings and tail. The wing bars are scarcely visible. Under parts marked thickly with streaks of the color of the back, producing almost uniform instead of spotted coloration. Size that of *P. iliaca*, but appearance quite distinct.

SOOTY FOX SPARROW

(*Passerella iliaca fuliginosa*).

This is another Pacific coast form, confined almost entirely to the Coast range and the islands of the coast. It is said to nest on the summits of the Coast Range. Its plumage resembles Townsend's Fox Sparrow, but is sooty brown, instead of olive brown.

SLATE-COLORED FOX SPARROW

(*Passerella iliaca schistacea*).

This form is found in the interior of British Columbia, reaching the eastern foothills and extending southward to Kansas and California. Its upper surface is uniform slate color, with dull rusty on rump and tail. Wing bars obsolete in some but visible in others. Under surface thickly spotted with dusky brown, forming a blotch on the breast. Length from 7 to 7½ inches.

TOWHEE BUNTINGS

(*Pipilo*).

These are birds of sparrow-like habits, but are larger and quite different in coloration. They have conical bills, large feet for scratching, wings short and round, and a long tail. The sexes are quite unlike each other in nearly all our northern forms.

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TOWHEE OR CHEEWINK

(*Pipilo erythrophthalmus*).

Of shy retiring disposition, the Towhee or Marsh Robin may be present in many districts without attracting the attention of others than students of the birds. A recently cleared field, grown up with young trees and brambles, with brush-heaps and stumps encumbering the ground, this is the favorite home of the Cheewink. Even here the male alone is likely to be seen, and then for only a few minutes while he scolds us for intruding on his domestic affairs. If undisturbed, he may sing his "Pill-a-will-a" song, prefacing it with a peculiar gurgling note. Otherwise an energetic, almost fussy, repetition of his name, with flirts of his long tail, are all that he furnishes by way of entertainment. The female meanwhile slips away through the shrubs without rising. The nest is usually on the ground, but may be in a shrub or heap of brush. It is rather a rough unfinished structure of bark, fibres, grass, weed stalks, and moss. Three or four eggs, white with reddish brown specks, are the usual complement, and a second brood is not uncommon. Nova Scotia occasionally, southern Quebec, Ontario and Manitoba regularly, and part of Saskatchewan are its Canadian range.

The head, breast, throat, back and tail are black, except that the outer tail feathers are edged and tipped with white, as are the outer primaries of the wings. The sides are chestnut; the crissum dark brown, and the belly white. The female wears brown where the male has black, but the white markings are the same. Length 8½, and extent about 11 inches.

OREGON TOWHEE

(*Pipilo maculatus oregonus*).

This and the other forms mentioned below are varieties of the Mexican Towhee, *Pipilo maculatus*. The Oregon variety is

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most like the eastern species described above. It is common near the Pacific Coast and on the islands of British Columbia, spending the whole year there. Its range extends southward along the coast to southern California.

Its coloration is much like *P. erythrophthalmus*, but on the shoulders are large roundish white spots, with smaller ones on the coverts. The primaries and secondaries have little or no white, and the spots on the tail are very small, while the outer feathers are white only at the tip. The female is dark amber brown.

ARCTIC TOWHEE

(*Pipilo maculatus arcticus*).

From the western boundary of the range of the common Cheewink in Saskatchewan to Calgary, this variety is found. It does not extend far north, but is found among the Rocky Mountains in the United States as far south as Texas. Plumage like that of the Oregon Towhee, but olivaceous on the back; spots on the wing coverts larger, while those on the scapulars are larger and become streaks. The quills and tail feathers are marked as in the eastern form.

SPURRED TOWHEE

(*Pipilo maculatus megalonyx*).

This is the variety most common in the mountains of California and New Mexico, and it has been found to be common in southern British Columbia, nesting there in May and June. Its plumage coloration resembles that of the Arctic Towhee, being slaty black with an olivaceous shade on the back. The female is quite similar to the male. Its note is said to be very much like that of the Catbird when wishing to repel intruders.

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THE PAINTED FINCHES

(*Cyanospiza*).

This is a group of birds with smaller bills than those of the Grosbeaks, but still clearly showing their relation to the seed and nut eaters. Most of them have brilliant colors in masses, blue being especially common, but others have green, or purple or red, on various parts of the body. Most of the group belong to regions nearer the tropics than any part of Canada, but one form occurs in the east and another in the western part, not extending their ranges far to the north.

INDIGO BUNTING—INDIGO BIRD

(*Cyanospiza cyanea*).

This bird has a limited range in Canada. It is not common east of Montreal, and not plentiful in eastern Ontario. Quite common in the western peninsula of Ontario, and recorded also from Manitoba. Like the Towhee, this bunting prefers shrubby pastures, or raspberry and hazel thickets, rather than orchards, lawns, or groves. The female is very retiring, and must be driven out of cover, but the male during the nesting season, and even during our hot July days, sings from the top of a small tree. Their feeding habits have not been thoroughly studied yet, but we know that beetles as well as weed seeds are eaten. They build a compact nest in a thicket, well hidden, and within two feet of the ground usually. Their eggs are nearly white with a pale shade of green or blue, varying with the light, and occasionally somewhat speckled. The plumage of the male renders him conspicuous, especially when in the sunlight. The head is dark blue, the back, rump, and under surface bright blue with greenish reflections in the sunlight; the wings and tail are blackish with greenish blue gloss, and deep blue edges. The female is uniform grayish brown on the upper surface, and pale grayish brown with



INDIGO BUNTING.
(*Passerina cyanea*, Linn).
About Life-size.

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indistinct streaks below. The wings and tail are brownish black with blue markings. Length about $5\frac{1}{2}$, and extent $8\frac{1}{2}$ inches.

LAZULI BUNTING

(*Cyanospiza amoena*).

From the eastern foothills of the Rockies to Vancouver Island, across southern British Columbia, and southward in the Pacific coast region to Mexico, is the range of this finch. It differs from the Indigo Bunting chiefly in having two white wing bars, and chestnut brown breast, with white on lower belly and crissum. The female is grayish brown above and brownish white below, paler on the belly. Size, nest, and habits similar to those of *cyanea*.

DICKCISSEL, BLACK-THROATED BUNTING

(*Spiza americana*).

For a number of years these birds reached Ontario and bred in Essex county, but they are now thought by W. E. Saunders to have deserted western Ontario. One has been collected in Manitoba, and in the hope that some reader may find and observe the habits of the bird, its description is given. Its range is the eastern United States, south of Massachusetts, west to Kansas, Nebraska, and Arizona. It is not likely to reach Canada except at the southern extremity of Ontario. It is a beautiful bird of very smooth plumage and pleasing colors. Above grayish brown, the middle of the back streaked with black. Sides of the head and neck, and the nape, ashy. A yellow line over the eye, and one on the side of the throat. Chin white, throat with large black patch, breast yellow, becoming white on the belly. Edge of wing yellow, wing coverts chestnut. Wings and tail feathers blackish brown. Length $6\frac{1}{2}$ inches, extent $10\frac{1}{2}$. The female has no black throat, and less yellow on the breast. Nest on the ground or in a low bush. Eggs

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usually greenish white. From its coloration it is sometimes called "the little meadow lark." A poor but earnest musician.

LARK BUNTING OR WHITE-WINGED BLACKBIRD

(*Calamospiza melanocorys*).

Southern Saskatchewan, Alberta and British Columbia are the only parts of Canada where this peculiar finch is found, and its range does not reach far north of the boundary. The great plains of the Missouri and Milk Rivers, and south to California and Mexico, are the home regions of the Lark Bunting. From its soaring and singing while on the wing, it was associated with the lark, but its form of bill relates it to the Grosbeaks, while its plumage changes recall the Bobolink. In Canada it nests in colonies and always under sagebush, *Artemisia*—being distinctly a bird of the plains. Its nest is on the ground in a hollow, and made of grass stems and rootlets. Four pale blue eggs are laid, and it is brooding as late as the middle of July. Its song is said to be pleasing.

The plumage of the male changes from the brownish black with white tips and edgings—which is the fall and winter costume,—to clear black with a white wing patch—for the nesting season only. This change is brought about not by moulting, but by the brownish and white wearing off, leaving the black inner structure visible. The female, and the male in fall and winter, are as noted above, white below, shaded with grayish brown and streaked with blackish, except on the throat and belly. The tail feathers are blackish, and except the middle are tipped with white. Length about 6½, extent about 10½ inches.

THE TANAGERS

(*Tanagridae*).

This family of 300 or more species, belongs to America, and is mostly tropical. Three species reach Canada, and in some places

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SCARLET Tanager.
Life-size.



PERCHING BIRDS

are fairly common, if the observer knows where to look for them. Sometimes they nest in orchards, but usually in hardwood groves. Their feeding and breeding habits are much alike in all our species. Their food in spring is largely of animal nature, wasps, ants, and beetles, but in autumn they eat often of wild berries and occasionally visit the gardens. Their nests are loosely made, shallow structures, placed on a broad horizontal branch, near the edge of a grove. The eggs are dull greenish blue, with spots of reddish brown. All the family have brilliant coloration, with marked sexual differences, and changing greatly with the seasons. The bill is thick and swollen above, with a notch near the tip and a tooth on the upper edge near the middle.

LOUISIANA OR CRIMSON-HEADED TANAGER

(*Piranga ludoviciana*).

This Tanager belongs to the Rocky Mountains and Pacific slope. It occurs from Edmonton southward and westward to Vancouver Island.

The middle of the back, the wings, and tail are black, the wings having two yellowish white bars, the head completely scarlet or crimson, the same color spreading on the breast. Other parts bright yellow, especially clear on the rump. The female is olive green on the rump, darker on the back, greenish yellow below, olive on the sides. Tail and wings blackish brown with olive edgings. Length about 7 inches.

THE SCARLET TANAGER—RED BIRD

(*Piranga erythromelas*).

This is the Tanager best known in eastern Canada, where it is sometimes called the War Bird, not from its habits, but entirely with references to its red coat. It is rare east of Montreal, but a regular summer resident throughout Ontario, as far north as

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Muskoka and Algonquin Park. It is known in Manitoba, and even in eastern Saskatchewan, but is not a prairie form, being always closely associated with upland groves. The song of the Tanager cannot be called musical, but one cannot expect everything excellent in one individual, and his beautiful colors are quite sufficient to make him a very welcome visitor. Like many other strongly marked birds, the Scarlet Tanager avoids advertising his position, keeping himself well screened from the ground by staying in the thick foliage of the tree tops. Nest, eggs, and food habits are similar to those of the Crimson-headed Tanager. The plumage of the male is scarlet, with black wings and tail. The female olive green above; clear yellowish green below; wings and tail dark with olive edgings. Length about 7 inches, extent 11½.

SUMMER TANAGER—ROSE TANAGER—SUMMER RED BIRD

(*Piranga rubra*).

A few specimens of this brilliant bird have been taken in Ontario and Nova Scotia, and others have been reported, but we must consider it an accidental migrant here, as its home is south of Connecticut, in the eastern States, wintering in Cuba and South America. The male is a beautiful rose red or vermilion, including wings and tail, although the wings may be dusky. The female is brownish olive above and brownish yellow below. No wing bars in either sex. The young are—as usual—like the mother.

THE SWALLOWS

(*Hirundinidae*).

This is a natural, well marked group of birds, with representatives throughout the world. Living entirely on insects, and exceedingly well qualified for catching them, the importance of the Swallow family to agriculture can scarcely be over estimated.

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From early spring till autumn they spend the long days incessantly capturing insects over gardens, orchards, fields, and ponds. Examination of their stomach contents has shown that the chief kinds captured are wasps, flies, ants, weevils, and beetles, and the quantity taken in any district can be estimated only in tons.

Swallows seldom walk on the ground, and perch only where they can readily grasp the support with their weak feet, but their wing development is remarkable, and on this they depend for catching their prey. Associated with this method of capturing flying insects is the fissi-rostral condition—the mouth extending far back beyond the weak bill. This we noted in the Nighthawk of the Goatsucker family. A well developed tail, often long and forked, assists the long strong wings in the rapid evolutions required in securing their food. Many species are sociable with each other and with man, nesting in colonies under the cornices and on the rafters of our buildings. The destruction of the forests, and with them the hollow trees suitable for their nests, has forced the Martin and the Tree Swallow to make use of bird houses and boxes put up for their accommodation.

THE PURPLE MARTIN

(Progne subis).

This is a southern species, but breeds in Canada, all across the southern portion, especially where encouraged by being furnished with houses or boxes, and where the House Sparrow is discouraged. In appearance, graceful flight, and clear gurgling notes, the Martin is a most attractive and welcome bird, expressing in an unusually perfect way the bright busy spirit of summer, rejoicing loudly in unceasing and satisfactory labor. The male is lustrous blue black. The female is grayish brown, with some glossy bluish back on the head and back, the lower surface whitish with much dark gray. Young like the female. Length about 8 inches. extent 15. Eggs pure glossy white.

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THE CLIFF SWALLOW

(*Petrochelidon lunifrons*).

This bird is very familiar to farm dwellers from its sometimes troublesome habit of building long ranges of flask-shaped nests of mud under the eaves of barns and houses. If its value as an insect destroyer were well known it would be protected, but in many districts it is now seldom found about barns, where formerly hundreds were reared every year. This is due to persistent destruction of the nests. It reaches southern Ontario about the middle of May, and starts for its winter quarters in Central and South America about the middle of August. In the absence of hospitable buildings, it constructs its nest against the face of a cliff or cutbank. From the Atlantic to the Coast range of British Columbia, and as far north as the Arctic Circle, it has been recorded in Canada. Its nest is of clay, lined with feathers, straw, and wool. Eggs four or five, white with brown spots. The sexes are similar, and the young merely lack the chestnut throat patch. The forehead is whitish, the crown, back, and a spot on the throat are steel blue; the throat, sides of the head, and the rump are chestnut; the breast, sides, and a collar around the back of the neck are grayish brown. Belly whitish. Length $5\frac{1}{2}$, extent 12 inches.

THE BARN SWALLOW

(*Hirundo erythrogaster*).

As the Cliff Swallow nests outside farm buildings, this species nests inside, against the rafters and along the roof beams. Its summer range in Canada includes all parts south of the Arctic Circle, its nest being especially common about buildings of either white men or Indians. Like the other species noted, this bird lives amicably with its fellows in colonies of many families. It is very fond of momentary plumage baths taken while on the wing, and

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may generally be seen haunting quiet pools on summer evenings. Its nest is always inside buildings, and while largely made of mud, the structure contains much more grass and straw than that of the Cliff Swallow. It is lined freely with grass and feathers. Eggs four to five, white with reddish brown spots. Upper parts of the plumage glossy steel blue, lower parts pale chestnut; forehead, chin, and throat deep chestnut; an imperfect collar of steel blue across the breast; white spots on the inner webs of all the tail feathers except the middle two. Tail deeply forked in the adult. Sexes alike, and the young similar, but paler below. Length 6 to 7 inches, and extent about 13.

VIOLET-GREEN SWALLOW

(*Tachycineta thalassina*).

This is a species confined to the Rocky Mountains and the other Pacific ranges, from Banff to Vancouver and southward, and up through Alaska to Circle City. It nests in crevices in cliffs, in holes in cutbanks, and in crevices between the logs of cabins. Its winter home is south of the United States, probably in Central and South America. This is one of the most beautiful swallows reaching Canada. The plumage of the under side—including the sides of the head below the eyes—is pure silky white. Upper parts soft velvety green, mixed with violet purple. This latter color is especially prominent on the back of the neck and the rump. The wings and tail are blackish with violet and purple gloss. Length about five inches, extent about twelve.

THE TREE SWALLOW

(*Tachycineta bicolor*).

This little swallow is a summer resident of all southern Canada from Nova Scotia and the boundary line as far north as Hudson Strait, York Factory on Hudson Bay, Fort Good Hope on the

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Mackenzie River, and Chilcat, Alaska. While naturally independent of man and his structures, the disappearance of hollow forest trees has made the Tree Swallow willing to build in woodpeckers' deserted nests, hollow posts, fence rails, and even empty boxes and bird houses. This is probably the most numerous of all our swallows, and is also the earliest both in arriving and in leaving. Their flocks are made up early in August and roost at night in cattail marshes. About the middle of the month they move southward, flying during the day often at a considerable height.

Their nests are made of grass, straw, and leaves, and are lined with feathers. The eggs are pure white and from four to eight in number. The upper plumage is lustrous steel blue or green, the under parts pure white, outer tail feathers longer than the middle ones. Length about 6, extent about 13 inches.

BANK SWALLOW

(*Clivicola riparia*).

Bank Swallows are rare in Labrador and Newfoundland, but plentiful in southern Nova Scotia, and especially so in Prince Edward Island, also common in New Brunswick, Quebec, Ontario, Manitoba, and across the plains of central British Columbia. Northward they are found to the mouth of the Mackenzie River, and to Dawson in the Yukon, and Circle City, Alaska. Every bank of sand along river or lake, railway ballast pit or sand pit is almost certain to have many tenants of this species. Their nests are placed in holes excavated to a depth of two or three feet, often with two entrances. The nest itself is made of grass, but is slight in structure, and the three to five white eggs have very thin shells. These nests are often in hundreds, and the population of one bank may by August be a thousand or more.

The plumage of the upper part is a brownish gray, and a band of the same crosses the breast; the throat is white, as are the

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other under parts. There is a small tuft of feathers above the hind toe; and the outside of the outer quill of the wings has no recurved hooklets. Length about 5 inches, and extent $10\frac{1}{2}$.

THE ROUGH-WINGED SWALLOW

(*Stelgidopteryx serripennis*).

In habits and appearance the Rough-winged Swallow resembles the Bank Swallow, but is not known further east than Ontario. It is found from Toronto westward to the Pacific coast, but may have a wider range than now known, because the bird must be in the hand in order to be distinguished from the preceding species. It builds in holes in banks, or walls, or stone bridges, almost always over water, and the nest is said to be lined, not with feathers, but with willow leaves. More careful observation is needed regarding both distribution and habits of this bird.

The upper plumage is brownish gray, with a paler shade of the same on the throat and breast. The belly is white. The marks which distinguish this species from the Bank Swallow are the recurved hooklets on the outside of the outer wing quill, and the absence of the tuft of feathers just above the hind toe.

WAXWINGS

(*Ampelidae*).

These peculiar birds are apparently not closely related to any other group. Three species are known, two of which are often seen in Canada, the other is peculiar to Asia. They are gregarious and migratory, weak in voice, and fearless of man. The peculiarity which gives them their name is the narrow horny tip, looking like red sealing wax, which terminates the tail feathers and the secondaries of the wings. The plumage of the Waxwings is in general fine and silky, a plain brownish drab, with a sharp pointed crest of the same color.

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THE BOHEMIAN WAXWING OR CHATTERER

(*Ampelis garrulus*).

This is the larger form known in Canada, and is common also to northern Europe and Asia. With us it spends the summer in the north, from the latitude of Fort Churchill and Banff to Great Bear Lake. Near all three of these points its nests have been found. In Europe its nesting was a subject of great interest, until found in Finland by Dresser. Their food is chiefly berries of the *Vaccinium* or Huckleberry family during the summer, and of the Red Cedar or Juniper during the fall and winter. In spring they catch insects, and no doubt feed them to their nestlings, and during their winter visit to southern Ontario they live largely on the frozen berries of the Rowan trees. Its range seems to cover most of Canada and the northern States, although very irregular in distribution in all parts, except possibly the eastern foothills of the Rockies. Every observer describes its appearance as erratic, several years often intervening between the occurrence of the flocks in which it travels. Its home seems to be the uninhabited wilds bordering on the treeless Arctic plains. When it is driven south by lack of food in winter it is quite free from the caution learned by the birds of "civilized" regions, and will perch close to windows and sidewalks while it gathers the fruit left by our more southerly migrants.

These beautiful birds may be thought of with the Evening or Pine Grosbeaks, and Crossbills, and Arctic Owls, visiting this part of the world only under stress of deep snow and zero weather. A flock spent about a fortnight in Kingston during the winter of 1910-11.

They nest usually in evergreens, at twenty or more feet from the ground, laying four or five eggs—pale bluish gray with spots of brownish black.

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The sexes are alike and seasonal changes are very slight, the plumage is smooth and silky, a brownish gray on the upper parts, brighter on the tail, rump, and wings. The primaries and secondaries have bars of white or yellow, and the tail a yellow band at the end. The under tail coverts are chestnut. The breast is brownish gray, like the back, the belly being paler, but not yellowish. The forehead, chin, and throat, and a bar through the eyes are velvety black, while the sides of the head and the front of the crest are often chestnut. Length between 7 and 8 inches, extent 13 to 14 inches.

THE CEDAR BIRD OR CHERRY BIRD OR CEDAR WAXWING

(*Ampelis cedrorum*).

This is much better known than its larger and more beautiful relative. It ranges all across the northern States and Canada, coming into Ontario about the middle of May. They go about in flocks in spring, nesting quite late, often in July. Until the young are fledged, insects form the chief food of these birds, locusts, May flies, and elm-tree beetle larvae being found in their stomachs, and they are believed to destroy canker worms. Their nests are built in apple or other broad-leaved trees or in evergreens, seldom higher than fifteen feet from the ground. In the fall the birds, young and old, in small flocks devote their attention to fruits, juniper berries, huckleberries, cultivated and wild cherries, and later mountain ash or rowan berries. Their boldness in taking possession of cherry trees under the immediate supervision of the owner results in the death of many, but they are slow to learn shyness. The small injury they occasionally do to our cherries should be overlooked in view of their destruction of insects, and their general confiding, gentle ways, and graceful beauty. Their eggs are four or five, blue gray with spots and blotches, and are quite like those of the Bohemian Waxwing, but smaller.

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The coloration of the Cedar Bird is very like that of its larger cousin—a quaker color—plain grayish brown on back, wings, tail, and breast. The end of the tail has a yellow band, the lower belly is yellowish. There are no white spots on the wings. The forehead, chin, and a line through the eye are black. The secondaries, and sometimes the tail feathers, have the red wax-like tips in many cases, although sometimes wanting, and their presence has not been proven to be due to sex, season, nor age. Length about 7 inches, extent $11\frac{1}{2}$ to 12 inches.

THE SHRIKES

(*Lanidae*).

This family has the peculiar structural characteristics of weak perching feet, associated with the bill of a bird of prey—notched, toothed, and hooked. Their characteristic habit is that of impaling their prey on splinters, thorns, or barbs of wire fences, apparently for convenience of feeding upon it.

In Canada only two species are known to occur regularly. In plumage our Shrikes are much alike, and strikingly resemble the Mocking-bird of the south. All are carnivorous, living entirely on mice, birds, lizards, snakes, and insects, in varying proportions, depending on the locality and season.

THE BUTCHER BIRD—NORTHERN SHRIKE.

(*Lanius borealis*).

In southern Canada, from ocean to ocean, this bird is found in winter, but the summer is spent usually some distance north of the boundary. It nests in Labrador, Quebec, and Ontario, also in Manitoba, Saskatchewan, and Alberta. The nest is large and rough, and built within ten feet of the ground. The eggs are usually four; greenish gray with brown and purplish spots. In spring this hawk-like bird is said (E. E. Thompson) to sing as well as a

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LOGGERHEAD SHRIKE.
(*Lanius ludovicianus*).
About $\frac{1}{2}$ Life-size.

PERCHING BIRDS

Cat-bird, but few seem to have heard this surprising performance. Its food in winter is chiefly small birds, especially the house sparrow in the vicinity of villages and towns. In winter the Butcher Bird is known to kill various other birds, mostly grain eaters. However, during spring, summer, and autumn its chief food is such as to offset its winter crimes, if killing house sparrows can be called a crime. It then feeds largely on mice, crickets, grasshoppers, caterpillars, and lizards.

The plumage of the upper part is gray, with wings and tail black, except the tips of the secondaries and of the outer tail feathers. Forehead whitish, lores grayish, ear coverts black. Under parts white, usually with fine wavy lines of black. Length about 10, extent $13\frac{1}{2}$ to $14\frac{1}{2}$ inches. Tarsus less than 1 inch.

THE LOGGERHEAD SHRIKE

(*Lanius ludovicianus*).

From Nova Scotia to Manitoba this is the well known Shrike of southern Canada. It is common as far north as Georgian Bay, nesting in hawthorn trees. Its grasshopper larder is frequently the barbed wire fences, which may be seen decorated with insects' bodies in considerable numbers. It catches small mice and small birds, but is not so strong or well equipped for slaughter as the Butcher Bird. As the Loggerhead goes southward in winter, its food while with us is almost entirely such as we can well spare. Caterpillars, crickets, grasshoppers, and mice are its principal victims. Its note is not musical, but is persistently uttered. These birds show little shyness, building near the ground, and allowing an observer to approach close to them and their nests without displaying alarm. Like the Kingbird and hawks, the Shrike perches on the top of a tree or stake, where its vision enables it to note moving insects or mice at some distance. Coloration in general like the last, but the forehead is black and the lower parts

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are without dark wavy lines. The rump and scapulars have small white markings, and the primaries a short white patch. Length 8 to 8½ inches, tarsus 1 inch or more.

THE WHITE-RUMPED SHRIKE

(*Lanius ludovicianus excubitoroides*).

From Manitoba westward to the mountains, and in the middle United States this is the common form. In habits this variety closely resembles the other, but being a more southerly form than the Butcher Bird, its food seems to be more of insects and less of birds.

The distinction between this and the Loggerhead is largely the proportion of white. This has much white on the rump and scapulars, and a long white patch on the primaries. The young of all three forms mentioned have the black wavy lines on the lower surface.

From southern British Columbia we have a record of the capture of one specimen of the California Shrike, a variety of the Loggerhead, darker in color than either of the others.

THE VIREOS

(*Vireonidae*).

We have used the name Flycatchers for one group of insect-eating birds—those which dart out from their perch to catch passing insects. Examples of that group are the Kingbird and Phoebe. This group—the Vireos or Greenlets—are as truly insect-eaters, but their hunting grounds are the leaves and bark of trees. These they explore most carefully in search of eggs or larvae or creeping forms of insects. Their structural peculiarities are: (1) bills like those of the Shrikes, hooked, notched, and toothed; (2) toes stout, with sharp claws, and united at the base. These feet are not used for catching their prey, but for their acro-

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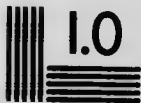
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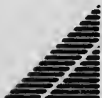
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PEROHING BIRDS

batic needs when clinging to leaves and twigs. In color they are olive green or gray, and in size they are usually between five and six inches in length. The sexes are alike, without seasonal variation, and the young are similar to the parents. They build a pensive nest of fibrous materials and lay four or five eggs, white or slightly spotted.

The Vireos have decided musical ability, some of them having very pleasing songs, which they reiterate at short intervals. As indicated above, they are strictly arboreal, and obtain prey by climbing and searching. They are known to eat the following forms:—scale insects, leaf hoppers, stinkbugs, saw-fly, larvae, joint-worm flies, ants, May-flies, caterpillars, and beetles. They must, therefore, be reckoned among the best of the winged garrison of our forest and fruit trees.

THE RED-EYED VIREO

(*Vireosylva olivacea*).

The summer range of this songster is the whole of the wooded portions of North America from Cape Breton to Vancouver, as far north as Lesser Slave Lake, and south to the Gulf of Mexico. In some places the Red-eye is known as the "preacher," and it certainly sets an example of clear, persistent reiteration of a statement, during the midday heat as well as at the more usual and "convenient season" of matins and vespers. Its nest is closely and smoothly woven of bark, tendrils, twigs, wasps' nest paper, and plant down, and is safely hung in a fork of small branches usually high in a maple. The eggs are three or four, pure white with a few reddish brown dots near the larger end. The crown of the head is gray, bordered by blackish with a sharp white line over the eye. Upper parts olive green, under parts white. No wing bars. Line around the eye red. Length about six inches, extent about 10.

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PHILADELPHIA VIREO

(*Vireosylva philadelphica*).

The range of this bird is not well defined, because the close resemblance it bears to other Vireos has prevented its being frequently recorded. Only expert observers distinguish it from the preceding and the next species. It has been taken as far north as James Bay and as far west as Edmonton. It is known to occur as a migrant near Ottawa, Toronto, London, and Guelph. It is reported as breeding in Leeds County, Ont., in Manitoba, and in Saskatchewan. Careful observations are needed to knit together these scattered records. Its nest and eggs are similar to those of the Red-eyed Vireo. The distinguishing peculiarity of its plumage is the fact that the grayish crown is not bordered by blackish, and that the entire under parts are pale greenish yellow. Length usually 5 inches, extent 8 to 8½.

THE WARBLING VIREO

(*Vireosilva gilvus*).

This and the Red-eyed Vireo are our common and well known species. From Nova Scotia to Vancouver Island we may hear the bright sweet warble of this bird, especially in the maples and elms of city streets and parks. It seems to prefer the vicinity of buildings, and brightens every daylight hour with its clear strong song, persistently repeated. It hangs its nest often from the highest branches of tall maples, and its eggs are similar to those already described.

To distinguish this from the two preceding species we must notice that it has very little yellow on the lower surface on a white ground color. Length about 5¾ inches, extent about 9¾.

Some ornithologists distinguish the form found in the Rocky Mountains and British Columbia as a variety to be known as the

PERCHING BIRDS

Western Warbling Vireo, but the characteristics are too slight to enable most observers to appreciate them. It is said to be smaller and paler than *V. gilvus*.

THE YELLOW-THROATED VIREO

(*Lanivireo flavifrons*).

This bird may be more plentiful than we think, because of the ease with which it may be overlooked. When seen close at hand there is no difficulty in distinguishing this species from those preceding it, but it stays in the tops of the trees, and resembles the Solitary and White-eyed Vireos in its markings. It is known to occur infrequently about Montreal, Ottawa, Kingston, and Toronto; frequently at London, and rarely in Manitoba and southern Saskatchewan. It nests throughout this range. Chapman describes it as a contralto singer with rich notes, and more expression than most of the others. Its nest and eggs are similar to the others described.

The upper plumage is bright olive green, with gray on the rump, and two distinct white wing bars. The eye-ring, throat, and breast are bright yellow, belly and crissum abruptly white. Length just under 6 inches, extent 10.

THE SOLITARY VIREO. BLUE-HEADED VIREO

(*Lanivireo solitarius*).

New England and the northern tier of states, and Canada north to Georgian Bay and to Lesser Slave Lake, and west to southern Saskatchewan seems to be the range of this splendid musician. It is thought by many to be the best singer of a gifted family. It builds its hanging nest quite low, often within five feet of the ground, and lays usually four eggs. In southern On-

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tario we see the Solitary Vireo only in May and September, as it builds usually further north.

The peculiarity in the plumage of this Vireo is the blue gray on the top and sides of the head, giving it the name Blue-headed Vireo. From the nostrils to and around the eye is a whitish line. The back, wings, and tail are olive green. Two white wing bars; sides and crissum yellowish; belly and breast pure white. Length $5\frac{1}{2}$ inches, extent $8\frac{1}{2}$; body stout.

In British Columbia a dull and more brownish variety of the Solitary Vireo is found, and is known as Cassin's Vireo.

THE WHITE-EYED VIREO

(*Vireo novaboracensis*).

Shrubby pastures of the eastern United States are the summer home of this bold and sprightly singer, but it has been collected in New Brunswick and Ontario. In winter it goes south to Central America. One nest is reported from the vicinity of Toronto.

Upper surface bright olive green, with two distinct white wing bars; lores and eye-ring yellow; iris white; throat and belly white; breast and sides yellow. Length about 5, extent about 8 inches.

THE ANTHONY VIREO

(*Vireo huttoni obscurus*).

This variety has been taken on Vancouver Island. It is a dusky form of Hutton's Greenlet which is found on the Pacific Slope further south. It is a small bird under five inches in length, with plumage like that of the White-eyed Vireo except that the upper parts have a brownish cast and the lower surface is almost entirely yellowish.

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PERCHING BIRDS

THE WOOD WARBLERS

(*Mniotiltidae*).

This is an American family,—the most numerous we have, except the *Fringillidae*, or Sparrow and Finch family. About 140 species are known, of which about 70 enter the United States, and about 45 reach Canada. The others are tropical. These numbers may be changed by more, and more skilled, observers. The spring emigration of the warblers agrees in date with spring house-cleaning. While the latter wholesome but disturbing process is going on within doors, outside is made doubly attractive to the man with eyes, by the daily advance of the army of inspectors that overhaul our lawn and fruit trees from base of trunk to tip of twigs. Of all colors, in all attitudes, each species attending to its particular part of the tree, these beautiful little birds search every crevice and examine every hole and fold for insects their eggs. One day the majority of those in sight will be streaked black and white birds, creeping up and down the trunks and branches, the next day may be prolific with brilliant, flitting forms, feeding on enemies of the highest and slenderest twigs and leaves.

In spite of the name Warbler, only a small proportion have strong musical voices. Some, however,—as the Oven Bird—rank among our best songsters.

The Warblers migrate at night, stopping only a day to rest and feed, then going on to their breeding grounds further north. In southern Ontario we expect them during the last week in April, and from that time until the end of May the tree-tops may show every day new and very interesting travellers.

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ARTIFICIAL KEY TO THE GENERA OF CANADIAN
WARBLERS

(Adapted from Coues).

1. Length 7 inches or more, Bill very stout. . . . *Icteria*, page 267
1. Length between 5½ and 7 inches:—
Bill ordinary, tail feathers unmarked. . . . *Seiurus*, page 263
1. Length under 5½ inches:—
2. Wing equal to tail or shorter, head ashy.
Geothlypis, pages 264-265-266
2. Wing equal to tail or longer. Head not ashy:—
3. Tarsus shorter than middle toe and claw; plumage streaked,
black and white *Mniotilta*, page 247
3. Tarsus not shorter than middle toe and claw.
4. Rictal bristles reaching far beyond the nostrils. Tail greenish,
plain or with white spots. *Wilsonia*, pages 267-268-269
4. Rictal bristles not reaching beyond the nostrils:—
5. Tail feathers all unmarked:—
5. Tail feathers blotched with white or yellow:—
6. Bill not over ½ inch long:—
7. Wing not over 2½ inches long. Bill very acute
Helminthophila, pages 248-249
8. No rictal bristles. Whole foreparts yellow.
Protonotaria, page 247
8. Rictal bristles evident:—
9. Back blue gray with a yellowish patch.
. *Compsothlypis*, page 250
9. Coloration otherwise.
Dendroica, pages 251-253-254-255-256-257-258-259-260-261-262

ARTIFICIAL KEY TO THE SPECIES OF CANADIAN
MALE *DENDROICAE* IN SPRING PLUMAGE.

1. Tail feathers edged with yellow, head yellow.
aestiva, pages 251-252
1. Tail feathers blotched with white:—
2. White spot at base of primaries:—

KEY TO GENERA OF CANADIAN WARBLERS

3. Head blue and black *caerulescens*, page 253
2. No white spot at base of primaries:—
4. Wing bar not white:—
5. White below, sides chestnut, streaked, crown yellow.
pennsylvanica, page 255
5. Yellow below, sides reddish-streaked, crown chestnut.
palmarum, page 261
5. Yellow below; sides black streaked, above ashy.
kirtlandi, page 260
5. Yellow below; sides black streaked, above olive with reddish streaks *discolor*, page 262
4. Wing bars white—sometimes fused:—
6. Crown blue like back, below white, sides and back streaked.
rara, page 256
6. Crown chestnut, like the throat, and under parts and sides of neck tinged with buff *castanea*, page 255
6. Crown clear ash, breast and sides black streaked; under parts and rump yellow *maculosa*, page 254
6. Crown blackish, median line and ear coverts orange brown, rump yellow *tigrina*, page 251
6. Crown perfectly black, throat black, with a small yellow loreal spot. *nigrescens*, page 258
6. Crown perfectly black, throat not black; no yellow; feet flesh color. *striata*, page 256
6. Crown with yellow spot:—
7. Throat flame color, rump not yellow. *blackburnia*, page 257
7. Throat white, rump and sides of breast yellow.
coronata, page 252
7. Throat yellow, rump and sides of breast yellow.
auduboni, page 253
6. Crown otherwise than 6:—
7. Throat black, back ashy streaked, rump ash colored, crown yellow. *occidentalis*, page 259

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7. Throat black, back olive, crown olive. *virens*, page 258
7. Throat black, back olive, crown not olive. *townsendi*, page 259
7. Throat yellow, back olive, head without ashy or black.
vigorsii, page 260

MARKS OF CERTAIN WARBLERS IN ANY PLUMAGE

(Copied from Coues).

- Bill very acute with deurved tip, rump generally yellow.
tigrina, page 251
Wing bars and belly yellow *discolor*, page 262
Wing bars and tail dusky, edged with yellow.
aestiva, pages 251-252
Wing bars yellow, belly pure white. *pennsylvanica*, page 252
A yellow spot in front of the eye and nowhere else.
nigrescens, page 258
A white spot at base of primaries. *caerulescens*, page 253
Rump, sides of breast, crown and throat more or less yellow.
auduboni, page 253
Rump, sides of breast and crown with yellow, throat white.
coronata, page 252
Wing bars white, tail spots oblique, and only at the ends of
two outer feathers *vigorsii*, page 260
Spots at end of nearly all tail feathers. No definite yellow
anywhere. *rara*, page 256
Wing bars brownish, tail spots square and at end of the two
outer feathers only *palmarum*, page 261
Wing bars not very conspicuous, wholly underpart yellow,
back with no green *kirtlandi*, page 260
Spots at middle of nearly all the tail feathers; rump and belly
yellow. *maculosa*, page 254
Throat yellow or orange, crown with some trace of central
yellow or orange spot, and outer tail feathers white-edged ex-
ternally. *blackburnia*, page 257

PERCHING BIRDS

THE BLACK AND WHITE WARBLER

(*Mniotilta varia*).

This is more likely to be called a creeper than a Warbler, as it runs up and down and around the trunks of trees before the leaves are fully expanded. Its note is plain and not musical. As a summer resident it is found in Nova Scotia and New Brunswick, also near Quebec, Montreal, and Ottawa. It is a common migrant and breeds in considerable numbers in Ontario, a migrant also in Manitoba, where it occasionally nests, but it is seldom found west of that, although a few have been taken in the foot-hill country of Alberta. It makes its nest on the ground, among trees, or logs, laying four or five eggs, creamy white with brown spots near the larger end.

The plumage is everywhere black and white striped, except the middle of the belly, which is white. Two white wing bars. Ear coverts black. No yellow anywhere. The female has more white below. Length about 5 inches, extent about 8½.

PROTHONOTARY WARBLER

(*Protonotaria citrea*).

This is one of the Golden Swamp Warblers, nesting in cavities in trees or logs, and partial to shrubbery and thick swampy growth. Its home is the southeastern United States as far north as Virginia. Any reaching Canada do so as accidental wanderers. Its eggs are five or six, creamy white, spotted with brown or red. The beauty of the bird is accentuated by the dark background of its usual home. The head, neck and breast are golden or orange yellow, with greenish on the back, and paler yellow on the belly; rump, wings, and tail ashy; bill large and black. Length 5½, extent 9 or more inches.

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GOLDEN-WINGED WARBLER

(*Helminthophila chrysoptera*).

These are of the so-called Worm-eating Warblers, having slender acute bills, and wings long and pointed. It is known but rarely in Canada, but has been seen in the Magdalen Islands, in New Brunswick, in Western Ontario, and in Manitoba. Its proper range is the eastern United States, wintering in Mexico and Central America. It is reported by W. E. Saunders to make a bulky nest of leaves among the stems of shrubs. The eggs are as usual white with reddish brown specks. The plumage is beautifully colored. The back, wings and tail are slaty blue, the crown and wing spots bright yellow. The chin, throat, and upper breast are black, as is also a stripe on each side of the head. These black patches are bordered with white. The lower parts otherwise are white, but sometimes yellowish. The black markings are obscure in the young birds, which also show some yellow on wings and back.

Length about 5 inches, extent $7\frac{1}{2}$ inches.

NASHVILLE WARBLER

(*Helminthophila rubricapilla*).

From the Atlantic provinces to Manitoba, probably about Hudson Bay as it was taken in Greenland, and through the eastern United States, wintering in Mexico and southward,—this quietly dressed and inconspicuous warbler ranges. It keeps to the shrubbery of wood borders, and among second growth and scrub. Its nest is built on the ground, its eggs being white or creamy with reddish specks chiefly at the larger end. Its song is not very musical.

The back, wings, and tail are olive green, the top and sides of the head gray, with a somewhat concealed chestnut patch on the crown; under parts bright yellow, paler on the belly.

PEROHING BIRDS

Length $4\frac{1}{2}$ or more, extent about $7\frac{1}{2}$ inches.

A variety of the Nashville Warbler, named the Calaveras Warbler, but considered by some good authorities as identical with the above, occurs in the Rocky Mountains of both the United States and Canada. It is described as somewhat more brightly colored both above and below.

ORANGE-CROWNED WARBLER

(*Helminthophila celata*).

This is a westerly form, being rarely taken east of Ontario, nor commonly in Ontario, and found breeding very seldom east of Manitoba. It is known to nest in Manitoba and Alaska. Being of quiet coloration and not notable as songsters, these may pass us unnoticed, but their chief migration route seems to be west of Ontario. They build their nest in deep grass, in shaded and often moist places. The eggs are not different from those of other small warblers.

The upper surface is dull olive green, brighter on the rump, below they are greenish white, pale on belly and throat, and somewhat streaky. On the crown is an orange-brown patch partly concealed. Length about 5 inches, extent about $7\frac{1}{2}$.

The Pacific Orange-crowned Warbler, variety *lutescens*, is found from Edmonton to Vancouver Island, and differs from the type in being more richly colored. It is bright olive green above, and greenish yellow below, with dusky streaks. It nests on the mountains from California to Alaska.

TENNESSEE WARBLER

(*Heminthophila peregrina*).

Across the continent from Nova Scotia and Anticosti to Central British Columbia, we have records of this warbler. It breeds from the New England States northward, but is not noted as common except near the Athabasca and Lesser Slave Lakes. When

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it is better known it may prove to be more plentiful than our present records indicate. It nests on the ground under old grass among shrubs, and the white eggs are thickly speckled with brown at the larger ends. Open woodland, and shrubby fences are the favorite haunts of this inconspicuous little bird. In plumage this resembles the Nashville and Orange-crowned Warblers, but the adults may be distinguished by noting that this warbler—while pale greenish yellow below,—is not streaked, as is the Orange-crowned Warbler, while the Nashville is bright yellow below. The tail of the Tennessee Warbler is only 2 inches or less, while the wing is $2\frac{3}{4}$ or more. The upper parts are bright olive green with bluish gray on the top and sides of the head, and no crown patch of different color. Length about $4\frac{3}{4}$, and extent $7\frac{3}{4}$ inches.

NORTHERN PARULA WARBLER OR BLUE YELLOW-BACKED WARBLER

(*Compothlypis americana usneae*).

This beautiful little warbler is a southern bird, but those coming to southern Ontario seem to go on northward to nest. It is recorded as resident in Nova Scotia and New Brunswick. In May it is quite plentiful just north of the Great Lakes but it is not known to breed there. In the southern United States it makes its nest in the 'long gray moss'—*Tillandsia*,—which is a flowering plant and not a moss. In the north it uses the *Usnea*,—a hanging lichen, but often called moss,—for the same purpose. Our northern form is said to be slightly larger and with shorter bill than the type, but this is scarcely sufficient distinction to make a new name necessary.

It is seen chiefly in tall treetops. The upper parts are grayish blue, with a greenish yellow patch on the back. Two white wing bars, and two outer wing feathers with white patches near the ends. Throat and breast yellow, but with a dark or chestnut band across the breast. Belly white. Length $4\frac{3}{4}$ or under, extent about $7\frac{1}{4}$ inches.



PARULA WARBLER.
(*Compothlypis americana*).
Life-size.

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PEROHING BIRDS

CAPE MAY WARBLER

(*Dendroica tigrina*).

This is a beautiful little bird, but rarely seen in Canada. In fact it seems to be nowhere common. Records of its appearance are known from James Bay, Nova Scotia, Quebec, Montreal, and Ottawa. Its nest has been found in New Brunswick and the Magdalen Islands. In Ontario we know it as a rare migrant, but in eastern Manitoba it is more plentiful, and is said to nest there. A few specimens have been taken in the prairie country, but it is more likely to be seen in wooded regions. It is fond of tall evergreen trees, but hangs its nest of twigs, grass, horse hair, and cobwebs to the branch of a low tree or shrub. Its voice is thin, and its song not at all notable.

The plumage of the back is light olive green with dark streaks or spots, and rump yellow. The crown is blackish, with a median line and ear coverts of orange brown. The bill is very acute with decurved tip, and the tongue is fringed. The entire under parts and the sides of the head and neck are yellow. A black line through the eye, and the lower throat, breast, and sides are streaked with black. The white wing bars are fused into a patch, and the outer tail feathers have a large white patch on the inner webs near the tip. Female with white patch on inner webs of tail feathers near the tip, but the wing bars are slight. The female also is without the brown and black on the crown. Length 5 to 5½ inches.

YELLOW OR SUMMER WARBLER

(*Dendroica aestiva*).

This is our common 'Yellow Bird' and 'Canary,' although the latter name is also given to the American Goldfinch. But about our houses throughout the summer this is the only wild bird likely to be called 'canary,' and in southern Ontario it is the only familiar species of the Warbler group.

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From Cape Breton to Vancouver Island it is common, and throughout all the wooded and shrubby parts of North America, as far north as James Bay and Great Slave Lake it is a plentiful and well known bird. Its nest is built in low trees, of grass stems and leaves, lined with feathers and willow and poplar down. It frequently happens that the parasitic Cowbird drops her egg into the nest of the Yellow Warbler, and thus destroys a brood of desirable birds to secure the life of one undesirable. Occasionally the Warbler rises to the occasion by building another nest over the egg of the intruder. Its song is a rapid repetition of "Wee-chee" ending in "chee-chee-chee," produced with evident pleasure, but little musical ability.

It is greenish yellow all over, the crown clearer, and the lower parts brighter yellow, streaked slightly with dark. Length under 5 inches, extent about 7½ inches.

ALASKAN SUMMER WARBLER

(*Dendroica aestiva rubiginosa*).

This is the variety of Summer Warbler most common in British Columbia. It differs from the typical form only in being more uniformly greenish yellow all over.

YELLOW RUMPED WARBLER OR MYRTLE WARBLER

(*Dendroica coronata*).

This is a well known Warbler from Cape Breton, Newfoundland, and Labrador, to the coast of British Columbia, and northward to the valley of the Mackenzie River.

Favoring the northern part of this range as a nesting ground, it is however known to breed sparingly in eastern Ontario and in Manitoba. It builds usually within twelve feet of the ground in evergreens, and the nest and eggs are of the usual Warbler type.

The adult male in spring is grayish blue streaked with black above, and the belly and throat are unspotted white; while the

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PEROHING BIRDS

sides of the head, the breast, and sides are mostly black. The characteristic marks are the sharply yellow rump, crown patch, and sides of the breast. The eye-lids and a line over the eye are white. The male in winter and the female in summer are brownish blue, and the breast is merely streaked with black. Two white wing bars and white spots on the outer tail feathers. Length about $5\frac{1}{2}$, and extent about 9 inches.

In British Columbia and Alaska a variety of the Myrtle Warbler is quite common, breeding as far north as the Arctic Circle. It is scarcely separable from the type, but has been called Hoover's Myrtle Warbler.

BLACK-THROATED BLUE WARBLER

(*Dendroica caerulescens*).

The male of this species is one of our most beautiful warblers, and the birds are not uncommon in Ontario in May and September. East of Montreal they seem less plentiful, and west of Ontario they are not recorded. While the northern districts are its favorite breeding grounds, a few become resident from Montreal westward through Ontario. The nest is built within a yard of the ground, of fibrous bark, and grass and leaves.

Upper parts of male grayish blue, sometimes with a few black feathers. Breast and belly white; white spot at the base of primaries, and on outer tail feathers next the tips. The sides of the head and throat are black, and this extends along the sides of the body. No wing bars. Female dull olive green above, pale yellowish below, but with white spots on the primaries. Length about 5, extent about $7\frac{3}{4}$ inches.

AUDUBON'S WARBLER

(*Dendroica auduboni*).

The Rocky Mountains and their eastern foot-hills, from Central America to and through British Columbia, are the homes of this beautiful bird. It spends the winter in the south and the

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summer in the northern part of this range. In British Columbia it is a very common resident. Like the Myrtle Warbler it prefers for its home an evergreen tree near the water. In plumage it resembles in general the last named, being bluish ash colored above, streaked with black. The rump, a central crown spot, the throat, and a patch on each side of the breast are rich yellow.

The sides of the head are slate color, and the eye-lids white, but no white superciliary line. Breast black, usually with some grayish or yellow. The sides are streaked with black. The belly and undertail coverts are white. Wings with white blotch, and outer tail feathers marked the same way. Female much like the male in summer but the colors not so clear or sharply defined. In autumn both are brownish above and all yellow and brown markings are obscure. Length over $5\frac{1}{2}$ inches, extent about 9 inches.

BLACK AND YELLOW WARBLER, MAGNOLIA WARBLER (*Dendroica maculosa*).

Through eastern North America this bird is known as a resident of Canada, and as a migrant in the United States. Near the shores of Lake Ontario its nest is seldom found, but further north and in the maritime provinces it is a common migrant, becoming less numerous westward, and found only in the eastern part of the mountain district. It lays four white or creamy eggs, strongly marked or blotched with reddish brown. The nest is usually near the ground in low evergreens. Near Kingston its northern migration is late in May.

The back is black with some olive, especially in the female; the rump is yellow. The crown is a bluish gray; the cheeks and a narrow forehead stripe are black. The eyelids and a stripe behind the eye are white. Under parts entirely yellow except the crissum which is white. The breast and sides are heavily striped with black. The white wing bars are fused into a patch. The tail is blackish with square white spots on all the feathers except the

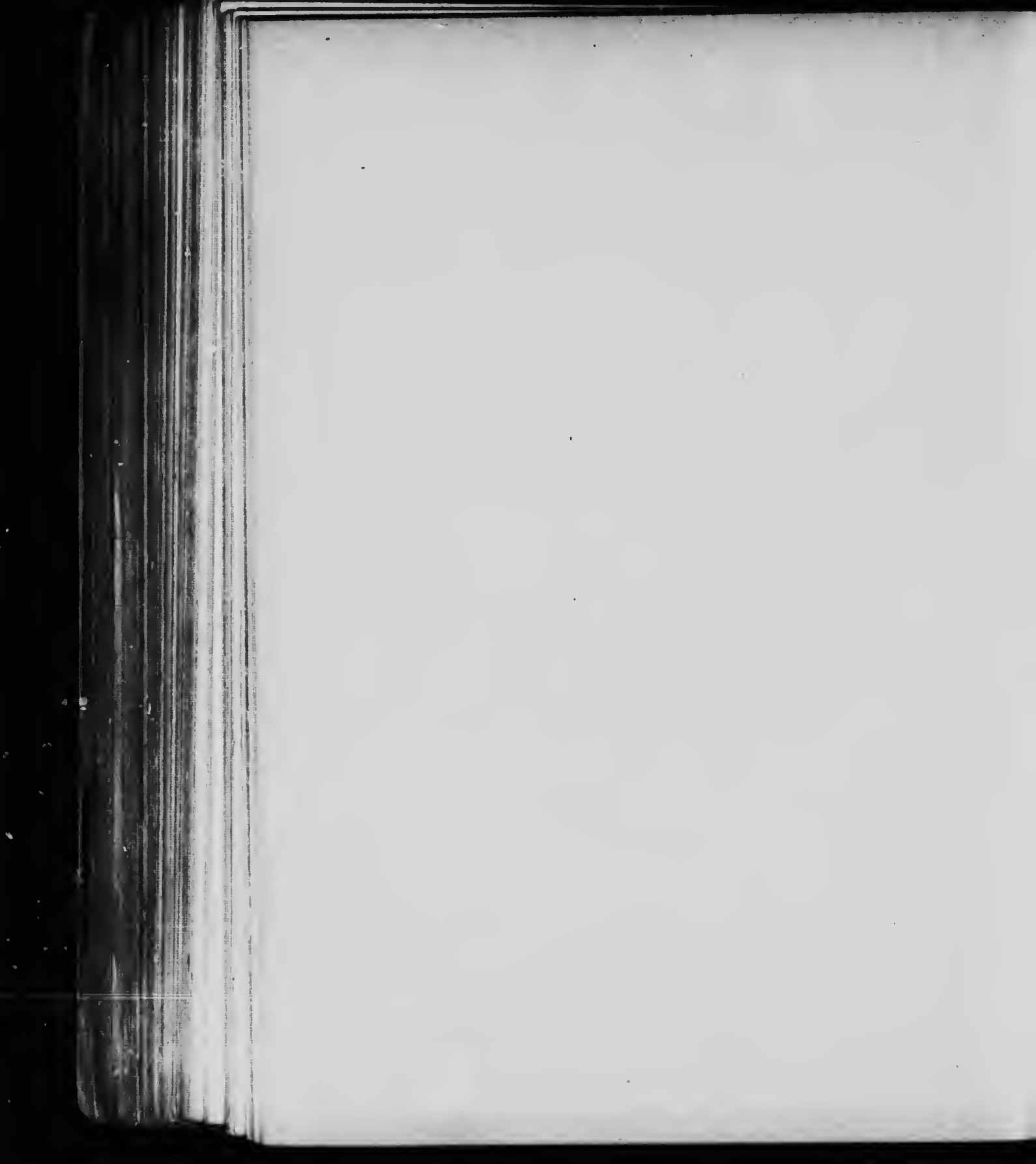
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CHESTNUT-SIDED WARBLER.
(*Dendroica pensylvanica*).
Life-size.

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PERCHING BIRDS

middle pair. The female is similar to the male, and the young have the same rump and tail marks.

Length about 5 inches, extent $7\frac{1}{4}$.

BAY-BREASTED WARBLER

(*Dendroica castanea*).

The range of this bird is similar to that of the Chestnut-sided Warbler,—the United States and Canada east of the plains region, and north to Hudson Bay. A few stragglers are seen west of Manitoba, but it is like the other warblers—thoroughly arboreal—and finds little satisfaction in the treeless prairies. In southern Ontario it is not common, but seen chiefly as a migrant, its breeding grounds being mostly further north. Evergreen coniferous trees are its favorite haunts both for food and nesting. The nest is often near the ground among twigs growing from the side of the trunk of a tree.

The crown is bright chestnut; the chin, throat and sides of the body are also chestnut, but not so bright. The back is streaked with black and grayish green. The forehead and sides of the head are black, with light buff patches on the sides of the neck. Two white wing-bars, and white patches on outer tail feathers. Lower breast and belly buffy white. The female has an olive green crown patch, but otherwise is like the male. Length about $5\frac{1}{2}$ inches.

CHESTNUT-SIDED WARBLER

(*Dendroica pennsylvanica*).

The eastern and northern middle states and Canada from Newfoundland to Manitoba are the home of this Warbler, which is not found north of James Bay nor west of the forested regions. It nests in low broadleaved trees or bushes, near the ground, and is quite common through the provinces of eastern Canada.

The back is streaked, black, olive green and white, the crown is bright yellow, cheeks black, ear coverts white, separated from the crown by a black line. Wing bars yellowish and often fused,

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tail spots on the outer feathers white. The under parts are white, the sides with bright chestnut streaks the whole length of the body. The female is similar though less bright, but the young are different, being yellowish green above and white below, but recognizable by the yellow wing bars. Length about 5 inches, extent about 8.

CERULEAN WARBLER—AZURE WARBLER

(*Dendroica rara*).

The home of this little beauty is the valley of the Mississippi, especially the wooded eastern portion. From this it comes into southwestern Ontario, but rarely is seen in the eastern portion. It is known to nest occasionally near London and Niagara.

The entire upper surface is sky blue, with some black streaks in the middle of the back. The crown is deeper blue and may have some dark feathers. Below pure white, with breast and side markings of dusky blue. Two white wing bars, and small white tail spots on all but the central pair of feathers. The female is dull green above with some gray blue. The eyelids, line over the eye and the entire under parts white, with a yellowish cast. Length $4\frac{1}{2}$ inches or less.

BLACKPOLL WARBLER

(*Dendroica striata*).

The Blackpoll is a common migrant all across southern Canada and the northern United States, and breeds sparingly in the eastern part. Its nesting ground is Labrador, about Hudson Bay, and across the Northwest Territories to Alaska. It is about the last of the warblers to go northward, and is seen from the middle to the last of May in southern Ontario. The southward movement begins about the first of September. Its note is a rapid repetition of "chee-chee-chee," and sounds much like the stridulations of an insect. The nest is built in June, about eight feet up, and usually in the top of a small spruce tree. The eggs are variable in color, from white to creamy and even greenish, unevenly

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From col. F. M. Woodruff.

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CERULEAN WARBLER.
(*Dendroica cerulea*.)
7-8 Life-size.

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speckled and blotched with both brown and lilac, not forming a circle at the larger end.

Crown pure black, other upper parts ashy olive green, thickly streaked with black; two white wing bars. The primaries are edged with green, the secondaries with white. The cheek below the eye is white, and the whole under surface the same, but a widening band of black streaks runs along each side from the chin to the flanks. Outer tail feathers with a large white spot. Second pair with a small spot. Female greenish olive above streaked with black. White below washed with greenish yellow. Young less streaked. Length about $5\frac{1}{2}$ inches, extent about 9 inches.

BLACKBURNIAN WARBLER

(*Dendroica blackburniae*).

The summer range of this beautiful little bird is the eastern part of North America, while in winter it goes to Mexico and Central America. Records of its appearance make it a common resident in Nova Scotia and New Brunswick, uncommon at Quebec, a migrant in Ontario and Manitoba. Further west it has not been recorded. Its favorite haunt is the top of evergreen trees, and its nest is usually in a pine or hemlock, twenty or more feet from the ground. The nest is compactly built and saddled on a limb. Like the home of the other warblers the nest of the Blackburnian is often used by the Cowbird as an asylum for her ill-begotten eggs. The four eggs are grayish or greenish white, spotted with brown and lilac. This is usually considered the most brilliant of the warblers. The back is black with some white feathers. The front of the crown, a line over the eye, the throat, the breast and sides of the neck are a bright orange. The ear coverts are black, and a black line separates the orange of the throat from that of the neck. A black line through the eye. Sides streaked with black; other under parts are white with some yellowish. Wing

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bars fused into a white patch. Tail feathers largely white. Female, olive and black streaked, throat and line over eye clear yellow. Two white wing bars. Length $5\frac{1}{2}$ inches, extent $8\frac{1}{2}$.

BLACK-THROATED GRAY WARBLER

(*Dendroica nigrescens*).

The Pacific Slope has a few Warblers of its own, never found east of the ranges. One of these is the Black-throated Gray. From Mexico, where it spends the winter, to British Columbia, the shrubby growths on the mountains are the home of this definitely marked bird. The crown, sides of head, chin, and throat are black. A yellow spot between the eye and the bill. A white stripe behind the eye and another from the lower mandible down the side of the neck. Upper parts bluish gray with some black on the back. Two broad white wing bars. Lower parts white, with sides streaked with black. Length, 5 inches, extent $7\frac{3}{4}$. Female similar, but grayish on crown, and some white on the throat.

BLACK-THROATED GREEN WARBLER

(*Dendroica virens*).

This bird ranges from the Atlantic Coast to the plains, reaching occasionally to the foot-hills of the Rockies. It is a common resident in the maritime provinces, and nests in dark swamps in southern Ontario, but most of those seen go further north to breed, probably to the Hudson Bay region. It builds in evergreens a compact round nest, placed near the end of a horizontal branch, and made of shreds of birch and other bark and spruce twigs, and lined with hair and fine grass. The four eggs are of the usual warbler style. Its food is obtained among the highest branches of the evergreens, and there we must look for the birds.

The crown and back are bright olive green, the forehead, line over the eye, and sides of the head and neck are bright greenish yellow. Chin, throat, and breast jet black, the sides being streaked

PERCHING BIRDS

with black, while the other under parts are white with yellowish tinge. The wings have two white bars; otherwise blackish, with gray edges to the feathers. The tail is dusky, the outer feathers mostly white. The female lacks the clear black on the throat. Length about 5 inches, extent $7\frac{1}{2}$.

TOWNSEND'S WARBLER

(*Dendroica townsendi*).

This is considered the western form of the Black-throated Green Warbler, and is found between the Rocky Mountains and the Pacific Coast from Alaska to Central America. It breeds in the evergreen forests of the northern states and British Columbia. Occasionally a straggler of the species is found in the east, probably accompanying its eastern relatives from winter quarters.

The upper parts are bright olive green, streaked everywhere with black, especially on the crown. A black patch around the eyes and on the ear coverts; otherwise the sides of the head are bright greenish yellow. The chin, throat, and upper breast are black, lower breast and sides yellow; white wing bars and tail blotches. Length about 5 inches, extent about 8. Female yellowish over the black of the throat. The distinction from *virens* is the black of the crown.

HERMIT WARBLER

(*Dendroica occidentalis*).

This is a form confined to the west between the Rocky Mountains and the Pacific. In winter it goes to Central America, and in summer it ranges north to southern British Columbia. The tops of the tall conifers of this region of tall trees, are its favorite feeding and nesting place. It is as yet but slightly known in Canada. The following description is from Coues:—Above ashy gray tinged with olive, especially on the rump, and closely streaked with black. Top and sides of the head rich yellow, the former spotted with black. Below white, central line of chin, throat and upper

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breast black, ending on the breast with a sharp convex outline, contrasted with the adjoining white. The tail is like that of *virens*. The female is more dusky above, and the throat is white spotted with dark. Length just under 5 inches, extent $7\frac{3}{4}$ inches.

KIRTLAND'S WARBLER

(*Dendroica kirtlandi*).

We have only one record of this Warbler in Canada and this comes from Toronto. It is said to be the rarest of all the warblers, and to have as its range the Bahama Islands and the eastern United States. Its nest and eggs are as yet unknown. Mr. Hughes Samuel describes its song as quite powerful and pleasing. A description from Chapman may enable others to identify the bird and perhaps give us facts regarding its breeding habits. A dozen specimens have been taken in the United States, as far west as Michigan, and we should find it in Ontario, as it probably nests in our northern districts.

Head bluish gray, sometimes spotted with black; lores and sides of the throat black; back brownish ashy, spotted with black; no white wing bars; outer tail feathers with white patches on inner webs at the tips; under parts pale yellow; sides streaked and spotted with black. Length $5\frac{1}{2}$ to $5\frac{3}{4}$ inches.

PINE WARBLER

(*Dendroica vigorsii*).

This is a plentiful bird in winter in the pine forests of the southern states. In summer it ranges as far north as Manitoba, Ontario, and the maritime provinces. We lack in southern Ontario the necessary attraction for a bird so closely related to the pine woods, so it is rather rarely seen with us. It finds both food and home in the coniferous trees, nesting high in pines and cedars. Its song is an improvement on that of most of the warblers, re-

PERCHING BIRDS

sembling the song of the Chipping Sparrow in the north, but it is said to be more musical in the southern part of its range. The Pine Warbler is one of the largest and most plainly dressed in the group. The upper surface is uniform yellowish olive, sometimes grayish. The wings have two white bars and the two outer pairs of tail feathers have large oblique white spots near their tips. The under parts are yellow, which is paler or grayish toward the belly. The female is similar, but duller, being sometimes brownish green above and grayish white or yellow below. Length about $5\frac{3}{4}$ inches, extent $8\frac{3}{4}$.

PALM WARBLER

(*Dendroica palmarum*).

From its winter home in Mexico and Texas, the north bound army of this Warbler spreads between Maine and Manitoba. It is not so plentiful near the coast as in the interior; in fact it is most abundant in Canada in western Ontario and Manitoba. It reaches Great Slave Lake and Hudson Bay, but seems not plentiful so far north. This is the most terrestrial of the group, being seen often with the sparrows, haunting shrubby fence rows. It also remains in the north until the snow drives it to other regions.

The male is brownish olive above, with yellowish olive rump, and chestnut crown. The back is sometimes obscurely streaked with dusky. A line over the eye, the throat, and the breast are bright yellow.

No wing bars. The sides of the throat, the breast, and sides of the body are streaked with chestnut. Belly yellowish white, crissum yellow. The tail spots are peculiar and characteristic in every plumage. Only the two outer pairs have the white and this at the very tips of the inner webs, and squarely cut off. The female is like the male and the young may be known by the tail spots and absence of wing bars.

Length 5 inches or more, extent about 8 inches. Brighter individuals are by some called the Yellow Palm Warbler.

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PRAIRIE WARBLER

(*Dendroica discolor*).

This beautiful Warbler belongs to the middle and southern United States as far north as Massachusetts, Michigan, and Western Kansas. A few specimens have been taken in Ontario, all in the western part, and its visits are likely to be repeated. It frequents thickets and scrubby evergreens and builds its nest near the ground. It captures flies on the wing, in the style of the Flycatchers.

The upper plumage is bright olive green with spots of chestnut or brick red on the back. The wing bars are yellow, as are the forehead, a line over the eye, and the entire under parts. The lores, a crescent below the eye, a narrow line through the eye and streaks along the sides of the neck and body are black. White tail blotches very large, especially on the outer pair of feathers, which are mostly white. Female very similar. Length $4\frac{3}{4}$, extent $7\frac{1}{4}$ inches.

OVEN BIRD—GOLDEN-CROWNED THRUSH

(*Seiurus aurocapillus*).

Thrush-like Warblers differ from the others in coloration, habits, and in nest building, as well as in their great vocal powers. The Oven Bird is quite common in secluded woodlands, and its song may be heard frequently during the nesting season. Later in the summer the birds are so silent and unobtrusive as to be very seldom seen. Its note is very clear and ringing, and is by John Burroughs translated into English as "teacher, teacher, teacher," becoming stronger with each repetition. The common name is given it because of its peculiar covered nest with a side entrance, somewhat the shape of an old Dutch oven, placed among the leaves on the ground. The materials used may be twigs, leaves, and grass, or pine needles, and the lining of leaves and grass or

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OVEN-BIRD.
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PERCHING BIRDS

hair. The eggs, laid in June, are yellowish or pinkish white, marked with lilac and brown. From the Atlantic to the Rocky Mountains, north to Slave Lake, nesting in all but the most southern parts, and going in September to Mexico and Central America,—may be given as its range. It is in colors that the *Seiurus* group most nearly resembles the thrushes. The Oven Bird is bright olive green above, without markings except the golden-brown crown with its black lateral stripes. Around the eye is a white ring. Lower surface pure white, spotted on the breast, and streaked on the sides with dusky. Female and young similar. Length about 6 inches, usually more, extent about 10.

SMALL-BILLED WATER THRUSH

(*Seiurus novaboracensis*).

The range of this bird is practically the same as that of the Oven Bird,—Newfoundland, Labrador, and the maritime provinces and westward to the plains region, extending into Alaska. South of Canada this Water Thrush is known chiefly as a migrant, but it nests from our southern boundary northward, except perhaps near Lake Erie. It does not cover its habitation, but builds on the side of a bank or among upturned tree roots, near streams and swamps. Like some of the sandpipers it has the habit of nervously jerking its tail, as it walks along the edge of the water. In the east it sings from an elevation, but in the west it hides in low thickets for its excellent musical performance. It is not very shy with us, and may remain on our lawns for some days. Its entire upper plumage, including wings and tail, is brownish olive. A whitish line over the eye. Lower surface pale sulphur yellow, marked everywhere with black; smaller spots on throat; a streak on the breast. Bill half an inch long. Length 6 inches, and extent about 9. The western form from Manitoba to the mountains is said to be larger and darker, and is called by some Grinnell's Water Thrush.

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LOUISIANA WATER THRUSH

(*Seiurus motacilla*).

This is the Large-billed Water Thrush, having the southern part of the eastern United States as its range. Massachusetts and southern Ontario are its northern limits. It is occasionally found near Toronto, Hamilton and London, and is more common along the north shore of Lake Erie in rocky ravines where streams flow. Its habits, nest, and eggs are like those of the *novaboracensis*. Few know much about the bird because of its shyness, and the speed with which it retreats into thickets. Its song is delightfully rich and clear. In plumage it closely resembles the last described. A clear white line over the eye, and the buff instead of sulphur yellow of the lower parts are the chief characteristics to be noted at a distance. The bill is longer and stouter. Length about $6\frac{1}{4}$ inches, extent $10\frac{1}{2}$, bill over $\frac{1}{2}$ inch.

CONNECTICUT WARBLER

(*Geothlypis agilis*).

This bird is rarely seen in Ontario, but is a common summer resident of Manitoba. Otherwise we have no records of it in Canada. Its usual summer home is the eastern slope of the United States, while in winter it reaches South America. The head, neck, and breast are bluish gray, lighter on the throat; narrow eye-ring white; other upper parts olive green; sides olive green; under parts yellow. The female lacks the bluish gray on the head and neck. Length $5\frac{1}{2}$ inches, extent $8\frac{1}{2}$.

KENTUCKY WARBLER

(*Geothlypis formosa*).

This is an accidental visitor as yet in Canada. One has been recorded from Quebec, and one from near London, Ontario, but

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the northern boundary of its usual range is Connecticut. In the west it occasionally reaches Michigan. It makes a large shallow nest of grass, leaves, and rootlets on or near the ground. The eggs are beautifully white, sprinkled with dots of reddish brown and lilac. The plumage of the male and female is similar, being clear olive green above; pure bright yellow below; crown, cheeks, and sides of the crown black; a yellow line from the bill over and around the eye. Length about $5\frac{3}{4}$, extent about $9\frac{1}{4}$ inches.

MOURNING WARBLER

(*Geothlypis philadelphia*).

This is a shy bird that may be more common than we think. It is found occasionally in the maritime provinces and Quebec, but is fairly common as a migrant in southern Ontario and as a resident throughout the greater part of the province. It breeds in Manitoba and eastern Saskatchewan also. Its winter home is south of the United States, and its chief migration route is the Mississippi valley. Its nest is built among weeds and ferns near the ground or in a low shrub and is not easily found. The eggs are variable in their markings, sometimes being but slightly speckled. The descriptive name comes from the crape-like band of black on the throat and breast of the adult birds in the spring. The head, neck, and throat are bluish gray, blackish on the throat and breast in perfect plumage. The eye ring is not white. Other upper parts plain olive green, and the lower surface yellow. The distinction between the Mourning and the Connecticut Warbler is the short round wing of the former, and the long pointed wing of the latter, in relation to the length of tail. Length about $5\frac{1}{4}$ inches, extent about 8.

TOLMIE'S WARBLER

(*Geothlypis tolmiei*).

This is the western representative of the Mourning Warbler, being found from Saskatchewan to Vancouver Island, and through-

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out the forested region of the Pacific, from Central America to British Columbia. The nest and eggs are as in the others. Its differences in coloration are the absence of black on the clear ashy head, neck, and breast, the white eye ring, and the black lores. The size is the same as that of the Mourning Warbler.

MARYLAND YELLOW-THROAT

(*Geothlypis trichas*).

This bright, active, and brave little bird is quite common from the Atlantic to the Pacific, and from Labrador and Lesser Slave Lake to Central America. It breeds throughout its Canadian range, and also in the northern and eastern United States. In southern Ontario we hear and see it from the first week in May until September, the wave of plenty of this as with most of the Warblers being, however, from the 10th to the 24th of May. The nest is built just above the ground, and well concealed in a clump of grass and weeds. The eggs sometimes number six, and may be quite sparingly marked; but in both size and markings the eggs of Warblers show great variation. The neck, back, wings and tail are dark olive green; the chin, throat, and upper breast are bright rich yellow; under tail coverts dull yellow, belly grayish white. A broad black mark extends across the forehead and sides of the head, and is bordered behind by grayish ash. The female has not the definite black mark, and the yellow is paler. Length $4\frac{1}{2}$ to 5 inches, extent $6\frac{1}{2}$ to 7.

THE PACIFIC COAST YELLOW-THROAT

(*G. t. occidentalis*).

This is slightly longer in the tail and more richly marked. Its range overlaps that of the common form in Alberta.

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MARYLAND YELLOW-THROAT.
Life size.

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PERCHING BIRDS

YELLOW-BREASTED CHAT

(*Icteria virens*).

The Chat are better known in Europe and Africa than with us, but we have one species which well exhibits the peculiarities of the group. They are closely related to both the Wood Warbler and the Thrush families, and probably to the mocking birds. All the Chats are noted for their singing powers, and for their acrobatic performances during the nesting season. Our species is very shy, and long quiet watching is necessary if one is to see the strutting, soaring, tumbling and other displays, usually accompanied by a great variety of utterances, with which the male entertains his mate. The range of the Yellow-breasted Chat is from the Mississippi River throughout the eastern States, a few reaching Ontario. In winter it retreats to Mexico and further south. It inhabits thickets and half cleared shrubbery, building in bushes near the ground a bulky nest of fibrous materials. The eggs resemble those of Warblers in general but are larger. The characteristic Warbler coloration is well shown in this the largest member of the group. Upper parts, wings, and tail are olive green without marks except a white line over the eye to the bill and around the eye. Throat, breast, and upper belly golden yellow, then abruptly white, posteriorly. A white line on the side of the throat. Lores black. Length about $7\frac{1}{2}$, extent about 10 inches.

The variety known as the Long-tailed Chat—*Icteria virens longicauda*—is found in southern British Columbia and southward. It is grayish olive above, and the tail averages longer than in the eastern form.

FLY-CATCHING WARBLERS

(*Wilsonia*).

This is a small group of three species and some varieties, characterized among the warblers by the length of the rictal bristles,

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which in these reach decidedly beyond the nostrils. The bills are broad and depressed at the base, and like the Fly-catchers they capture flying insects.

HOODED WARBLER

(*Wilsonia mitrata*).

Range, eastern North America as far westward as the plains only, and north to Connecticut, southern New York, southern Ontario and Michigan. Only an occasional visitor in Canada. It nests in low bushes and lays four eggs of the usual kind for Warblers. The upper plumage is clear, olive green, with black crown and nape; forehead and cheeks bright yellow. Two or three outer tail feathers blotched with white. Throat and neck black; breast and belly rich yellow, shading into olive along the sides. The female and young show a less clear black, and it may be much less extensive. Length about $5\frac{1}{2}$ inches, extent about $8\frac{1}{2}$.

BLACK CAP OR WILSON'S WARBLER

(*Wilsonia pusilla*).

This species with its western variety—the Pileolated Black-capped Warbler—is found in the wooded regions of North America both east and west, and occasionally during migration on the plains also. All of its Canadian range except southern Ontario and Quebec is breeding ground, even to the Arctic Ocean along the Mackenzie valley. The nest is built on the ground by the eastern form, but from one to four feet above the ground, by the western variety (Davie). The sexes are similar, while the young differ in lacking the black cap. Upper parts, including wings and tail, bright olive green without wing bars or tail blotches; forehead and line over the eye yellow, and the crown bluish black. Under parts all bright yellow, with olive on the sides. The western form wears brighter yellow. Length nearly 5 inches, extent nearly 7.

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FROM COL. CH. ACAD. SCIENCES

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CANADIAN WARBLER.
(*Sylvania canadensis*).
About Life-size.

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AMERICAN COLORTYPE CO., CHICAGO, U. S. A.

PERCHING BIRDS

CANADIAN WARBLER

(*Wilsonia canadensis*).

This beautiful fly-catching warbler is found from Nova Scotia to Saskatchewan and through the eastern United States especially the Alleghany region. It has been captured as far north as James Bay. When settled in its nesting range its favorite home is moist thickets and wet woods, and there it nests very near the ground, frequently in the upturned roots of trees. The eggs are described as clear white with a rosy blush, and the coloration orange, rather than reddish or brown (Kells). The sexes are much alike. The upper parts, wings, and tail are bluish gray, without wing bars or tail spots. The crown is spotted with lanceolate black markings, nearly solid on the forehead; lores and sides of neck black, continuous with a necklace of black spots across the breast. A line from the bill to the eye, the throat, and under parts are clear yellow. In the young and the females the black is of less extent and not so bright. Length about $5\frac{1}{2}$, extent about 8 inches.

THE AMERICAN REDSTART

(*Setophaga ruticilla*).

Many of this group of warblers are found in tropical America, but only three reach to United States and but one is known in Canada. The name is derived from the German words for *red tail* and is in Europe and Asia applied to the genus *ruticilla* which frequent lawns and parks and is a very popular group of birds. In Canada and United States the Redstart is generally distributed, being found from ocean to ocean, breeding from the international boundary northward to Labrador, Hudson Bay, Fort Good Hope on the Mackenzie River, and less commonly in British Columbia. In southern Ontario it appears about the middle of May and again when going southward about September 1st. It builds a beautifully neat and compact nest of fibrous materials in a fork

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of a young tree, within twenty feet of the ground. The Redstart is probably our most brilliant Warbler, and has a sweet song also to win our delighted attention. The upper parts, throat, and breast are shining black; the belly, flanks, and crissum white, often with a pinkish yellow or salmon color. The sides of the body and the lining of the wings deep flame color. Bases of the wing quills, and the tail feathers except the middle pair orange yellow. Female olive, instead of black, and yellow in place of orange or flame color. Length nearly 5½, extent nearly 8 inches.

WAGTAILS

(*Motacillidae*).

We have now reached a group of terrestrial, walking birds, insectivorous and gregarious, building on the ground, and like some other groups marked by the habit of moving the tail up and down while walking or standing. The group belongs chiefly to Europe and Asia, and of the true Wagtails only a few are known to have reached Greenland and Alaska. The closely allied Pipits form perhaps 40 species in tropical America, but only two reach Canada.

AMERICAN PIPIT OR TITLARK

(*Anthus pennsylvanicus*).

These birds winter in the tropics, and are known throughout North America, as a migrant in the United States and southern Canada, but nesting in northern Labrador, about Hudson Bay, Great Slave Lake, on the mountains in British Columbia, and in Alaska. In southern Ontario they are seen in flocks in April and again in September. They sing sweetly while soaring, and have many lark-like habits. They lay from four to six eggs, which are bluish but stained with brown.

The upper plumage is brownish gray or olive, a line over the eye, and also the under parts buffy white streaked with dusky;

PERCHING BIRDS

wings and tail blackish. The end half of the outer tail feathers white, the next pair with white tips. Female similar. The hind toe nail is the longest, being at least as long as the toe. Length of bird about $6\frac{3}{4}$ inches, extent nearly 11.

SPRAGUE'S PIPIT—MISSOURI LARK

(*Anthus spraguei*).

This bird has a notable singing and soaring lark-like habit, rising aloft out of sight and returning to the same place, singing constantly. Its range is from the valley of the Red River to the Rocky Mountains, and in winter southwards to Texas and Mexico. It is a common summer resident in the dry and treeless plains of southern Manitoba, Saskatchewan and Alberta.

The upper parts are brownish gray with well marked dark streaks. Below dull white with brownish on sides. The two outer pairs of tail feathers mostly white, others dusky. Length under 7 inches, extent about $10\frac{1}{2}$.

THE AMERICAN DIPPERS

(*Cinclidae*).

This is a remarkable group of little birds combining many of the characters of the Warblers and the Thrushes. They are, however, peculiar in their habits and plumage. The body is sturdy and full of energy. The teetering motions of some water thrushes and sandpipers are here seen combined with the power of walking, running, and apparently flying under water. Stagnant water is avoided,—only rapid, cold, mountain streams are satisfactory, and in these the Dipper finds its food, collecting it on the bottom of the rapidly flowing water, and walking into and out of the stream in a peculiarly casual way. The bird does not dive, but merely runs into the water and along the bottom, gathering its prey as it goes, then walks out with dry plumage. Only one species is known in Canada.

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AMERICAN DIPPER

(*Cinclus mexicanus*).

The range of this most interesting little bird is the Rocky Mountain region from Alaska to Central America. In Canada it is found from the foot-hills in Alberta to the Coast Range. I found it plentiful in the Crows' Nest Pass, wherever rapids and waterfalls gave it satisfactory conditions. It is said to winter in Alaska, and certainly it seems quite indifferent to the temperature of glacier water. The song of the Dipper is well described by F. M. Drew, as "sweet, sparkling, and vivacious like crystallized spray—the very embodiment of a mountain stream." They build an oven-shaped or domed nest of moss, with an opening in the side, and this is usually placed near a waterfall, often on a ledge behind the curtain of water. The eggs are three to five, plain and pure white. In appearance the Dipper resembles the Catbird. Its fine compact water proof plumage is smoky grey or slaty in color, lighter below, and sooty brown on the head. In winter the lower surface is paler than in summer. Eyelids white, bill black, feet yellowish. Length 6 to 7 inches, extent 10 to 11.

WRENS AND THRASHERS

(*Troglodytidae*).

This group includes two sub-families which may be distinguished from each other as follows:—(1) Mockers or *Miminae*:—size large, length 8 inches or more, appearance thrush-like, inner toe free to its base from the middle toe, rictal bristles evident; represented by Mocking Birds, Cat Birds, and Thrashers. (2) Wrens or *Troglodytinae*:—size small,—under 8 inches in length, rictal bristles not evident; represented by all kinds of Wrens. A few species of wrens are known in Europe, but this whole group is chiefly American. They like brushy thickets where the heavy timber has been removed. There they fuss, and scold, and sing,

KEY TO GENERA OF WRENS

working without rest from morning till night. The thrashers are also dwellers in thickets rather than high trees, and rank first of all American songsters for brilliance of execution.

KEY TO THE GENERA OF WRENS.

1. Tail broad, fan shaped, each feather widening toward the end. Length about 6 inches. Tarsus scutellate behind: Lateral toes of unequal length *Salpinctes*, page 274
1. Tail thin, of narrow parallel edged feathers:—
 2. Large; upper parts uniform in color without streaks or bars except the tail:—
 3. Tail not longer than wing, and all its feathers brown and distinctly barred *Thyrothorus*, page 274
 3. Tail decidedly longer than wing, and blackish, not barred on all the feathers *Thyromanes*, page 275
 2. Small; upper parts not uniform, back, wings, flanks, and tail, with crossbars:—
 4. Tail about equal to wings. Feet when outstretched reaching not beyond the tail *Troglodytes*, page 275
 4. Tail decidedly shorter than wing, feet outstretched reaching far beyond tail *Anorthura*, page 276
 2. Small; upper parts not uniform, back with lengthwise streaks, flanks scarcely barred:—
 5. Bill not more than half as long as the head; crown and back streaked. *Cistothorus*, page 277
 5. Bill two-thirds as long as head, crown plain, back streaked between wings *Telmatodytes*, pages 277-278

THE WRENS

(*Troglodytinae*).

These are lively, courageous, little birds, of which the common House Wren may be taken as the type. They are impudent, fussy,

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and quarrelsome, scolding vigorously if they think anyone means to intrude on premises which they have taken under their protection. They sing or fight with equal dash and persistence, attacking much larger birds, sparrows, martins, and bluebirds, whose homes they often take for themselves. They are never at rest during daylight hours, and are especially persevering in capturing insects for themselves and their babies. They nest in cavities in houses, trees, and logs, or build bulky nests of reeds, moss, and grass leaves, with holes in the sides for their entrance. They lay several sets of eggs, and raise many young each summer.

THE ROCK WREN

(*Salpinctes obsoletus*).

This is a western form, confined in Canada to southern Saskatchewan, Alberta, and British Columbia. From Iowa to the Pacific and south to Central America it ranges in rocky places. It is a restless, noisy bird, building in a crevice among rocks, and laying from five to eight eggs, white with reddish brown dots. Its upper plumage is brownish gray with small sharp spots of black, bordering spots of white, and often wavy lines of dusky. Wings with spots like these on the back. A white line over the eye, and tan colored rump are characteristic. Middle tail feathers like the back with equal black and white on outer webs. All tail feathers with tan colored tips following a broad black zone. Below, whitish with broken streaks of dusky on the throat and breast. Length about 5½ inches.

CAROLINA WREN

(*Thyrothorus ludovicianus*).

A few specimens of this wren have been taken in Canada, all in southern Ontario,—St. Thomas, Forest, and Point Pelee. The more southern of the eastern States are its home; and Massachusetts, Ontario, and Michigan are but rarely visited. Its outdoor

PEROHING BIRDS

nest is usually roofed over, but it frequently builds in hollow trees or stumps, or in outhouses. Its white eggs are thickly spotted and blotched with purplish brown. The upper plumage is uniform reddish brown, below pale buff, deepening backward. A long whitish line over the eye, and whitish spots on the edges of the wing quills. Length about 6, extent about $7\frac{1}{2}$ inches. This is a shy, thicket-loving bird, with a clear loud song.

BEWICK'S WREN

(*Thyromanes bewicki*).

One specimen of this species has been taken by W. E. Saunders in western Ontario, but the western form is abundant in southern British Columbia. The home of Bewick's Wren is the interior of the eastern United States from the coast to the plains, but it is scarce near the Atlantic. The western form ranges from Mexico to British Columbia. Above, the plumage is dark grayish brown; below, it is ashy white. The rump has concealed white spots. The tail is decidedly longer than the wings. A white line over the eye from the nostrils to the nape. The middle tail feathers have many fine black bars, the others have whitish markings on outer webs and tips. Length about $5\frac{1}{2}$ inches, extent $6\frac{3}{4}$.

HOUSE WREN

(*Troglodytes aedon*).

This is the familiar wren of the eastern United States and Canada, and is represented by the variety *parkmani* in the Pacific Coast region, and as far east as Manitoba. A large loose nest in any enclosed space is the home chosen by these familiar and brave little birds, and having decided upon it they fight for it against all comers. Year after year if undisturbed they return to the box, knot hole, cornice, old hat, empty can, or bleached skull which satisfies their desire for a position of strength. They lay seven or

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eight eggs, whitish, spotted with brown. The song of the House Wren is pleasing although brief, and is persistently repeated with peculiar tiltings of the ridiculous little tail, which is such an expressive part of the bird's makeup.

The upper surface is brown, brighter on rump and tail. Below, it is rusty or grayish brown, or even whitish brown. The back has darker bars, the rump has concealed white spots. The wings, tail, and under parts are all barred with blackish. Length about 5 inches, extent about $6\frac{3}{4}$.

Parkman's Wren is more deeply barred on the back, but the variety grades into the type. (Coues.)

WINTER WREN

(*Anorthura hiemalis*).

This is the American form of the European Wren. It differs from the House Wren in having the wings longer than the tail. The outstretched feet also reach beyond the tail. The usual winter home of this bird is south of the international boundary, but a few of them remain in our dense arbor vitae or white cedar swamps, and may be seen on bright days in midwinter. The breeding grounds of the Winter Wren are the Alleghany Mountains from Carolina northward, and throughout eastern Canada from Nova Scotia to Manitoba and north to Labrador and James Bay. It is more plentiful in the maritime provinces than in Ontario, except during the migration. Its song is a delightful and surprising melody. The nest is often built among the tangled roots of a fallen tree in a dark swamp, and is usually a spherical mass of moss with an entrance on one side. Six, seven, or eight eggs are laid, white with pale markings. The plumage is very similar to that of the House Wren, but the relative lengths of wings, legs, and tail, noted above, will always distinguish them. Length about 4 inches, extent about $6\frac{1}{4}$. The Pacific Coast form is slightly darker, and ranges through the mountains.

PERCHING BIRDS

SHORT-BILLED MARSH WREN

(*Cistothorus stellaris*).

Eastern North America,—breeding in Ontario and Manitoba and probably the New England States,—may be considered the range of this very interesting but shy bird. As it never leaves its marshy home it is not at all familiar to many who would enjoy hearing its bright, sweet, little song. Its nest is built of coarse grass and cattails woven together to form a spherical mass. On one side of this and possibly elsewhere the materials are so loose as to permit easy entrance, but no clear open passage is formed. The excess of domestic energy of these bustling little songsters usually results in the construction of several nests, only one of which is used. The object of this is not yet apparent, perhaps it is to fool the water snakes, which without doubt take all the young birds they can find. Eggs five to eight usually pure white. The upper surface of the plumage is streaked with brown, black, and white, the wings and tail are barred. The lower parts are pale brownish white, darker on the sides and under tail coverts; flanks barred with dusky. Length 4 to 4½ inches, extent under 6. Bill less than one-half inch.

LONG-BILLED MARSH WREN

(*Telmatodytes palustris*).

The range and habits of this form are very like those of the preceding. It probably nests further north and is certainly more uniformly distributed in southern Ontario. The cat-tail marshes along the St. Lawrence and Lake Ontario seem to be alive with these little settlers about the 24th of May, and their globular nests, about a foot in diameter, may be seen all along the quiet sluggish waterways. Birds near you are anxiously enquiring your business in their neighborhood, but those more distant can be seen rising to the height of ten feet, apparently carried up by the burst

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of melody which ripples from their open beaks, then sinking and immediately singing their way up again. Each pair builds several nests besides the one selected for occupancy, and these may be some yards apart.

The crown is plain olive-green, bounded by a white line over the eye. The back is black, streaked with white between the wings; rump brown; tail and wings barred with dark. Sides grayish-brown; under parts white along the middle line. Length 5 inches or more, extent about $6\frac{1}{2}$, bill $\frac{1}{2}$ inch or more.

CALIFORNIA WREN

(*Telmatodytes palustris paludicola*).

This is the variety of Long-billed Marsh Wren found between the Rocky Mountains and the Pacific Coast from Mexico into British Columbia. It is said to have a slightly shorter bill, and to be more distinctly barred on the tail.

The Western Marsh Wren and the Prairie Marsh Wren are names given to forms found respectively in southern British Columbia, and in the prairie marshes of southern Alberta and Saskatchewan. The description of the type will serve for them all.

BROWN THRASHER

(*Harporhynchus rufus*).

The eastern United States and Canada to the foot of the Rockies, form the range of the Brown Thrasher, Ground Thrush, or Sandy Mockingbird as this is called. It winters in the southern States and nests as far north as the Saskatchewan River in the west, but only in Southern Ontario and about Montreal in the east. The habits of the Thrasher are retiring except when in the humor for singing,—morning and evening. Then he takes a prominent position,—the top of a small tree usually,—and gives a finished performance, loud, clear and brilliant. But even in a quiet and



BROWN THRESHER.

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PERCHING BIRDS

lonely place he seems to be singing to the gallery, quite in contrast to the Cat Bird which gives itself up to song, and often is heard with delight when invisible in a thicket. The Thrasher scratches for its food among leaves, and shrubs, and builds within a few feet of the ground in dense bushy growths often of wild plum or cherry. The eggs are bluish with reddish brown speckles. The upper plumage is a rich, rusty red; wings with bars of dark and white. Under parts white, pure on the throat and middle of belly, but streaked with dark brown and tinged with tan color elsewhere. Length about 11 inches, extent 13 to 14, tail about 5 inches.

MOCKINGBIRD

(*Mimus polyglottos*).

From Mexico and Florida to New Jersey and Ohio rarely to Massachusetts, is the range of this "prince of musicians." A few are known to have entered Canada, records exist of specimens seen or taken at Sable Island, Truro in Nova Scotia, and Kingston, Hamilton, Strathroy, and Chatham in Ontario. The Kingston specimen was taken after a long chase by the late R. M. Horsey, a devoted student of birds. Mr. Horsey had lived at New Orleans and knew the bird well. He mounted it carefully, and the specimen is at present in the possession of his family.

These must all be considered accidental visitors, and we can see no reason to hope for a permanent extension of the Mockingbird's range into Canada soon. In coloration it resembles more nearly our Shrike than any other of our common birds.

The upper parts are ashy gray; wings and tail blackish with a white spot on the primaries. The outer tail feathers are largely white. Lower surface grayish white. Length about 10 inches, extent about 14.

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CATBIRD

(*Galeoscoptes carolinensis*).

All the way from Nova Scotia to Vancouver Island, and from 54 degrees north latitude, or about the Saskatchewan River, to the Southern United States, the Catbird is resident, more plentifully however in the east. Excepting his cousin the Brown Thrasher, he has no rival as a musician in Canada, and the friendly nature he shows in living near our houses and singing his delightful melodies for us, makes him one of the best loved of wild creatures. The vagrant cat,—and all cats are vagrants,—is his especial abomination, and deservedly so, because his nest is certain to be visited when the young family become well worth eating. During all but the fall months the Catbird lives on insects alone, thus protecting all growing fruits and vegetables. When the raspberries and strawberries are ripe, he claims his proper share, and he certainly has earned the right. His nest is built usually within six feet of the ground in thickets of choke-cherry, sweet briar, or other dense shrubbery. The eggs are greenish blue.

Plumage is slaty gray; crown and tail black; under tail coverts dark chestnut. Length $8\frac{1}{2}$ to 9 inches, extent 11 or more.

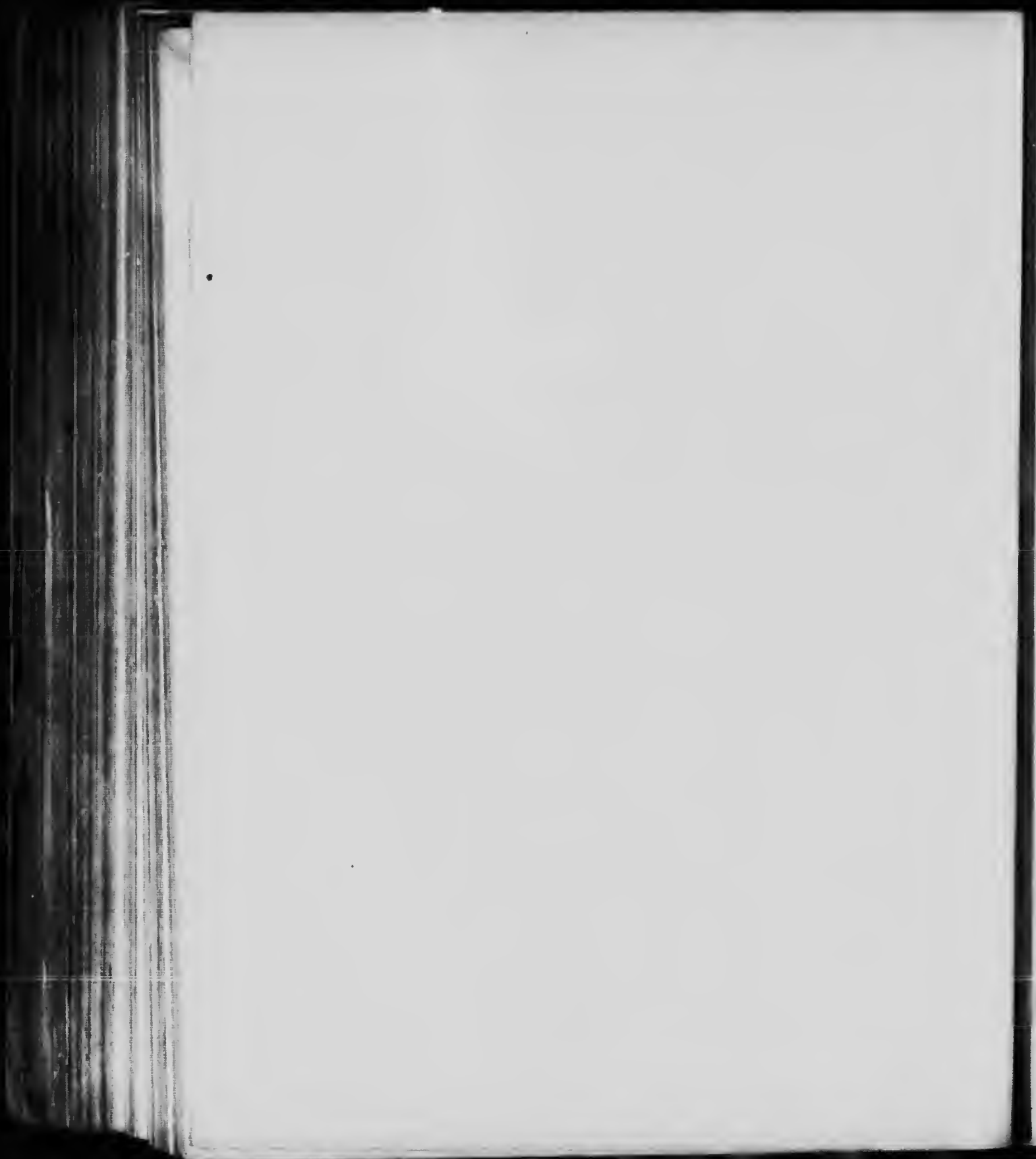
THE CREEPERS

(*Certhiidae*).

This is an Old World family, except the one species and its varieties named below. The mark by which our Creeper may readily be known is its stiff tail of acuminate feathers, used as the Woodpeckers use their similar structures, as a prop for the body while the bird climbs spirally up the trunks of trees. The bill is very long, sharp, and decurved, and by its use the bird lives by picking bugs, beetles, and worms out of the crevices in the bark.



CATBIRD.
1 Life size.



PERCHING BIRDS

BROWN CREEPER

(*Certhia familiaris*).

Eastern North America—as far north as Newfoundland and as far west as Manitoba—forms the range of the type form of the Brown Creeper. It is common in few places; always confined to wooded districts, and is partially migratory. In southern Ontario we occasionally see it in winter and in summer, but more frequently in spring and fall. It nests in hollow trees or holes made by woodpeckers, and lays from five to eight speckled eggs. The custom of this bird is to start at the bottom of a tree and climb it spirally until the branches become somewhat small, then it floats off to the foot of a neighboring tree and begins again. It pays little attention to observers but attends strictly to its lifelong business. Plumage on the upper surface brown, streaked and barred with black and white; rump clear brown; lower surface white or brownish white. Wings dark, with yellowish and whitish spots and bars; tail brown, of stiff sharp pointed feathers. Length about $5\frac{1}{2}$ inches, extent $7\frac{1}{2}$ to 8.

The Rocky Mountain Creeper—*C. f. montana*—is found in central British Columbia, and is said to differ in being grayer, with contrasting tawny rump. It is thought to average longer throughout.

The Tawny Creeper,—*C. f. occidentalis*, is another variety found only on the Pacific slope from California to Alaska, and is darker in tone.

NUTHATCHES AND CHICKADEES

(*Paridae*).

This family of small birds is related to the Wrens and Creepers, but is distinguished by having:—

- (1) tail about as long as the wings;
- (2) tail feathers not stiff nor acuminate;

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(3) front toes united at the base;

(4) bill compressed, stout, straight and much shorter than the head.

These characters belong also to the Jays, but our Jays are over seven inches long, while all our Nuthatches, Chickadees and Tits are under seven inches. They belong to the northern hemisphere, and are almost indifferent to low temperatures, although slightly migratory in the northern parts of their range. They are active, energetic, fearless of man, eating almost anything, and several of them have pleasing little songs.

Nuthatches get their name from their habits of wedging a nut,—as of the beech—in a crevice, and then opening or hatching it with blows of their bill. They climb downward as well as upward on the trunks of trees, but unlike Woodpeckers and Creepers, do not use their tails as supports. Chickadees or Titmice seek their prey rather among the twigs and outer branches, but are very accommodating in their appetite, and greatly enjoy a bit of meat or suet in winter.

WHITE-BREASTED NUTHATCH

(*Sitta carolinensis*).

From the Gulf of Mexico north and eastward to Labrador and James Bay, this interesting little acrobat ranges, nesting in the northern part and in the mountain regions. In southern Ontario it is more plentiful in fall and winter than in summer, being only partly migratory. Its food is chiefly insects, but it also eats nuts and hard fruits. Its calls are scarcely musical, but the peculiar habits of the bird make it always interesting. Its nest is made in a natural or artificial cavity in a tree, often far from the ground, very frequently in a hole made by themselves or by a woodpecker. It lays from five to eight eggs,—whitish and speckled with brown.

The plumage of the back and the central tail-feathers are clear bluish gray, the top of the head and the back of the neck and

PERCHING BIRDS

a band across the shoulders being glossy black. The outer tail-feathers are black with white blotches. The sides of the head and the under parts are white, becoming rusty brown on the lower belly and crissum. Female similar, but with some gray mixed with the black. Length about 6 inches, extent about $10\frac{1}{2}$. The variety of this called the Rocky Mountain Nuthatch is resident in British Columbia, and reported from Manitoba.

PIGMY NUTHATCH

(*Sitta pygmaea*).

This Nuthatch is confined to the Pacific slope, being found in Canada only in south-western British Columbia. Their nesting habits are like those of the others, but they are described as "caulking up the holes and seams in the trees around their nests with hair." (Spreadborough). It lays six or seven white eggs thickly speckled with reddish. The crown, the nape, and the sides of the head to below the eyes are olive-brown, a blackish line around the eyes forms a border to the crown-patch, remaining upper parts ashy-blue. Central tail feather like the back, but with a long white spot, others blackish with white marks. Under surface shading from a dusky-white in front, to smoky-brown or even blackish towards the tail. Size the same as that of the Red-breasted.

RED-BREASTED NUTHATCH

(*Sitta canadensis*).

This little Nuthatch is found in Labrador and Newfoundland, and is resident in Nova Scotia, New Brunswick, Quebec, northern Ontario, in Manitoba and westward to the Pacific in wooded regions, and also north to Alaska. It is a common migrant in southern Ontario. They often excavate their own nesting-places in rotten trees and stumps, usually not more than ten feet from

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the ground. An interesting peculiarity is the fact noted by several observers,—that they often place around the entrance to the nest a ring of pine gum, which is supposed to be either a trap for insects or a defence against mice. Evergreen trees and their cones are favorite objects of investigation by this nuthatch, and they probably eat the seeds of pines. Their note is thinner and more nasal than that of the White-breasted. They lay about six eggs, embedding them in hair and feathers. Beside the crown stripe this species has a wide black stripe through the eye, reaching back to the nape, and widening on the side of the neck. Back and tail like those of the White-breasted. The throat is white but the breast and belly are yellowish brown or almost chestnut. Length rather over $4\frac{1}{2}$ inches, extent about $8\frac{1}{4}$.

CHICKADEE

(*Parus atricapillus*).

The forest regions of eastern North America from North Carolina to Labrador and James Bay, are the range of this, our common Chickadee. It is a resident in all the provinces east of Manitoba, but there its place is taken by the long-tailed variety. They nest in holes which they excavate in rotten stumps or fence posts. They lay from six to eight eggs, white, speckled with reddish-brown. In southern Ontario, we notice these birds more frequently in winter when they come near the houses and barns, showing no fear of man, singing their "chik-a-dee-dee-dee" very cheerfully when the days are bright. During the summer they remain in the cool evergreen swamps. The back, wings and tail are brownish-ash; the crown, nape, chin, and throat shining black; the sides of the neck and head white; wing and tail feathers bordered with white; breast white and belly brownish. Length $5\frac{1}{4}$ inches, extent 8 inches.

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LONG-TAILED CHICKADEE

(*Parus atricapillus septentrionalis*).

From Manitoba westward, especially in the Rocky Mountain region, the Chickadees are somewhat larger and their tails are longer, surpassing the wings in length. The coloration is the same as that of the preceding, but clear and sharp, the black more extensive on the nape, and in front reaching to the breast. The feathers of the wings and tail are strongly edged with whitish.

WESTERN OR OREGON CHICKADEE

(*Parus atricapillus occidentalis*).

This form, belonging to the Pacific coast region, is dark in tone, with very light whitish edgings on wing and tail feathers, and a brownish wash on the blue-gray of the sides.

MOUNTAIN OR GAMBEL'S CHICKADEE

(*Parus gambeli*).

From the foot-hills of the Rockies in Alberta to the Pacific Coast, and southward to California, Gambel's Chickadee is a common resident. Its upper surface is unshaded ashy-gray, and the under parts grayish-white, nearly pure white in a median line. Sides of neck and head white; throat and top of head black, with a narrow white line over the eyes and across the forehead. Length about 5 inches, extent about $8\frac{1}{2}$.

HUDSONIAN CHICKADEE

(*Parus hudsonicus*).

This bird ranges from northern New England and the Great Lakes northward in the coniferous forests to Hudson Bay, and westward to Alaska. It is common in the maritime provinces and

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is occasionally seen in southern Ontario as a winter migrant. Its note is different from that of the common Chickadee, and its coloration quite distinct. The two species are often associated in their winter wanderings. The crown, nape, and back are ashy-brown, small throat patch black, sides of the head below the eyes white, under parts whitish, with brownish on sides and flank.

CHESTNUT-BACKED CHICKADEE

(*Parus rufescens*).

This species is common in the Pacific coast region from Oregon through Washington, British Columbia, and southern Alaska. It haunts shrubby and coniferous forests, and nests in hollow trees. Its coloration distinguishes it, being chestnut on the sides and back, dark brown on the crown and nape, black on the throat, with a large white patch on each side of the neck. Its length is about $4\frac{3}{4}$ inches and its extent $7\frac{1}{2}$ inches.

KINGLETS AND GNATCATCHERS

(*Sylviidae*).

This group contains the Old World Warblers of which we have no records in America except of one species which has been taken in Alaska,—also the Kinglets—*Regulinae*, and the Gnatcatchers—*Poliophilinae*, of which we have a few. They are all related to the Thrushes, but moult twice a year, whereas the Thrushes moult but once. Connected with this is the lack of spots on the young *Sylviidae*, which are so marked a character in the Thrushes.

The Kinglets—*Regulinae*—are active and elegant little birds of olive green coloration, pale below, and with red, black, or yellow crown. Two species and one variety are known in Canada, an additional species being known in the United States, and about seven other species are inhabitants of Europe and Asia. Some

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RUBY-CROWNED KINGLET.
About Life-size.

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PERCHING BIRDS

of these are—next to the Hummingbirds—the smallest feathered creatures known. The tarsus is booted, very slender, and longer than the middle toe and claw.

GOLDEN CROWNED KINGLET

(*Regulus satrapa*).

This is a beautiful little bird with a pleasing song, and is known in all parts of North America. It seldom breeds south of the Canadian boundary except on mountains, but, unless in southwestern Ontario, it is a resident in all parts where there are plenty of evergreen conifers. During mild winters it remains in Ontario, but it usually migrates a short distance southward. It builds a bulky partially suspended nest of green moss and all sorts of fibrous vegetable materials, lined with fine rootlets and feathers. This it fastens near the end of a branch of an evergreen, often high in the tree. The eggs number sometimes ten, and are creamy or pale grayish yellow, with a few brown marks. The crown is reddish orange bordered with yellow and black. In the female the red shades are absent. The forehead and a line over the eye are whitish. A tiny feather over each nostril. Upper parts otherwise olive green; wings and tail, dusky. Lower surface grayish or yellowish white. Length 4 inches, extent $6\frac{1}{2}$ or more. The form found in British Columbia is by some called *R. s. olivaceous*, or Western Golden-crowned Kinglet, and is "said to be of a livelier coloration than the above." (Coues.)

RUBY-CROWNED KINGLET

(*Regulus calendula*).

The distribution of this bird is practically the same as that of the Golden-Crowned Kinglet, with which it often associates. The Ruby-crown is however a brilliant musician, his "mellow flute-like" warble being of surprising strength and quality for such a

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diminutive bird. His song is heard in perfection only in spring, usually early in May, and the call note of autumn gives us no suggestion of the bird's ability as a singer. It seldom nests in southern Ontario, but does so in Nova Scotia. The distinction between the birds is in the crown spot and wing bars. In this species the crown has a partly concealed rich scarlet patch, the rest of the upper parts are greenish olive, more yellowish on the rump. The wings have two whitish bars, and the under parts are a drab white. Length $4\frac{1}{2}$, extent $7\frac{1}{2}$ inches. Its nest and eggs are very similar to those of the preceding species.

BLUE-GRAY GNATOATCHER

(*Polioptila caerulea*).

This is one of the birds whose northern limit practically coincides with our international boundary. A few specimens stray across, but so far they must be classed as accidental visitors, except in southwestern Ontario. It has been taken at Montreal, Ottawa, Toronto, and London. Its home is south of the northern tier of states, and it breeds from the east coast to California in well-wooded districts. Its nest is one of the most perfect known, being deep, compact, contracted at the mouth, and often decorated with lichens. The interior is beautifully lined with down and feathers. This structure is usually fixed to twigs so as to be suspended, but may be saddled on a high horizontal branch. The bird has a thin but pleasing song, and stays in the tops of tall trees. The upper parts of the plumage are grayish-blue, brightest on the crown, with a black foreband and line over the eye in the male. Under parts whitish, the outer tail feather is white, as are two-thirds of the second and the tip of the third; the others are jet black. Length $4\frac{1}{2}$ or more, extent $6\frac{1}{2}$ inches.

PERCHING BIRDS

THE THRUSHES AND BLUEBIRDS

(*Turdidae*).

The marks of North American members of this family are,—booted tarsi, 10 primaries,—the first spurious,—and wing over 3 inches long. This would, however, include one bird—the American Dipper,—which does not belong here. The fusion of the scales of the tarsus into a boot is complete only at maturity.

The Fly-catching Thrushes or Solitaires are confined to tropical America except one:—

TOWNSEND'S SOLITAIRE

(*Myiadestes townsendi*).

The Rocky Mountain region from New Mexico and California to Alaska is the home and breeding ground of this interesting and remarkable singer. It feeds on insects during the summer, and on fruit in the cold weather. Its nest and eggs have been taken near Banff, the nest built on the ground usually on the side of a bank. Eggs three to six, bluish, speckled with reddish brown. The plumage in general is brownish gray, paler below, especially on the throat, belly, and crissum. Wings and tail blackish, the former with a tawny spot and blackish bar; the tail with white on the outer feathers. A white ring around the eye. Length about 8 inches.

THE TRUE THRUSHES

(*Turdinae*).

Many species of Thrush are known, and they are found in all parts of the world, being especially well represented in tropical America. Six species with several varieties reach Canada, while about twelve species are known in the United States. All are insect and fruit eating birds, inhabiting wooded regions, and travelling in flocks during migration. The young are streaked and spotted.

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ted in their first feathers, but soon become like the parents. For sweetness of voice and expression these birds occupy the first place, although others may excel in brilliance and power. The Nightingale of Europe belongs to the same group. At present this group, including the Bluebirds, is placed at the head of the division of animal life known as birds. They are believed to represent the highest point in bird structure, although this is open to question.

WOOD THRUSH

(*Hylocichla mustelina*).

The Wood Thrush winters in Central America and ranges over the eastern United States and southern Ontario. It breeds as far north as Georgian Bay, building a firm cuplike nest, similar to that of the American Robin, and placing it usually within ten feet of the ground, often in a young broad leaved tree. The eggs, usually four, are light greenish blue. The note of the Wood Thrush is significant of peace and rest, and while too short to be properly designated a song, it is one of the most pleasing and satisfying of Nature's evening voices. The markings of the Wood Thrush are more readily distinguished than those of any other of his retiring and forest loving family. The upper surface is yellowish brown, brightest on the head, shading to olive brown on the rump and tail; a light ring around the eye; under parts white, thickly marked with large round blackish spots, except the throat and middle of the belly. Length about 8 inches, extent about 13.

WILSON'S THRUSH OR VEERY

(*Hylocichla fuscescens*).

The eastern United States, the maritime provinces, Quebec and Ontario are the range of the Veery. It goes further north than the Wood Thrush and is also a much more common resident

PERCHING BIRDS

in eastern Ontario. It places its nest on the ground or near it, on a bush or stump, making it of grass and weed stems, bark and other fibrous materials, but with little mud. The eggs are similar to those of the Wood Thrush. The song of the Veery cannot well be described. "All the wondrous mysteries of the woods find a voice in the song of this bird; he thrills us with emotion we cannot express." The upper plumage is uniform reddish brown. No light ring around the eye. Breast and throat washed with brownish yellow. Lower breast and belly white, sides grayish or olive. Chin and middle line nearly white, and unspotted, while indistinct brownish spots mark the throat and jugulum. Length 7 to 7½ inches, extent about 12.

From Manitoba to the Coast Range of British Columbia in all well wooded places the Willow Thrush,—*H. f. salicicola*,—is found. The upper surface is less yellow, more olive, the lower less yellow also, than in the type, with few or no spots back of the dusky breast.

GRAY-CHEEKED OR ALICE'S THRUSH.

(*Hylocichla aliciae*).

Range, Eastern North America, breeding in Labrador, about Hudson Bay, in Manitoba, Saskatchewan, about Great Slave Lake, and to the mouth of the Mackenzie River. Rarely noted in Ontario except by a few skilled observers. It is a shy bird, difficult to distinguish. Its nest is placed usually in low trees or bushes, and sometimes on the ground. The eggs are greenish blue speckled with brown.

The upper parts are uniform olive, no buff around the eye. Middle of throat and belly white, sides of throat and breast may have a faint wash of creamy buff, and "with wedged shaped dark marks on the throat, and half-round spots on the sides of breast." Length about 7¾, extent about 13 inches.

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BICKNELL'S THRUSH

(*Hylocichla aliciae bicknelli*).

This is a smaller and brighter variety of Alice's Thrush. It belongs to the White Mountains and Nova Scotia, nesting near the mountain-tops in scrubby evergreens.

RUSSET-BACKED THRUSH

(*Hylocichla ustulata*).

The range of the Russet-backed Thrush is the Pacific coast, from Central America to Alaska, nesting abundantly in British Columbia.

Upper surface russet olive, as in the Willow Thrush. A buff ring around the eye. The breast and throat are thickly marked with dark olive spots, which extend back of the buff area of the breast. Sides shaded with olive gray. Length $7\frac{3}{4}$, extent 12 to $12\frac{1}{2}$ inches.

KADIAK HERMIT THRUSH

(*Hylocichla guttata*).

This is the Hermit Thrush of the west coast, especially of Alaska and northern British Columbia. The more southern part of British Columbia has the variety *auduboni*—Audubon's Hermit Thrush, while the Eastern Hermit Thrush or Swamp Angel, is the variety *pallasi*. As the latter is the best known we shall notice its characters and the differences among the varieties. This is the commonest thrush in many parts of the east and is found in woodlands in Manitoba, Saskatchewan, Alberta, and British Columbia. This bird winters from the latitude of New Jersey southward, and nests from Massachusetts and Michigan northward to the latitude of Lesser Slave Lake. It comes to us in southern Ontario soon after the snow disappears, and remains

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till late fall. Their food is probably largely gathered from the ground, as we usually see them flying up from the ground as we approach the thickets in which they make their homes. While not a timid bird, the Hermit Thrush prefers to live in secluded places, and is decidedly averse to being conspicuous.

Its song is placed by many at the very top of the catalogue of American bird music because of its sweetness of tone. It builds usually on the ground, a nest of moss, leaves, and grass, lined with fine rootlets, and sometimes leaves of conifers. The site of the nest is usually very secluded, a dense shrubby thicket far from the haunts of men, boys, or dogs. The plumage of the upper surface is olive brown, becoming reddish brown on the rump and tail. Throat and breast tinged with buff, middle of the belly white, sides of the throat with wedge-shaped black spots, the breast with rounded spots: sides brownish gray. Length about 7 inches, extent about $11\frac{1}{2}$.

The variety known as Audubon's Thrush is a little larger, reaching seven and three-quarter inches in length. The back is inclined to be olive gray instead of brown and is not so bright. The Kadiak Hermit Thrush is smaller, scarcely seven inches long, the colors being the same as those of the eastern form.

OLIVE-BACKED THRUSH

(*Hyllocichla ustulata swainsoni*).

This is the eastern variety of *ustulata*, and breeds mostly in Canada and Alaska. Its western limit is the Coast Range of British Columbia, while it is common in the maritime provinces and New England. It is said to spend the winter in the West Indies and South America. Its eye ring and ears are buffy yellow and its upper surface lacks russet, being a uniform olivaceous; the lower surface is white with brownish gray on the sides. The fore parts except the throat are marked with many large dusky spots;

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the sides of the throat with wedge-shaped black feather tips. Length about 7, extent 12 to 12½ inches.

AMERICAN ROBIN

(*Merula migratoria*).

Our Robin ranges over North America at large except the extreme northern plains and the western part of Mexico. The form in the Rocky Mountains and Pacific slope regions is perhaps slightly larger, but otherwise is practically identical with the type. No other bird is better known or loved than this cheerful Red-breasted Thrush, singing vociferously under cheerless March skies before the snow has disappeared, staying with us till it comes again, and in southern Ontario, not infrequently all winter long, in the vicinity of dense evergreen swamps. It is known to raise its young from near the border of Mexico to the Arctic Ocean in Alaska, and under favorable circumstances four broods in a season. The nest is half grass, leaves, twigs and hair, held together and lined with clay. It is a fairly deep cup, and the eggs—usually four or five,—are greenish blue, usually plain, but occasionally having brownish markings. The deep chestnut reddish of the under parts except the throat, is a sufficient mark of identification. The female is less bright, and both in the fall have whitish tips on the reddish feathers. The young birds are for a short time after leaving the nest spotted and streaked with black. Length from 9½ to 10 inches, extent 16.

THE VARIED THRUSH--OREGON ROBIN

(*Hesperocichla naevia*).

This thrush ranges from Mexico to Alaska, being quite common throughout western British Columbia. The upper plumage is dark slate color, wings and tail blackish or blackish olive, two wing bars of orange brown. The same orange forms a stripe be-

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BLUEBIRD.
Life-size.

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PERCHING BIRDS

hind the eye, and covers the under parts to the lower belly, where it fades to whitish. The breast is crossed by a broad black band which extends upward round the orange brown on the sides of the neck and head. The female is more olivaceous above, and duller below,—rusty rather than orange brown. Length about $9\frac{3}{4}$ inches, extent about 16 inches. Very rarely a specimen of this thrush wanders to the eastern United States.

GREENLAND WHEATEAR OR STONE-CHAT

(*Saricola oenanthe*).

The stone-chats are birds of Europe, Asia, and Africa, and this can be considered merely as a circumpolar wanderer which occasionally migrates southward through Canada. It possibly breeds in northern Labrador and Greenland. A few specimens have been taken in Ontario, Quebec, and New Brunswick. It nests in holes in the ground or crevices in rocks, laying greenish blue unspotted eggs. The adult male is ashy gray, with a white line over the eyes and across the forehead, and the under parts white or washed with dusky. Rump white; wings and end of tail black, but more than one half the upper portion of the tail feathers white. Female brownish gray. Length about $6\frac{1}{2}$ inches, extent about 12 inches. Song pleasing and somewhat imitative.

BLUEBIRD

(*Sialia sialis*).

From Newfoundland to eastern Manitoba, and from the southern States to Hudson Bay is the range of our common Bluebird. It is not nearly so plentiful in the maritime provinces as in western Quebec and Ontario, where it is abundant. Like the Robin it enjoys the conditions of agriculture, and prefers hollow rails and posts, a woodpecker's excavation in a telegraph pole, or a box or birdhouse, to the hollow tree of remote woodlands. The

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garden, orchard, and farm out-buildings are favorite breeding grounds. It is welcome everywhere, and in spring its early, sweet, plaintive call is the essence of loving, gentle cheerfulness. "Pur-i-ty, pur-i-ty" is its admonition, given in the spring with joyfulness, and in autumn with sadness.

The eggs are pale blue. The upper parts,—head, wings, and tail are bright blue. The throat, breast, and sides of the body are reddish chestnut, belly and crissum whitish.

The female has a brownish cast over the blue of the back, while the under parts are rusty-brown. Length about 7 inches, extent about 12½ inches.

MEXICAN OR TOWNSEND'S BLUEBIRD

(*Sialia mexicana occidentalis*).

In southern British Columbia and southward to New Mexico this bluebird is common. Its habits, nest and eggs are very similar to those of the eastern form. The rich blue of the back, wings, and tail, also includes the head and neck all around. On the upper back is a patch or two patches of bright chestnut. The breast and sides are chestnut, the belly and crissum are bluish. There seems to be either hybrids or intergrading forms between these bluebirds. Length and extent same as the last.

ARCTIC OR MOUNTAIN BLUEBIRD

(*Sialia arctica*).

From western Manitoba to the Pacific Coast especially throughout the mountain region, and from Alaska to Mexico this is a common bird. Its nest and habits are the same, but its eggs are larger than those of the eastern bluebird. The upper plumage is a paler azure blue than that of the other species, and at times has a greenish shade. Below, the surface is a pale greenish-blue, fading into white on the lower belly and crissum. Length 7 inches or more, and extent 13 or more.

GLOSSARY OF TECHNICAL TERMS

- Acuminate*tapering gradually to a long point.
- Altricial*born or hatched in an immature, unfledged, helpless condition, and requiring protection and food from the parents for some time.
- Angulated*having a change in direction in the commissure (see below).
- Arboreal*living in trees or shrubs.
- Bend of wing*the angle formed when the wing is folded.
- Booted*having the scales of the tarsus fused into a smooth unmarked covering as in the robin.
- Bristle*a stiff hair.
- Cere*fleshy or skinlike covering of the base of the bill in certain birds, especially the hawks and owls.
- Cervical*relating to the neck.
- Chin*the space between the two branches of the lower bill or jaw.
- Commissure*the line on which the mandibles of a bird are closed.
- Compressed*flattened sidewise.
- Conirostral*having the beak conical in form with the commissure angulated.
- Coverts*small feathers hiding the bases of the quills.
- Crest*lengthened feathers about the top of the head.
- Crissum*under tail coverts.
- Crop*an enlargement of the gullet of bird.
- Culmen*the middle line or ridge of the upper mandible of a bird's bill.
- Deciduous*falling off after a season, temporary.
- Decurved*curved downward.
- Dentate*with toothlike notches or plates.
- Depressed*flattened from above and below.
- Depth*diameter in a vertical direction.
- Distal*the end furthest from the point of attachment.

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- Ecological* dependent on surrounding conditions.
- Emarginate* having a portion cut out, resulting in the abrupt narrowing of quill feathers, and the slight forking of the tail.
- Erectile* able to be raised or erected.
- Facial* belonging to the face or front of the skull.
- Falcate* long, narrow and curved like a sickle.
- Fissirostral* having the bill deeply cleft, beyond the base of the horny part, as in the swallows and goatsuckers.
- Furcate* forked, having the lateral tail feathers longer than the middle ones.
- Gape* the opening of the mouth.
- Gonys* the middle line of the lower surface of the lower mandible in birds.
- Gorget* the throat patch of peculiar feathers, notable in the hummingbirds.
- Graduated* becoming progressively longer from the outer toward the central, as in the tail feathers of the magpie.
- Gular* belonging to the throat or upper fore-neck.
- Hallux* in birds,—the hind toe.
- Hyoid* belonging to the tongue.
- Imbricate* overlapping like shingles on a roof.
- Imperforate* not pierced through.
- Jugulum* the lower throat.
- Lamellae* plate-like processes like those inside the bill of a duck.
- Lamellirostral* having plate-like or tooth-like projections along the edge of the bill, as in ducks.
- Lateral* toward or on the side.
- Lobate* furnished with membranous flaps, as the toes of the coots and grebes.
- Lores* the space between the eye and the bill.
- Nape* the back of the neck.
- Nasal* relating to the nostrils.
- Nuchal* pertaining to the nape or the back of the neck.

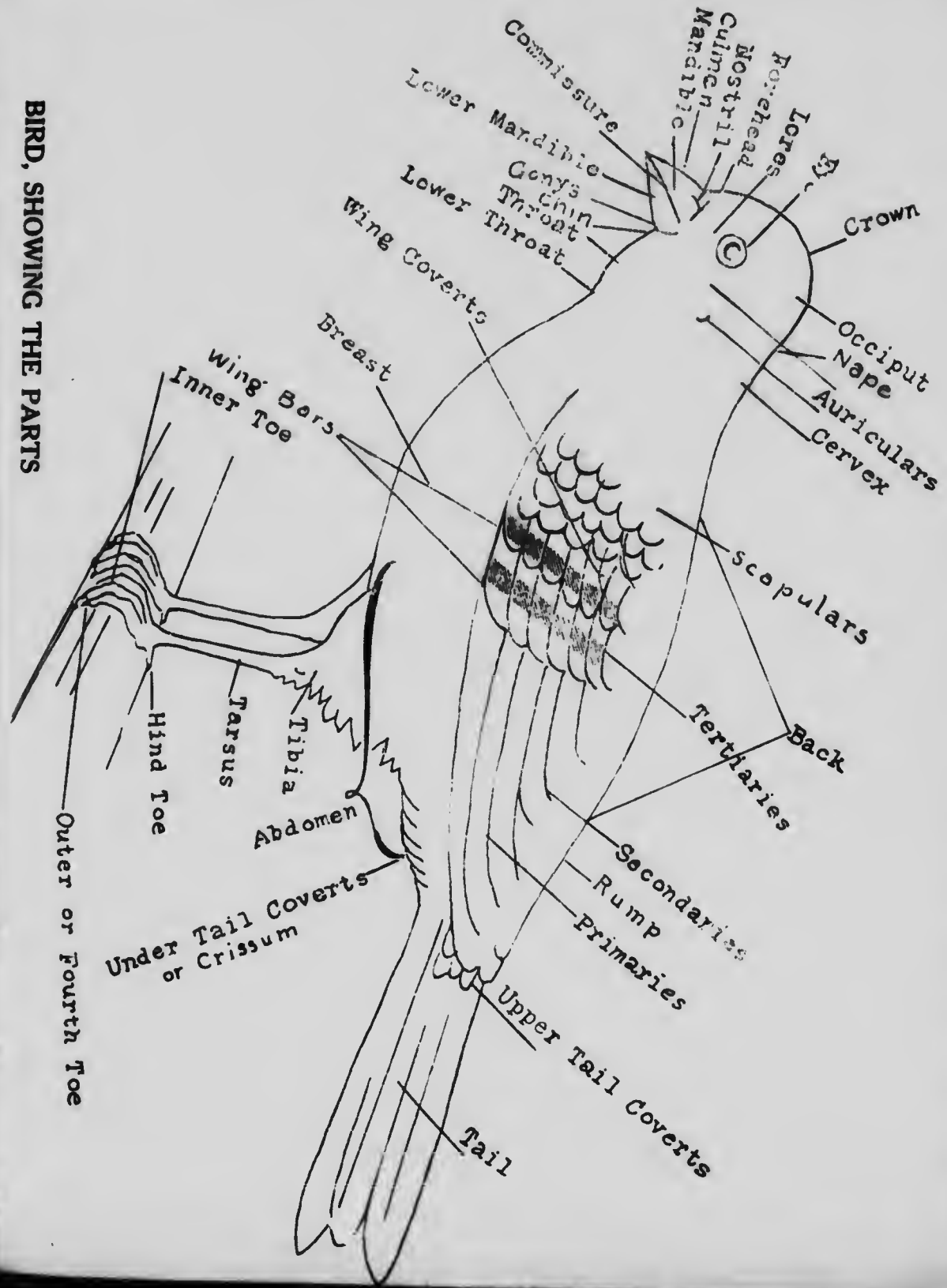
GLOSSARY OF TECHNICAL TERMS

- Obscure*scarcely visible.
- Obsolete*scarcely to be found.
- Obtuse*blunt.
- Occipital*belonging to the back of the head.
- Ocellate*with eye-like spots.
- Palmate*having webs between the toes.
- Pectinate*having a row of horny points along the side,
as the toes of the grouse in winter.
- Perforate*pierced through.
- Pigment*coloring matter.
- Plumbeous*lead colored.
- Polygamous*uniting with more than one female.
- Precocial*able to run and feed themselves as soon as
hatched.
- Primary*one of the nine or ten longest stiff quills of
a bird's wing.
- Primary wing coverts*.the coverts overlying the primaries.
- Punctate*dotted with small spots or points.
- Quadrata*nearly square.
- Quill*one of the stiff feathers of the wing or tail
of a bird.
- Rachis*the shaft of a feather.
- Reticulate*marked or divided by a network of lines.
- Retractile*able to be drawn inward, as the claws of a
cat and of some birds.
- Retrorse*turned backward.
- Rictal*belonging to the gape of the mouth.
- Rostral*belonging to the beak or snout.
- Rudimentary*undeveloped.
- Ruff*a collar of modified feathers.
- Scapular*relating to the shoulder.
- Scutellate*having broad shield-like plates regularly ar-
ranged, as on the tarsus of certain birds.
- Secondaries*the shorter quills growing on the inner part
of the wing.
- Semipalmate*half-webbed, toes connected at the base by
a web.

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- Septum* a partition.
Serrate notched like a saw.
Shaft the axis of a feather.
Speculum a special colored area on the flight feathers
 of many kinds of ducks.
Sternum the breast bone.
Subulate awl-shaped.
Supra-orbital above the eye.
Syndactyle having two toes welded together for some
 distance as in the kingfishers.
Tarsus the ankle bones,—or the shank bone between
 the tibia and the toes.
Tarsi. plural of tarsus.
Terete cylindrical.
Terminal at the end.
Tibia. the bone above and jointed to the tarsus.
Tomium the cutting edge of the bill.
Torsi. plural of tarsus.
Totipalmate having all four toes connected by webs.
Transverse crosswise.
Truncate cut squarely off, abrupt.
Ventral pertaining to the abdomen.
Versatile capable of being turned either way.
Zygodactyle having the toes in pairs, two in front and
 two behind.

BIRD, SHOWING THE PARTS





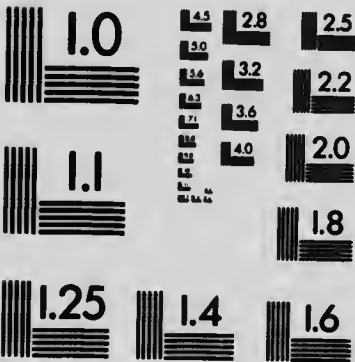
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