



**BIRDS OF CANADA'S
MOUNTAIN PARKS**

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BIRDS OF CANADA'S MOUNTAIN PARKS

Introduction

Canada's Mountain National Parks afford sanctuary for more than 170 kinds of wild birds. Some are rare, others elusive, but most, by virtue of their appearance and habits of voice, may easily be seen by the interested traveller.

In the larger mountain parks are tracts of grassland, aspen woods, conifer forest, alplands, rockslide, snowfields and glaciers, each of these several habitats being populated or visited in season by characteristic birds. Some few species are present throughout the year; some only in summer; others are transient visitors in spring and autumn.

The pleasure of bird-watching is enhanced when the subjects can be named correctly, and so this booklet is offered as an aid in identifying fifty of the more common or more conspicuous bird species which visitors to the mountain parks are likely to encounter.

Bird-watching along the park roads and the park trails can be a rewarding experience obtained with little expenditure of time and energy, for birds are attracted to the openings in the forest which highways provide. Certain kinds of birds go to them to find gravel, a material necessary to the digestion of their food; others to seek insects, or wild fruits, or weed seeds, all of which are more readily accessible in such places.

Bird-study of a more serious kind, as practised by a growing number of enthusiastic park visitors, can be an exciting avocation, for it entails more than correct identification of this or that bird, more than a collection of names listed in a notebook. Study of the live bird in its native environment is a never-ending source of delight and satisfaction to those who practise this art, because it represents a journey into the unknown. For the how and why of bird-behaviour remain, as yet, largely unexplained. Birds live intense and complex lives, about which we know comparatively little, so that each discovery made stimulates the interest and broadens the field of inquiry. And it is an inquiry which never can be completed, for in addition to the questions posed by bird-behaviour there remains the fact of a constantly shifting and changing bird population, a population that is dynamic, not static, forever undergoing modification—not only in the variety of species constituting it but in the numbers of individuals representing the species.

And so this matter of bird study can be all things to all men, a means of relaxation and renewal to one, an engrossing hobby to another. And so also, like some other outdoor pursuits, it demands of its followers no little measure of native skill, of patience, and of endurance. Skill in woodcraft, in the faculty of quick movement, skill in actually 'seeing' a bird and memorizing its peculiarities—these skills are required and are developed by use. Patience is required: patience in seeking out the hidden nest; patience in identifying and remembering bird-songs; patience to sit still, to watch, to wait, and finally most important of all,

patience to interpret in terms of bird, not human, psychology the curious items of bird-behaviour. Such patience is a requisite and it, too, develops through use. And some measure of endurance is required: endurance on long walks in mountain forests, up steeply-sloping trails and through boulder-heaped gulches that lead to alpland summits. This requirement also is developed through use.

The novice bird-watcher is advised to equip himself with a binocular; many people consider the newer instruments with wide fields and magnification of seven or eight to be best. A camera with high-speed shutter is desirable but not essential. Pencil and notebook should not be forgotten. The observance of a few simple rules will help to make a field-day successful. Wear clothing of inconspicuous shades, grey or khaki; clothing that will not rustle too much. Walk slowly and quietly, with the sun at your back when possible. Stop frequently to look and listen; sit frequently, under cover when cover is available, and make no sudden movements. Many kinds of birds can be induced to approach, sometimes within a few feet, by 'squeaking'. The noise produced by a sucking movement of the lips on the back of the hand is an effective lure. So is the old-fashioned rubber toy, the squeaking mouse. Not all days are good bird days. On a windy day birds are likely to be restless and difficult to approach; it is difficult also to hear them. The best conditions for bird study are usually found during the early morning and late afternoon of a still day, for these are the times when birds are most active.

Bird study is no new thing, although its origin can only be conjectured. Man and birds have jointly occupied mutually desired territories on the earth's surface since a time before man's reckoning. On man's part there has been dislike, fostered by ignorance; there has been tolerance; there has been affection, first by the few, later by the many. In time came an awareness of the birds' place in the pattern of nature's economy, as agents helping to control the insects which destroy farm crops and forests. Later came recognition of the place birds occupy in the social life of modern man, in his art, his literature, and his education.

Thoughtful persons have pondered upon the future of man's and birds' joint occupancy of the earth. They have devised and put into effect wise laws to ensure, so they hope, the perpetuation of bird life upon the earth. Three great countries of North America—the United States, Canada, and Mexico—have ratified treaties to protect migratory birds and passed laws to implement these treaties. The Canadian Federal law is known as The Migratory Birds Convention Act. In most of the provinces additional bird protection laws with similar provisions are in effect. In the United States, under the similar Migratory Birds Treaty Act, great areas of marshlands and lake have been set aside as winter refuges for waterfowl. In Canada too, there are permanent bird sanctuaries. There are numerous private organizations dedicated to the preservation of bird life.

It is perhaps trite to say, but nevertheless wise to remember, that the professional ornithologist commenced his career as an amateur bird watcher. It is doubtful if there is an exception to this rule. What began perhaps as a holiday interest in attaching standard names to the more



Mallard

Common Golden-eye



Barrow's Golden-eye

common birds became a desire to explore the secrets of bird behaviour, and finally, an ever-growing interest became the absorbing lifework of the professional. Modern university education provides facilities for scientific bird study unheard-of a generation ago. The path, well trodden by the pioneer, is now broad and inviting. Some young men will follow it to success.

Those who search carefully may discover many of the following birds in the mountain parks.

MALLARD

Anas platyrhynchos

From November to June the male mallard is a handsome duck, with iridescent-green head separated from a chestnut breast by a white collar; the sides are grey, and the tail is white, partly obscured on its upper surface by a black triangle. From July to October the plumage is dusky and inconspicuous, like that of the brown female. In both sexes the white tail and white or cream-coloured undersurface of the wings are identifying field marks. The voice of the female is the characteristic 'duck quack'; the voice of the male, less often heard, has a thin buzzing quality with slight carrying power.

The mallard is the common 'wild duck' over much of the northern hemisphere, but in Canada it is most plentiful in the west. It is of regular occurrence in the mountain parks, frequenting many of the lakes, ponds, and rivers, and wintering, in small numbers, where open water is available.

Adaptability to the sub-marginal living conditions associated with winter in a cold climate enables the mallard to occupy open water on northern rivers and unfrozen margins of running springs, far north of the species' main winter range.

This species is adaptable also in the matter of nesting sites and has been known to use a crow's nest, the hollow on the top of a stump, and a haystack. Usually, however, a nest of dry grasses, cattails, or rushes is built on the ground under some slight cover of shrubbery, brush heap, or grass clump. During and after the laying period the nest cavity is partly filled with down which the female plucks from the underpart of her body. After she has finished laying the eight to twelve greenish-buff eggs that constitute the clutch, the male deserts her to associate with other males which likewise have completed their duties. Soon the males assume the dusky summer dress that naturalists call the eclipse plumage and at the same time moult the wing feathers and become incapable of flight, a condition that lasts until, several weeks later, these feathers are renewed. During this flightless period the males are shy and inconspicuous and thus seldom noticed. Meanwhile the female, unless beset by some misfortune, has hatched her nestful of eggs. A few hours after the olive-and-yellow downy young have broken through the egg, the female leads them to the relative security of marsh growth or shrubbery, where she guards them courageously. Should a man approach she may simulate a broken wing and drag herself along the ground, quacking continuously, while the young remain hidden in whatever cover they happen to be frequenting. Under these

circumstances the young ducks are not likely to be discovered, or are seen for only a few brief moments. Regularly the family visit a pond, lake, or stream to feed, and if they are disturbed in this habitat by an observer the manner of defence is quite different. Usually the small young scamper over the water for a few yards, then assemble in a close-packed group and swim steadily towards some distant point. Meanwhile the female, remaining close to the fancied source of danger, surges across the water, back and forth, or makes short flights over the same general territory. Eventually she flies off and rejoins her brood, which has sought concealment in marsh growth or shoreward brush.

The diet of the mallard covers a wide range of vegetable and animal food, including the leaves, rootlets, and seeds of numerous kinds of water plants, weed seeds, grain, small fishes, salmon eggs, tadpoles, leeches, fresh water shrimps, beetles, aquatic insect larvae, and many other items.

This common duck is held in high esteem both by the hunting fraternity and by the section of the public that finds more pleasure in hunting birds without a gun. To the first it represents a game bird, often plentiful, and endowed with the qualities of wariness, speed in flight, and highly palatable flesh. To the second it represents a handsome and virile wild creature endowed with more than the common measure of adaptability and variation of individual behaviour, which makes study of the species' life-history forever interesting.

BARROW'S GOLDEN-EYE. WHISTLER

Glaucionetta islandica

The Barrow's Golden-eye is a medium-sized duck, smaller, more heavily built, and with relatively shorter neck and larger, more rounded head than the mallard. The male is chiefly black above, white below, and heavily marked with black on the flanks. The head is deep violet, with a white crescent at the base of the black bill. The female is slate above, white below, with grey chest and brown head. The dusky bill in spring is heavily clouded with dull yellow. This duck is likely to be confused only with the American Golden-eye, a species of similar size and appearance in which the male has relatively more white on back and flanks and a green head, marked near the bill by a nearly round white spot, and in which the dusky bill of the female has a terminal yellow bar. The difference in the amount of black on the males, and in the amount and position of yellow on the bills of the females, makes it possible, however, to distinguish the two species in the field.

The Barrow's Golden-eye has a somewhat unusual geographical range that includes Iceland, part of Greenland, and Labrador. It is a winter visitor to Quebec, the Maritime Provinces, and the New England coast. In Western Canada, the centre of abundance, it is a summer visitant to the interior of British Columbia and the mountainous portion of Alberta. In winter it frequents sheltered bays, estuaries, and tidal rivers along the Pacific coast from Washington to southeastern Alaska. It is the common golden-eye of the larger mountain parks. This is a tree-nesting duck. The site most commonly used is a cavity in a dead tree or tree stump, perhaps a woodpecker's hole which time and decay

have enlarged. The site may be close to, or as much as a mile away from, the nearest lake, pond, or stream. Eight to fifteen pale green eggs are laid upon the desiccated wood or sawdust that covers the bottom of the nesting cavity. The female plucks down from her breast and abdomen and adds this to the nest, a small amount each day, until a high rim that insulates the eggs and helps to retain warmth while the female is absent has been formed. An occupied nest usually can be identified by the presence of fragments of down adhering to the entrance. After about 30 days of incubation the eggs hatch, and not long afterwards the tiny ducks scramble to the nest entrance, drop to the ground, and follow the waiting female to the nearest water.

All species of ducks indulge in some form of courtship ritual that includes a formalized posturing in which the plumage, and in some species the feet, are displayed. The courtship of the Barrow's Golden-eye is elaborate, often sustained, and exceedingly interesting to watch, especially when a group of these ducks is so engaged. One or another of the males may bow a number of times in quick succession, then stretch his neck upward to its full extent, so that the beautiful iridescent violet head is shown to best advantage above the snow-white neck and chest. This action may be followed by a sudden kick, momentarily revealing a brilliant orange foot against an immaculate flank, and sending a thin stream of water several feet into the air. To this behaviour the dull-coloured female may bow a response. The courting males fight savagely among themselves for the favour of a particular female.

The food of the Barrow's Golden-eye is largely animal matter, including caddis larvae, dragonfly and damselfly nymphs, snails, fresh water shrimps, crayfish, and small fishes.

The Barrow's Golden-eye is not highly regarded as a game duck, although when it is taken in the interior the flesh is well-flavoured. On salt water the flesh becomes rank from the duck's diet of crabs, mussels, and salmon eggs. Undoubtedly the value of this duck as a handsome and exciting subject for study transcends its value as food or for sport. Much of the life history of this duck has yet to be learned, and will engage the attention of naturalists for a long time to come. For example, it is known that the males, after having completed their function in the reproductive process, leave the females and disappear from the nesting ground, but to what region they retreat at this time has never been discovered.

HARLEQUIN DUCK

Histrionicus histrionicus

This is a small duck, the male showily marked with white spots and crescents on a dark blue head, and with chestnut-red flanks conspicuous against an otherwise dark body. The smaller, dusky female lacks the male's contrasting pattern, her sober dress being relieved only by a small white spot on the face.

The species is essentially a sea duck, travelling inland to nest, at other times restricted to salt water. It is common on both coasts of North America, and reported also from Greenland and Iceland. It is a regular summer visitor to mountain streams, and to the larger rivers



Harlequin Duck

in our mountain parks. Here these handsome and agile ducks are perfectly at ease even in the most turbulent water, riding its crest and diving to the bottom in search of caddis or snails. They rest on the rocks that rise above the water, or float high on the surface of quiet reaches, dressing their plumage and loafing through the midday hours.

Little has been discovered concerning the courtship behaviour or breeding habits of the species. This duck is known to nest beside mountain streams but very few nests have been found. More often the female and her brood, swimming easily on these swift streams, form the basis of breeding records. In late June or early July the males fly westward across the mountains to the sea and there gather in large flocks before beginning the summer's moult, which covers a period when the ducks are incapable of flight. In winter harlequin ducks frequent tide rips and the fast water about rocky islets, where they obtain a variety of sea snails, their chief food.

The little harlequin ducks are of no importance to the hunter and few are killed for food or in the way of sport. By the nature student the species is regarded with marked affection. It is with never-failing surprise that one meets this small sea duck in the seemingly inappropriate surroundings of tumbling stream, fern-decked rocks, and encircling forest.

RED-TAILED HAWK. HEN HAWK *Buteo jamaicensis*

This is a large hawk, averaging twenty inches in length, with broad, rounded wings; adults are varied in appearance and very different from the young. One adult, viewed from beneath, may appear as a dark, reddish-brown bird, another as cream-coloured with a dark chest-band. Between these two extremes are many variations of colour and pattern; in all adults the back is dark brown, the upper surface of the tail brick-red, lightly marked with dusky. The young, during the first year, have no red on tail or body plumage and, except in contour, none resembles an adult. The brick-red tail, often conspicuous, is a good field-mark for identifying an adult; other aids to identification applying to both adults and young are the wide, rounded wings, the heavy, relatively slow flight, and the loud, harsh, squealing cry, *kee-ar*.

The red-tailed hawk is widely distributed through most of Canada and the United States and is a summer visitor to open territory in the mountain parks. A common nesting-site is a tall conifer, usually one standing in thick woods with its top sufficiently high above the surrounding trees to permit a view in all directions. A more unusual site is a ledge or opening high on a cliff-face. The bulky nests, made of sticks and lined with bark or some other soft material, may be used several seasons in succession. Two, sometimes three, eggs are laid; they are dull white, some faintly, others more heavily, marked with various tints of red and brown.

This large, sometimes fierce-seeming hawk is an economic asset to any community. The food range includes grasshoppers, crickets, snakes, mice, gophers, ground squirrels, and other small mammals; less often are birds taken. The name 'hen hawk' is unfortunate, for seldom,



Red-tailed Hawk



American Sparrow Hawk

if ever, is the poultry yard invaded. In the National Parks the red-tailed hawk enjoys complete protection, as does wildlife generally; elsewhere it has not been so fortunate. A subject of persecution by ill-advised hunters, by whom all hawks are believed to be enemies of this or that game bird, the species has been greatly reduced in numbers over parts of its range and all but exterminated in others.

The economic value of the red-tailed hawk in helping to control destructive insects and the small mammals harmful to man's interests is so great that on these grounds alone this hawk merits full protection at all times. There is another reason, however, why this fine bird should be permitted to live unmolested. It is the less readily measured value of the bird as a wild untameable creature sharing our Canadian country life, a creature to be sought out, admired, and left in peace. The boy who, with no little trepidation, climbed the tall yellow pine to peer over the rim of the great stick nest at the two exciting eggs—he has not forgotten this adventure; he will understand the reason. The man who, lying on the grass of the bench-lands, gazed upward at the red-tail, high-soaring, and sharp-etched against a blue sky and cirrus clouds—he will understand the reason. And those who have heard, and have been stirred by, the red-tail's wild cry—they too will understand.

GOLDEN EAGLE

Aquila chrysaetos

The golden eagle requires more than three years to attain the chocolate-brown plumage with dark tail and full dark-gold cape on the hind-neck. The young eagle in its first years may be darker than the adult in body colour, and with one-half or three-quarters of the tail white above a terminal dark bar. It was the tail feathers of the young golden eagle that some tribes of Indians used in making head-dresses. In the wild it is difficult to distinguish the golden eagle from the young bald eagle, but it is simple enough when specimens can be examined. The foot of the golden eagle is feathered to the toes; the foot of the bald eagle is only partly feathered.

The range of the golden eagle includes the greater part of the Northern Hemisphere. It is a mountain-loving bird and in North America the western mountain ranges constitute its chief habitat. In the mountain parks it is resident at all times, in winter travelling long distances and somewhat of a vagrant, in summer confining its hunting activities within relatively large but fairly well-defined territories. The usual nesting-site is some ledge or declivity high on a rock-cliff; few are accessible to man without the aid of a rope. The nest, built of stout sticks and lined with various kinds of soft material, which may include some green leaves, is used through many successive years. The one or two eggs are white or buff, marked in different degrees of profusion with shades of brown. The young are fed in the nest by their parents until, after a period that may exceed two months, they have attained the power of flight.

The magnificent golden eagle, the King of Birds, figures in the folk-lore and pictorial art of many peoples. To it are attributed acts of fierceness and valour, acts of savagery and destruction, which seem



Golden Eagle



Bald Eagle

appropriate only to tales of fiction and romance. Here in North America it is regarded, except by those who wish to destroy all birds of prey, as a handsome and stately member of the mountain wildlife, taking toll in kingly fashion of the lesser members, but harming no man. In the mountain parks its chief item of summer food is the hoary marmot. In winter, it must be said with some embarrassment, the King of Birds is an eater of carrion, ready to feed on the carcass of any mountain sheep, wapiti, or deer which has died from disease, or which a more powerful predator has killed.

BALD EAGLE. WHITE-HEADED EAGLE

Haliaeetus leucocephalus

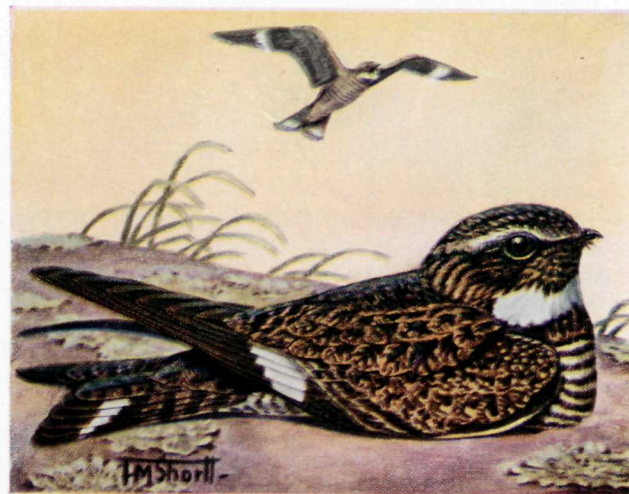
An adult bald eagle, with its white head and white tail, is recognized easily; but young bald eagles resemble the golden eagle, and it is sometimes difficult to tell one from the other. The adult plumage is not attained until the fourth year. During the first four years of life the original solid-brown dress of the young bird undergoes constant change, brought about partly by moult, in which some white feathers are acquired, and partly by the fading of old plumage to various shades of light-brown, flaxen, and cream.

This eagle, found only in North America, from Mexico to Alaska and Mackenzie District, is most abundant on the Pacific coast, where the great bird is conspicuous along the forested and rocky seashore. In the mountain parks it is a much less common visitor, most often seen in the river valleys. Bald eagles build their nests close to the top of some tall tree, a cottonwood perhaps, or a Douglas fir. The same nest may be occupied for many years, or for so long as the nest tree remains standing. Sticks, some quite stout, form the main bulk of the nest; the interior is lined with grasses, dry cattails, and other substances. Relatively small at first, the nest is added to and repaired each spring so that in course of time its bulk becomes truly impressive. Fragments of fishes, bones, hair, and other food remains are trampled into it and become part of the structure, helping to cement the whole together. Two unmarked white eggs constitute the set. Both parents take part in incubation, one parent remaining on the nest while the other hunts. The incubation period, which in Western Canada normally begins in April, lasts approximately thirty-five days. The nest site is used also as a lookout and perching tree; both adults and full-grown young often return to it in late summer and autumn, long after the nest has fulfilled its main function for the season.

The bald eagle's food is primarily fish—live fish where and when these can be captured; dead fish, fresh or decayed, when these are more easily procured. The bald eagle is a scavenger, finding any form of carrion acceptable food. To a lesser extent he is a hunter of live game, and on the sea-coast and on the lakes of the interior diving ducks, coots, and other waterfowl are pursued. The eagle's method of attack is to circle over a swimming duck, perhaps one singled out from among a flock, then commence a sharp descent, whereupon the duck immediately dives. The duck's movements below the surface are visible to the eagle above, and when it breaks water the eagle again swoops



Osprey



Nighthawk

with feet extended, toes and claws spread wide apart. The eagle's swoop, the duck's dive, are repeated time and again. Eventually the duck may tire and so be easily captured. Then the eagle, successful in his hunting, carries the duck in his claws to some favoured tree-perch, where the prey is torn apart and eaten. Such perches may be used over long periods, with consequent accumulation on the ground below of the debris of numerous meals. More often than not, however, the hunting is unsuccessful and the pursued duck escapes, for the bald eagle, although persistent, is a clumsy and unskilled hunter. Many of the waterfowl he succeeds in capturing are wounded or diseased individuals which have not the strength to evade persistent attack.

When suckers, at spawning time, swarm in narrow streams, the bald eagle captures them with little difficulty. The eagle stands in the shallows to a depth which submerges his long leg plumes, which reach almost to the toes. Motionless, he stands, a fine figure with white head gleaming above the dark body, until a fish moves within his reach. Then follows a wild commotion of plunging body and thrashing wings and the fish is captured—or it escapes. Again, the eagle may fly low along the stream, drop to the water and attempt to seize a fish. For deep-water fishing, where the bald eagle commonly obtains little reward by the conventional means, he has developed a method of robbing the more skilled osprey of his catch. The eagle's technique is to watch from some prominent place the osprey's fishing. When the osprey plunges to the water and succeeds in capturing and flying off with a fish the eagle launches out in pursuit. He circles above the osprey, then swoops downward again and again until the osprey drops the fish, which the eagle quickly retrieves from the water.

OSPREY. FISH HAWK

Pandion haliaetus

The osprey is a large hawk, more than 20 inches in length, with back brownish-black, head black and white and slightly crested, white on all the underparts, and long semi-pointed wings of wide expanse. These characters can be seen plainly and are good field-marks for identification.

Ospreys have a nearly cosmopolitan distribution; the American bird spends the summer in regions as far north as Alaska and Hudson Bay, and winters as far south as Mexico and Central America. It is a summer visitant to the larger mountain parks, arriving in late April and departing in October. A hawk of rivers, lakes, and seashore, it seldom is seen elsewhere. High above ground, on the broken top of some tall, dead tree, the osprey builds a bulky nest of sticks, lining it with grass and a variety of other materials, which may include water weeds and water moss raked from near the surface of lake or pond. The same nest is used for many years in succession and, as nests are added to and enlarged each season, becomes a well-known landmark on many a lake and river. The eggs, usually three, are beautiful objects, heavily marked with many shades of red, brown, and ecru. When quite small the young in the nest are shielded by the generous spread of a parent's

wing from sun and rain. They are fed there until such time as the power of flight is attained.

This hawk is a fish-eater exclusively, capturing prey by its own skilful efforts. A hunting osprey flies with slow, regular wing-beats at a moderate height above the water until a fish is sighted near the surface. Then follows a sudden breaking of speed as wings are bowed forward and inward, a second or so of flapping hover, then a slightly-slanted or spiral descent and a plunge into the water that momentarily may take the bird out of sight. Often he fails, then immediately climbs aloft and continues his hunting. When he succeeds in striking and grasping a fish his powerful wings beat the water and soon raise him above it, the fish held horizontally in his great claws. If it is nesting time he flies straight to the nest to feed mate or young, at other times straight to a favoured lookout tree. When carrying a fish, the hawk's feet are fully extended, the toes of one grasping the fish close behind the head, those of the other fastened at a point nearer the tail. The fish carried thus, head first, is in the correct stream-lined position to lessen friction and resistance. The osprey is capable of these seemingly difficult feats by reason of certain specialized equipment—the keen sight, the great muscular development on chest, wings, and legs, and the strong, curved claws attached to heavy toes that are deeply corrugated on the underside and thus fitted for holding large and slippery fish.

Ospreys feed on the fishes which are most easily caught, these being for the most part those sluggish species of little economic value which frequent shallow waters. This is not to say that ospreys never capture trout. They do, in some lakes, but the number of trout taken probably is not excessive, and few anglers resent the presence on their fishing grounds of this interesting competitor.

AMERICAN SPARROW HAWK. KILLY HAWK. POLLY HAWK

Falco sparverius

This small hawk, about 10 inches in length, is not likely to be confused with any other. The male is distinctive, with red-brown on tail and back, and blue on head and wings. The larger female is held to be less handsome, with her brownish back banded in black. Other useful means of identification are: the habit of lengthy hovering on rapidly beating wings; the fashion of swinging the tail immediately after alighting; the usual call—a fast killi killi killi.

The sparrow hawk is a common summer bird in most of Canada and the northern United States, and is resident in more southern parts of North America. The most widely distributed hawk in the mountain parks, it hunts the valleys, the open forests below timber-line, and the alpine meadows. It is a hole-nesting species, commonly using a deserted nest of flicker or pileated woodpecker, or some natural tree cavity. A pair has been observed in occupation of a magpie's nest, and a large bird-house will sometimes attract a nesting pair. The four to six eggs, creamy white and marked with reddish-brown, are laid on the bare floor of the nest cavity, without the addition of any soft nest material.

Many observations of sparrow hawks and studies of the food items found in crop and gizzard have shown this species to be beneficial in its economic relations. Beetles and grasshoppers form a large percentage of its food, and many meadow mice are eaten. Seldom is one seen in pursuit of a small bird, and stomach analyses rate birds as a minor item of diet.

This is a friendly and graceful bird nesting close to human dwellings and carrying on, in full view of anyone interested enough to observe, the many and varied activities connected with the rearing of a family. The members of a pair appear devoted and companionable and indulge in nuptial flights in which they chase one another through a series of graceful evolutions that are charming indeed to watch. And they are courageous too, driving off any crows or larger hawks which pass within sight of their nesting-tree. One has been watched in a spirited attack upon a red-tailed hawk during which it repeatedly swooped, in true falcon style, and struck the larger bird on the back and broad wings.

FRANKLIN'S GROUSE. FOOL HEN *Canachites franklini*

The male Franklin's grouse is the darkest of all the American grouse, more black below than its near relative, the spruce grouse, and lacking the brown tip to the tail which is characteristic of that species. A brilliant red comb over the eye is a good identification character. The smaller female, barred and otherwise marked with reddish browns, greys, and black, is less readily identified.

This grouse occupies a relatively limited range, at moderately high altitudes, from Oregon to central British Columbia. At no place, so far as is known, does it descend to the sea. Neither is it found in the open, park-like yellow pine forests of British Columbia. In the mountain parks and elsewhere it is a grouse of tamarack swamps, spruce, balsam, and lodgepole pine forests, and is particularly associated with those sections of forest where draws and depressions contain a mixed growth of berry-yielding shrubs, such as honeysuckle, wild rose, dogwood, and soopalallie, or where the forest floor carries blueberries or kinnikinnick. The nest, a slight depression in the ground lined with grass, plant-stalks, or leaves, is made in a dry place—perhaps on the slope of some ridge, or beside a partly decayed tree, which, fallen long ago, is slowly being absorbed by the forest floor. The six to eight eggs are buff-coloured and speckled or blotched with brown; newly hatched chicks are yellow below and patterned above in rich tones of tawny-buff.

The Franklin's grouse has none of the qualities demanded of a game bird other than the value of its flesh for the table. Nevertheless it is hunted persistently, chiefly by novice hunters, and in many places, from this cause and others, has decreased to the vanishing point. The tameness of the species is proverbial, hence the name 'fool hen'. Sometimes, when these grouse walk about in a blueberry patch, picking off the fruit and talking to each other with soft cooing voices, and pass unafraid within a few inches of one's feet, or take dusting-baths within



Franklin's Grouse



Spotted Sandpiper

arm's-reach, it is difficult to realize they are actually wild birds. Perhaps this "tameness" is the quality which endears them to the naturalist, and yet it has not helped greatly in accumulating facts concerning the species' life history, for this is far from being well-known. Relatively few nests have been found, one reason being that the hen sits tight on her eggs and may not flush even should a man approach within a few feet; thus many nests are passed by unobserved.

More often the nuptial display of the male has been witnessed. When displaying he cuts a handsome and graceful figure as, in some small forest opening, he struts close to where a hen is standing. The black tail, spread fanwise to the fullest extent, is held vertically above the back, thus framing a central triangle of black and white formed by the lower tail-coverts; the wings are drooped, the body plumage fluffed out so that the bird looks twice its normal size, and on each side of the face above the eye is a swollen, scarlet comb that all but meets its fellow. No doubt courtship behaviour has many variations. Woodsmen tell of seeing the male rise in short vertical flight and then drop to the ground, producing some time during the display a sharp, clapping sound.

The small hen is courageous in defence of her young. Should a brood be encountered by one walking along some forest trail the young immediately fly into the nearest trees, for chicks are capable of flight at an early age, and the hen attempts to entice the traveller farther along the trail. Crouched low, with dragging wings and body plumage expanded, she creeps along as if mortally wounded and utters soft, piteous cries. As the traveller moves toward her she keeps a few steps ahead, always just out of reach, or she may fly a few yards and then creep forward again. Farther along the trail she abruptly rises on strong wings, all pretence forgotten, and circles through the woods to her brood.

SPOTTED SANDPIPER. TEETER

Actitis macularia

This is one of the smaller shore-birds, less than eight inches long; the adults are clearly spotted on the breast, and both adults and full-grown young have clear olive-grey backs glossed with a silky sheen. Other aids to identification are: a constant bobbing motion of the body which tips up the tail and from which the name "teeter" is derived; the odd manner of flight—on quivering wings with little vertical movement, and usually close to the water or to the ground; the delicate *pee weet* cry, uttered more frequently when on the wing.

It is the common and most familiar sandpiper of North America. Any small shore-bird seen singly or in pairs along the rivers, the ponds, or the lakes in the mountain parks is likely to be the spotted sandpiper. It might be confused with the solitary sandpiper, some of which may nest and spend the summer in the parks, but is smaller, has a flight entirely different, and is distinguished by a white stripe along the spread wing. The spotted sandpiper arrives in late May, usually in the rear of the big shore-bird migration, involving many species, which is headed for the Arctic; it leaves the mountain parks in September. The nesting site may be a little distance from stream or lake margin, some-

times in places fully exposed to view, sometimes under the slight cover of a grass clump or willow. Nests have been found in potato fields and in gardens situated near shore or stream. The nest is a slight hollow in the ground scantily lined with a few dry leaves, grass, or plant stalks. The eggs, invariably four, are pear-shaped and large in relation to the size of the bird, as are the eggs of all shore-birds. They are cream, fawn, or ecru, handsomely spotted and blotched with brown, black, and lilac. It is the male, not the female, who assumes the duties of incubation and subsequent care of the young birds. The young, when first hatched, are covered with fine, grey down, through which the first sheathed feathers of wings and tail soon appear. The downy young leave the nest a few hours after being hatched. Slim-legged, active, and able to hide skilfully at a second's notice, they follow the parent along the margin of pond and stream, over wet boggy ground and sand beach, seeking the insect larvae and the other small organisms that constitute their diet.

This small sandpiper is of no great economic importance. It is one of many kinds of birds which, by reason of their beauty, their notes, their grace of action, and the mere fact of their presence, add something definitely desirable to country life. These values, while intangible, and not amenable to measurement, are woven into the fabric of Canadian life. If lost they would be irreplaceable.

HORNED OWL. HOOT-OWL

Bubo virginianus

The horned owl, nearly two feet in length, is the only large owl that carries conspicuous horns, that is, long tufts of feathers on the face above the eyes, capable of being raised or lowered at will. The species varies in colour and pattern, each variation being associated with the nesting population of a particular geographical area; a northern bird is nearly as white as a snowy owl, a prairie bird is grey and tawny, and a Pacific coast bird is very dark. As horned owls travel a great deal in the late autumn, more in some years than in others, samples of each of the several kinds may be present in the same locality at one time. Identification of the horned owl is, however, simple enough—any large owl with prominent horns is certainly of this species. Moreover, horned owls are heard more often than seen and they have distinctive calls, the commonest being a deep, sonorous *hoo, hoo-hoo, hoo, hoo*.

The range of this owl in its various colours and patterns covers all parts of North America where trees grow. In the mountain parks are resident populations, and there also to be found are autumn and winter visitants from localities far to the north and to the east. The nesting site of the horned owl may be an opening or crevice in a rock cliff, the hollowed top of a tree stub, or the old nest of a crow or of one of the larger hawks. The nesting season starts early and may be well under way by mid-April. Two to four pure white eggs are laid. The resulting young remain in the nest until capable of short flights. In mid-summer it is not uncommon to meet, in some well-shaded wood, a family of two or three young, perhaps about three-quarters grown and fully feathered only on the wings, with body plumage composed of long, tawny down interspersed with partly-ensheathed feathers.

The diet of the horned owl includes both mammals and birds, among them snowshoe rabbit, skunk, red squirrel, mink, muskrat, weasel, duck, domestic fowl, grouse, Hungarian partridge, ring-necked pheasant, crow, and saw-whet owl. In its economic relations, therefore, the species is considered to be harmful to man's interests. Horned owls would seem to have no natural enemies other than man. They are shot or taken in pole-traps by hunters, farmers, and poultry men whenever an opportunity occurs; they are caught in traps set for fur-bearing animals by professional trappers. Nevertheless, the species continues to thrive, and is periodically abundant, even close to long-settled urban communities. The size of the horned owl population, like that of other forms of wildlife, increases or decreases in response to an abundance or scarcity of its food supply. The snowshoe rabbit, perhaps the chief food of the horned owl, is known to follow a definite cycle from a period of scarcity through nine years or so of increasing numbers to a time of great abundance and a subsequent abrupt decline. With this cycle the increase and decrease of horned owl populations appears to be definitely associated.

People whose habit it is to attribute human qualities to birds describe the horned owl as a morose, vindictive, and savage creature and a menace to the welfare of other more valuable birds and mammals. Hence it has become an outlaw, sometimes with a price on its head; nevertheless, there seems little reason to believe that it will not continue to survive as a member of our Canadian fauna.

NIGHTHAWK. MOSQUITO HAWK *Chordeiles minor*

The nighthawk is not a hawk but an insectivorous bird, slim and dark-bodied, with white chin and a conspicuous white spot on each of the long narrow wings.

The species inhabits the United States and most of Canada north to Yukon Territory and Mackenzie District; the winter home is Central and South America. It is a common summer visitor to the mountain parks, where it arrives, with great regularity, in early June and departs in mid-August. Actually the time spent on these northern nesting grounds is rarely longer than nine or ten weeks; during the rest of the year the nighthawk is inhabiting, or travelling to and from, a southern wintering ground.

The nighthawk is a bird of the air, alighting only to rest and to raise young. In the air it is known to many; few people are familiar with its terrestrial habits. This bird builds no nest but lays its two white, grey-spotted eggs on the ground. A rocky slope or rocky summit, a small open space on wooded hillside, which may be either bare or grass-covered, the sandy, sometimes cone-strewn ground under a pine or fir tree—these are favoured nesting sites. In towns and cities the nighthawk commonly nests on flat, gravelled roof-tops. In the natural habitat the blended browns and greys of the plumage, as the bird lies relaxed and motionless on the eggs, blend well with the surroundings. Many a nesting bird escapes observation in spite of a prolonged and careful search; it is loath to rise until the last possible moment, when the nest-hunter steps within a few feet of the nest. If disturbed thus



Great Horned Owl



Rufous Hummingbird

the bird may fly only a short distance, then alight and crouch lengthwise, perhaps on a log, perhaps on the low branch of a tree. As it lies motionless, blending with its surroundings, it seems to melt and disappear, so well does the plumage harmonize with other objects nearby.

The food of the nighthawk is composed of beetles, flies, moths, and flying insects of many kinds. Because of this diet, and because no nighthawk interferes with man's interests, or man's comfort, the species is considered as beneficial to the highest degree.

This bird is one of the latest of the avian summer visitors to arrive in the mountain parks; the migration lasts for only a few days and is heralded by the appearance, on some June morning, of one or of several birds. A day or so later a dozen or more, representing a section of the main flight, may be seen in the area at one time. Subsequently the members of the summer population will be seen constantly, more often in the dusk of evening than at other times, for the nighthawk is crepuscular in feeding habits. Here in its native element, the nighthawk exhibits a grace and power of flight equalled by few other species of birds, now sweeping close to the ground with slow wing-beats that impel the small, light body at high speed, now climbing on wings moving at a faster tempo, now circling aloft for a few moments, now dropping abruptly with still greater speed. In swift descent through the air the nighthawk's wings, held momentarily at a particular downward angle, perform the function of a primitive wind instrument capable of but one performance—a short explosive boom, which has mystified many an evening traveller. There also is a vocal accompaniment to flight—a shrill cry, difficult to describe, which sometimes is repeated throughout the evening hours.

RUFOUS HUMMINGBIRD

Selasphorus rufus

The male rufous hummingbird is bright coppery red on the back and carries a flashing red shield, or gorget, on the throat; the female lacks this adornment and is chiefly bronze-green above and white below.

Hummingbirds belong to America and are found nowhere else. No less than seventeen species have been reported from the southwestern States and a great many more inhabit tropical North America. The rufous hummingbird is a northwestern species, in summer nesting from Alaska to Oregon, in winter occupying southern Mexico. It is a summer visitor to the mountain parks and is common there, much more so than a smaller hummingbird called the calliope, both the males and the females of which have green backs. The brightly-coloured male rufous hummingbird arrives first in spring; the female follows a few days later. Soon they are busily engaged in nest building, or in relining and decorating a last-year's nest, a habit some few have acquired. The nest is a beautiful thing—a delicate cup of soft white or creamy plant down, sometimes with flecks of golden moss among the white, the whole reinforced with a few strong plant fibres and completely shingled on the outside with lichen that may be laced with threads of silky cobweb. Usually it is saddled on a branch of a conifer, more often than not on a branch bare of leaves but hung with moss and scaled with lichens. In

such surroundings the nest seems, at first glance, just one of many inconspicuous, lichen-draped knots, and thus is it protected. Less often a nest is attached to a drooping branch, but this nest too is inconspicuous. In such a downy cradle two tiny white eggs are laid and from them emerge, after about twelve days of incubation, two naked, black, and helpless creatures, bearing no resemblance whatsoever to their jewel-like parents. The female parent guards the young courageously and feeds them on nectar and small insects—the same food she herself eats. She secures this food by the skilled use of her long, tubular tongue, which is capable of extension beyond the tip of the bill—a mechanism perfectly designed for the function of sucking nectar from long-tubed flowers, and of taking also the minute insects which are attracted to them. This material is pumped down the throats of the young, which thrive on it and grow rapidly. Soon, on the black, naked skin of the body, appear two narrow parallel lines of buff-coloured down; other downy tracts appear and, rough against this downy softness, the first sheathed feathers. The latter swell and grow and soon burst into a plumage that, in both sexes, is bronze above and white below. Before long the two young are as large as their mother. They lie parallel in the nest, bulging over its rim—but still nest and young blend well with their surroundings and a sharp eye is needed to detect them. One day the nest is deserted; the young are making short flights. For a while they may return and roost in the nest at night; but the short summer is nearing its close, and by mid-August female and young have joined the ranks of the great bird army headed for winter quarters far to the south.

Meanwhile, during the early part of the nesting season, the gorgeous male has been part of this domestic scene. He stands, hours at a time, on the topmost twig of some dead tree close to the nest and guards his territory. When the sunlight strikes, now on the jewelled throat, now on the copper back, he flashes and scintillates in minute and tropical splendour. Time and again he darts forth in arrow-like flight and as he does so one hears a shrill *zee-ee* note from his unseen wing-beats. Frequently he may be seen beside some flowering shrub, poised stationary for a moment in front of blossom after blossom as the long tongue probes to the innermost store of nectar. Then can be seen how his wings are blurred to a shadow by their rapid movement, how he darts, now ahead, now to right or left, now to the rear, with unerring aim and matchless grace. But the male is visible on the nesting ground for only a few brief weeks. Then he disappears, to what place no man knows for sure, although it is conjectured that even as early as mid-July he has started on the long journey south.

Hummingbirds are creatures of a charm and beauty perhaps unequalled in the world of birds. So far as is known they have no bad habits, as these are judged by man's ever-critical eye; neither are they beset by bird or mammal enemies. They are more plentiful in some years than in others, but such changes are the result of factors about which man knows little.

BELTED KINGFISHER

Megaceryle alcyon

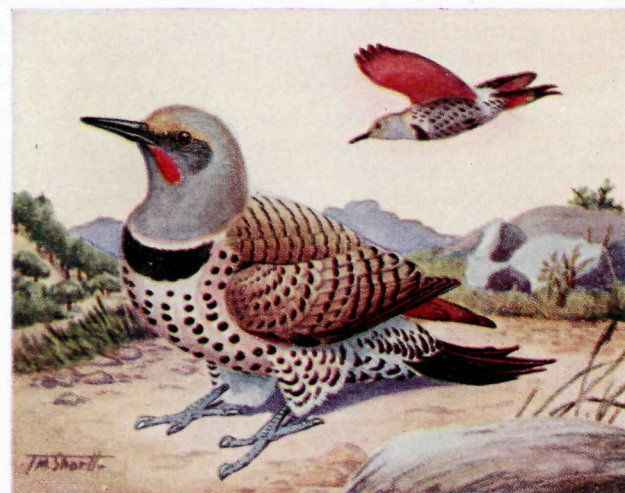
With its broad dagger-bill, its big head adorned by a prominent ragged crest, and the more slender afterparts ending in a diminutive tail, the belted kingfisher, somewhat larger than a robin, seems top-heavy. The body is blue-grey above and white below, with a banded chest. The voice is almost invariably described as a "rattling cry" and no better description for it need be sought.

Over most of Canada and the northern United States the kingfisher is a summer visitant only, the greater part of the population of the interior wintering in the south, some members of it travelling as far as Central America. On the coast of British Columbia it is resident. In the mountain parks the first arrivals appear in April, the last are seen in late September. Here, as elsewhere in the interior, the kingfisher is to be looked for along rivers and lakes, the natural habitat of the species, where he is a familiar and well-loved figure. Here is the territory from which he rarely strays and in which neighbouring pairs are not suffered to trespass; here the sole feeding ground, and here in some earth-bank the nesting place. If river or lake-shore banks are of rock and unfitted for nesting, the nearest earth or sand or rubble bank will be sought out and occupied. Nevertheless, even under these circumstances, a section of lake or river is maintained as home territory for the exclusive use of one pair during the nesting season, as the kingfisher is a charter member of a riparian community. The powerful bill of this fish-hunter, used as a dagger to stab or stun the fishes he pursues, has another important function—that of a workman's pick. For the bill is well designed to dig the long, angled tunnel that leads to the nest. So also the broad-soled toes on the short feet are effective tools and complementary to the pick-bill; they are used as trowels to scrape from the tunnel the earth dislodged by the bill. Both parents take part in the excavating. The exact site of the tunnel appears to be selected on the basis of the ease with which the earth can be removed, and a tunnel may be abandoned when hard digging is encountered. The completed tunnel, which may be ten feet long, leads to a terminal or lateral enlargement. In this chamber six to eight glossy-white eggs are laid, and the young, naked at first but fast growing to big-headed, clumsy, prickly creatures, are raised. For the first week or so the parents feed them with partly digested fishes; later small whole fishes are given them, the bones being disgorged in the form of soft, friable pellets that dry out and disintegrate on the floor of the nest.

In the interior of Canada the kingfisher lives on fishes almost exclusively, and is capable of capturing individuals six or eight inches long. He is a solitary fisherman, often to be seen standing motionless on some rock, stick, or dead branch of a tree which overhangs water, undoubtedly selected because of its nearness to good fishing places. To such favoured perch and watching-post he will return day after day. Here he watches, alert and patient, until some passing fish hesitates within his field of vision or stops to examine some upright water plant; then suddenly he darts forward in a long slant to the water, and strikes. Again he may fly over his fishing territory, stopping at times to hover



Belted Kingfisher



Red-shafted Flicker

expertly on rapidly moving wings, keen eyes searching the water below. Perhaps he moves forward again without other action, perhaps he cleaves the air in downward flight that plunges him below the surface, to strike, or miss, his prey. If successful he flies, holding the fish in his bill, to one or another of his watching-posts. Should the captured fish be a large one he may hammer it against the branch or rock that is his perch until it becomes lifeless and sufficiently softened to be manipulated easily; then he swallows it, head first, so that the fin-spines will lie flat against his gullet.

Like all other fish-eating birds the kingfisher feeds upon the kinds of fishes that are most easily captured. These may be trout confined in uncovered rearing ponds at a fish-hatchery, and in such circumstances the kingfisher is capable of doing considerable damage. In the wild, however, on streams and lakes inhabited by trout and other fishes as well, shiners, dace, squawfish, and the like are more often captured.

Because it is a fish-eater the species is viewed with hostility by some anglers; others think that the trout which may be charged on the debit side of the account are balanced by the credit of less desirable fishes destroyed and by the less tangible credit of aesthetic values. Moreover, many students of wildlife management believe that predation such as this is a normal and healthy condition necessary to the well-being of a balanced wildlife community.

RED-SHAFTED FLICKER

Colaptes cafer

The red-shafted flicker is one of the larger woodpeckers, easily identified by several conspicuous features—the pinkish-red underwings and tail, the black crescent on the breast, and the broad white patch on the rump. A loud, penetrating call, *wicka, wicka, wicka*, and variations of it, and the long rolling tattoo which mating birds produce by hammering on dead tree trunks, or on some other object of wood or metal, are likewise characteristic and identifying.

This is the flicker of the far west; the flicker of the east and the north has yellow on the undersides of wing and tail and differs also in other less prominent characters. Where the two species meet, over large sections of the continent, they cross readily and produce a fertile generation of offspring showing various combinations of the colours and patterns of both species. The range of the red-shafted flicker includes Alaska, southern British Columbia, western Alberta, the western United States south to California, and part of Mexico. It is a regular and common summer visitant to the mountain parks, arriving in April and leaving in late September. The flicker, like all woodpeckers, uses its bill to chisel out a nest in some tree, either growing or dead, or in a tall tree-stub or a low stump; not infrequently a telephone or power pole is the chosen site. The eggs are polished white, beautifully rose-pink when fresh, and as many as six or eight may be laid on the soft layer of wood fragments or chip-litter that covers the bottom of the nest cavity, and provides the only nest-lining.

The flicker is a wood-worker, using no other material in constructing a nest. The parents take turns in the sedentary task of incubation and

both of them participate in feeding and caring for the young, which remain in the nest until about three-quarters grown and nearly full-fledged—and a hungry and clamorous lot they are. An occupied nest can be recognized immediately by the constant chorus of cries that issues from it. As the young increase in size, they find the nest chamber too small for them. They crowd one another; one clambers on the backs of its fellows but is soon shoved aside to make way for another. They climb to the nest entrance, one or more at a time, and peer at the outside world, soon to be adventured.

The summer food of the flicker, both adult and young, is composed very largely of ants, of which some are gleaned from tree trunks and branches but the greater number, including adults and the large white larvae and pupae, are secured by ground-foraging. The ever active parent flickers carry this food to the nest, some held in the bill, some in the gullet, and pump it into the mouths of their receptive young. The appetite of young insectivorous birds in general, and that of young flickers in particular, is extraordinary. The number of ants consumed annually by flickers is beyond computation. Some species of ants, because of their destruction of standing timber, are responsible for great economic loss to the nation; others devour young birds; some are agents in fostering the increase of plant-destroying aphides, and some enter house-larders to eat or destroy food. In a word, this group of insects as a whole is decidedly adverse to human interests. Its numbers are incalculable and its control is very important.

The flicker, conducting a summer-long attack on ant colonies, is therefore a welcome ally of the forester, the farmer, the housewife, and the horticulturist, in their constant war against these pests. With this in mind, few will long resent the flicker's frequent habit of buzzing a too-early alarm clock over the head of a tired sleeper; nor will the occasional damage to fruit be held against him.

As a member of a wildlife community the flicker plays a quite different, but perhaps equally important, role—for in the capacity of artisan and woodcutter he is home-builder-extraordinary to that community. As a rule the flicker hews out a new nest each spring; the old one becomes available to whatever pair of birds is first on the scene and able to defend it successfully against competitors. Tree swallows are eager to be tenants; so are sparrow hawks, mountain bluebirds, western bluebirds, and the less common screech owls, saw-whet owls, and pygmy owls; so, too, is the little buffle-head duck; the golden-eye duck may occupy a flicker's nest after time and decay have enlarged it sufficiently to permit the entrance and egress of this larger bird. For how long the flicker has been the benefactor of so many other kinds of birds, no man knows; that he is now an instrument advancing their welfare there is no gainsaying.

DOWNY WOODPECKER

Dryobates pubescens

This woodpecker, the smallest member of the family, may be identified by its white back and underparts, black-and-white tail, and black wings with white polka-dots. The adult male shows a red stripe on the back of the head. It could be confused only with the hairy woodpecker, which is similar in pattern and colour but distinctly larger.

The distribution of the downy woodpecker includes most of the wooded parts of North America. Except in far northern parts of the interior of Canada, the species is resident wherever found. The habitat most commonly frequented is one in which larch, aspen, alder, willow, and other deciduous trees predominate. Here is the chief feeding ground and here also the nesting territory. Like all woodpeckers, the 'downy' chips out its nest, the site often being high up on a dead tree, less often in a live one. From a similar, but often higher, position the male gives his mating call, hammering it out on a dead tree-trunk or branch with the rapid and mechanical precision of a miniature electric riveter. The nest is unlined; the eggs, glossy-white, as are those of all woodpeckers, are laid on the cushion of chips that covers the bottom. Both parents take part in incubating and in feeding the young.

In some of its feeding habits the 'downy' follows the traditional woodpecker method, which is to expose, by cutting and chipping, the working tunnel of a wood-boring beetle larva; then with barbed tongue, to impale and drag forth the hidden occupant. For this particular method of taking food woodpeckers are equipped with special tools—a chisel bill, with strong supporting muscles, for cutting; a long, hard-tipped tongue for spearing; toes of special structure and arrangement for clinging; and a tail stiff-shafted for bracing the body while the woodpecker strikes. Other insects, besides wood-boring beetle larvae, are sought out by the less strenuous method of careful search on tree-trunk and in bark-crevice. Ants are eaten in large numbers; shade trees about dwellings are closely inspected for what insect food they may harbour; and the 'downy' is a lover of orchards, where codlin moths and scale insects are potent attractions. In late summer the otherwise steady insect diet is varied to include such wild fruits as may be locally available.

Besides being valuable to man as an agent helping to control destructive insects, the downy woodpecker exhibits charming traits that endear him to people. He is a friendly bird, invariably tame enough to permit observation of his activities at close range; sometimes he will hammer away industriously without apparent concern over the presence of a man standing within a few feet. A bird house often serves as a winter lodging, and to this safe retreat he may return night after night. To those who in winter put out bird-food in the form of suet or bacon rind or who maintain a winter food-table, the 'downy' is a welcome pensioner.

THREE-TOED WOODPECKER.

LADDER-BACKED WOODPECKER

Picooides tridactylus

This is a medium-sized woodpecker, white below, and transversely barred on the back with black and white. The adult male can be distinguished by his yellow crown-patch. Most woodpeckers have four



Downy Woodpecker



Three-toed Woodpecker

toes, so arranged that two are in front and two behind; but this species, and the black-backed Arctic three-toed woodpecker, have two toes in front and one behind.

The three-toed woodpecker is a dweller in forests of spruce, alpine fir, larch, and lodgepole pine, at moderately high altitudes, from Alaska south to New Mexico and east to Labrador. A permanent resident in the mountain parks, it must be sought for in a conifer-habitat, for only rarely does it go elsewhere. It is a solitary and usually rather quiet woodpecker, although, like others of the family, it produces the characteristic woodpecker *bu-rrrr*, hammered out mechanically on the dead top of a conifer at nesting time, and parents with young in the nest are vocally noisy on occasion. At other times there is but a faint, persisting tapping, the noise made by cutting into wood, to guide one to its presence. The nest is cut out in the trunk of a conifer, sometimes only a few feet above ground, more often at a considerable height. Both parents take part in the work of excavating the nest and in the duty of incubating the four or five white eggs. Both also share in the day-long search for food that the care of growing nestlings requires.

Insects of various kinds, including ants, are eaten, but much of the food consumed by adults and young alike consists of the larvae of wood-boring beetles, principally those species which infest the commercially valuable conifers. These beetles lay their eggs in the bark of a tree and the grubs hatched from them bore into, and feed upon, the sapwood. By so doing they provide a means of entry for moulds, fungi, destructive ants, and other organisms that eventually kill the tree and render the timber useless for commercial purposes. Sometimes plagues of beetles and their even more destructive followers infest and threaten the life of large tracts of valuable forest.

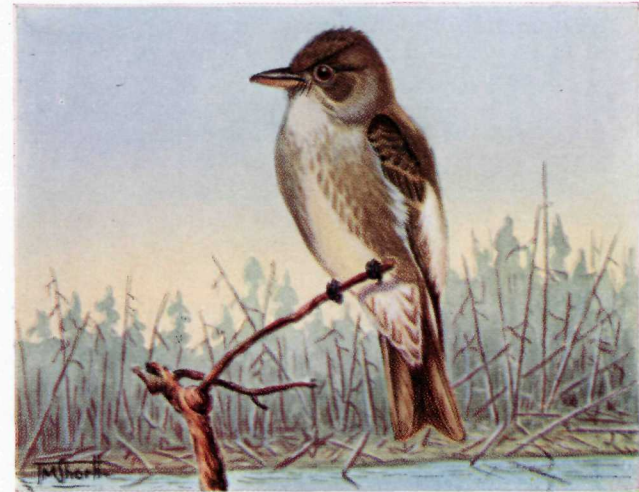
A three-toed woodpecker may return day after day to a heavily-infested tree until there are few parts of the trunk that do not show marks of his diligent and systematic search for beetle larvae, while the chips piled on the ground below bear additional testimony to the extent of his labours. Thus the three-toed woodpecker, as a forester's ally, proves his value to the nation.

OLIVE-SIDED FLYCATCHER

Nuttallornis borealis

This is a stoutly-built, olive-brown bird, with a relatively large head and heavy wedge-shaped bill, the otherwise dark plumage relieved by white on the throat and belly and on each side of the rump. It is one of the larger flycatchers, measuring seven to eight inches in length. Perhaps the best means of identification is its voice; for persistently, from dawn to dark, the olive-sided flycatcher whistles a loud, staccato, and far-carrying *quip-peer-peer*. To the novice in the woods this is one of the mysterious wilderness sounds, but when the source has been explained it need be so no longer, for the whistle is distinctive, unvaried, and easily recognized. There is also a sharp *pip pip* call, used under stress of excitement.

The olive-sided flycatcher is a summer visitant to coniferous woodlands across Canada and the northern United States and from Alaska



Olive-sided Flycatcher



Horned Lark

south through British Columbia and the Pacific States to Mexico. The winter home is in northern South America. It is a characteristic summer bird of the mountain parks, dwelling in a habitat of semi-open coniferous forest. The green edge of an old burn is a favourite place and there the top of some tall spruce or pine will be the male's lookout, from which to fly forth and defend his nesting territory. The nest will be not far away, saddled on an upper branch of a conifer where thick foliage provides shade and concealment. Nests are made of twigs, plant-stalks, and tree moss; the eggs, usually three in number, are cream or pinkish-white, spotted with brown.

Flycatchers, as the name suggests, are insect-eaters and capture most of their food on the wing. To this rule the 'olive-sided' is no exception. On tree-top or tall stub he waits hours on end, watching for a passing moth, butterfly, bee, beetle, or almost any flying insect which may come within the range of his vision. When prey is perceived, he flies out in pursuit and usually is successful. A loud snap of the bill accompanies or follows the seizure of an insect. Almost invariably the flycatcher returns to the same perch from which he launched forth a few seconds earlier.

While it is true that useful as well as harmful insects are consumed, nevertheless it seems probable that the harm done by destroying insects in the first category is neutralized by the good achieved in destroying those in the second. The weight of all the evidence accumulated through the years is favourable to this species, as it is to other members of the flycatcher family.

HORNED LARK. SHORE LARK

Otocoris alpestris

The horned lark is the size of a large sparrow but with a slimmer and more graceful outline. The back is pinkish-grey, the underparts white except for a black collar between chest and throat; the small ear-tufts, sometimes prominent, are distinguishing marks. It is a bird of the ground, a walking, not a hopping bird, and, except when nesting, usually travels in flocks.

Horned larks, of numerous geographical varieties, inhabit much of Canada from the Atlantic to the Pacific and north to the Arctic seas. In some places they are resident the year through, in others they are counted among the earliest of spring transients. One variety nests in the fields, meadows, and beaches of Eastern Canada, another on the Arctic tundra, a third on the open prairies, and one, the variety found in the mountain parks, nests on the high alplands. Horned larks also are native to the United States as far south as New Mexico and Texas, and on the great desert plains of those southern States many kinds spend the winter. The horned lark's nest is of dry grass matching the ground on which it is built. The eggs in one nest may differ greatly in appearance from those in another; a common type is grey-white, heavily marked with pale brown; all are inconspicuous. So also are the streaked and spotted young, which in the nest match their surroundings so closely one might easily walk within a few feet and fail to see them.

On the open land of their nesting territories, the males sing while perched on the slight eminence provided by a stone or clod. It is a thin,

tinkling song not readily described, and the motionless singers are hard to distinguish against a neutral background with which the harmony of neutral-shaded plumage blends so well. These small inconspicuous objects may, however, spring into sharp relief when sunlight strikes the black collar, white vest, and erected ear-tufts, and the song, faint and sibilant from the ground, seems to achieve more volume and richer tone when it comes to us from the sky. The nesting males, lark-like, often sing on the wing. One may circle upward, singing as it goes, higher and higher, until the air-borne notes become the faintest shadow of a song dropping earthward and their author but a faint speck against the sky.

When on their unhurried migrations north or south, migrations that are interrupted by long days of loitering on good feeding grounds, these gentle birds are a delight to watch and study. A flock drifts past in undulating, graceful flight, now barely visible as the birds pass below the ridge of some brown hillside, now flashing white as they wheel and circle. They alight and completely disappear; they seem to melt into the dun earth. Walk towards them and for long they remain invisible; not until a bird walks forward does its form take outline. Another and another take shape and substance; now the flock rises, a few birds at a time, then more, until all are a-wing. Again they drift slowly across the field, and again alight.

Nesting horned larks depend mainly on insects to supply food for themselves and for their young; but through early autumn to early summer the bird is a seed eater, harvesting the crops of pigweed and lamb's quarters and the seeds of many other weeds that plague the farmer and the gardener. Destruction of sown grain is charged against this bird but in Canada, at least, the amount consumed is slight and the horned lark is generally esteemed as a friend of man.

VIOLET-GREEN SWALLOW

Tachycineta thalassina

Violet-green swallows and tree swallows, the only two members of this family that are clear unmarked white below, often associate while feeding or when on migration, and then may be difficult to distinguish. The tree swallow is greenish-blue above; the slightly smaller violet-green swallow is purple and violet, and the white of its underparts extends on to the back at the base of the tail to form a mark that is often conspicuous while the bird is flying.

The violet-green swallow is a western species inhabiting mountain territory from Canada to Mexico. In the mountain parks the first spring arrivals appear in early April, usually a few days or a week in advance of the first tree swallow. Later in the spring both these species and the earliest cliff swallow may be seen together, perhaps flying over some pond where midges are hatching and the first spring insects are astir, perhaps strung out along telephone wires. In some localities the violet-green swallow commonly nests in holes in trees—those made by hairy woodpeckers or by flickers. In other localities, both rural and suburban, it is a tenant of bird houses, and occupies holes under the eaves of buildings; or it may enter, through a knot-hole, some loft or attic and build a nest of grasses and feathers there. The greater number,

however, are cliff dwellers, associating in large communities and building their nests in rock crevices.

The ease and beauty of flight exhibited by violet-green swallows may be observed from above, as well as from below, on visits to the mountain cliffs they inhabit. Walk along the rim of some cliff where a colony is nesting; see the birds dash out and swirl about in the void below, darting this way and that, making sharp turns, making wide sweeps, and accompanying all these complicated aerial manoeuvres with delicate, sibilant cries. The sun brings out the brilliant iridescence of bronze, green, and violet on the birds' backs as they are seen clearly from above. To see these little swallows—so many of them where other birds are scarce in mountain solitudes—means much to the traveller who pauses on his way through the high places. Because of them the great, sheer cliffs, grim and somewhat sinister, with the centuries' accumulation of detritus below, are in some way made less terrifying, less foreign to man's understanding.

ROUGH-WINGED SWALLOW *Stelgidopteryx ruficollis*

Two kinds of swallows are particularly associated with the sand banks of lake and river side, nesting in them and capturing, over the adjacent waters, much of their food. These are the bank swallow and the rough-winged swallow. Both are brown above and largely white below, the first with a brown band across the white breast, the latter washed with fawn-colour on flanks and throat. These markings distinguish the two species.

The rough-winged swallow is a summer visitant to many parts of southern Canada and the United States and winters chiefly in Central America. In the swallow migrations which reach the mountain parks this species, arriving in early May, is usually third in point of time. It is usual for the six species of swallows to appear in this order, viz. violet-green swallow, tree swallow, rough-winged swallow, bank swallow, cliff swallow, and barn swallow.

The common nesting place is a gravel or sandbank and such locations may be occupied by several pairs, although this species is less communal in habit than are some other members of the family. A tunnel, anywhere from eight inches to three feet in length, is scratched out with much labour, for the swallow's feet are small and weak, and at its end is prepared a crude nest of grass, plant stalks, and other dry vegetation. A nest of poor construction is compensated for by the solid earthen walls that support and retain it. Here the six or more pure white eggs, and later the young, obtain better shelter and a greater degree of security than are enjoyed by the majority of tree-nesting birds.

Swallows are birds of the air and capture all their food in this element; the long, pointed wings indicate the great power of flight; the small, weak feet show that a less exacting role is played by these members. There is an old tale, current in many countries, that swallows carry bedbugs and for this reason are undesirable neighbours, to be discouraged from nesting about man's habitations. Many swallows have been killed, and swallows' nests have been destroyed by believers in this old folk-tale, but like so many other superstitious beliefs it is a

product of man's ignorance of natural history. It is a fact that swallows are attacked by, and carry from place to place, an insect which does resemble a bedbug. It is not a bedbug, however, but an entirely different creature, one that will do no harm to man.

Swallows specifically, and as a group, are man's good friends and as such should be encouraged to nest in their chosen sites of bank, or tree, or barn, or farmhouse.

CANADA JAY. WHISKY JACK. *Perisoreus canadensis* CAMP ROBBER

The grey body and white head of the Canada jay are distinctive; the plumage is soft and fluffy; the bill and feet are black.

The Canada jay is resident in the coniferous forests across Canada and the northern United States and through the mountains of the west from Alaska to California. In the mountain parks it is a familiar acquaintance of those who travel or camp in the woods. Few have found a nest of this common bird; the nests are built and the eggs incubated at a time when it is early spring according to the calendar but still actually winter at the altitudes or latitudes that these birds inhabit—a time when the snow-bound woods are travelled by few save the professional woodsman or trapper. Another reason why few nests are found is the shy and secretive behaviour, at nesting time, of this generally bold and friendly bird. The nest, stoutly built of twigs and tree moss surrounding a deep cup lined with feathers, mammal fur or hair, or all three combined, provides warm housing for the three or four grey, brown-spotted eggs. On them the parents, in turn, sit closely through nights when the temperature drops below zero, and through days in which the early spring sunshine tempers the cold but little. Not much is known of the Canada jay's homelife. It has been reported that both members of a pair take part in incubation, and it is suspected that the male feeds the female during the time she is on the nest. The larder in these high, cold woods is not well stocked in late winter. Some adult insects dormant at that time and other insects in the pupal stage are available and probably represent an important item of diet; there may be scraps of fat and muscle to be pulled from a deer or a moose carcass which wolves and coyotes have in part consumed; there are dried berries and seeds to be had for the seeking. Still greater effort is called for later, when the hungry young must be fed and kept warm.

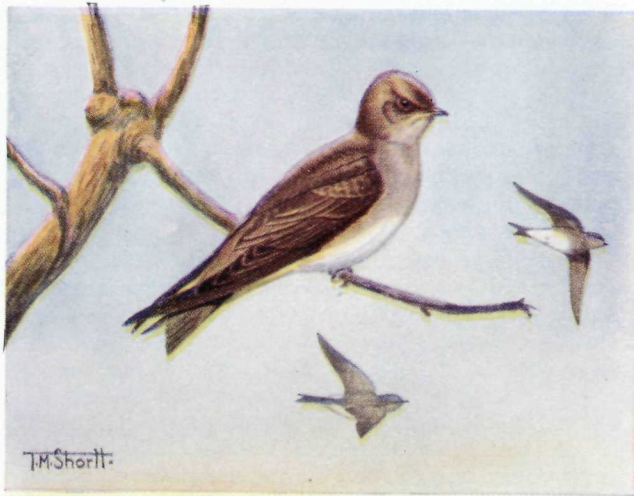
This secret life of the Canada jay ends when the young—sooty black, with cream-coloured bills—leave the nest that has served them so well through days and nights of wintry weather. The entire family takes up residence in some stretch of woodland and there, through the first summer and the autumn which follows, maintains its identity. Quiet and sociable, the grey birds drift shadow-like through the woods, within a territory circumscribed by boundaries the human eye cannot discern, in constant search of spiders, insects, berries, and seeds. Inquisitively curious, they come quickly to the lure of the pygmy owl's call, imitating the call as they come in notes softer than the original; or they come to the lure of a highpitched squeak, the sound made by a terrified mouse and a distress signal to which many kinds of birds and



Violet-green Swallow



Canada Jay



Rough-winged Swallow



Magpie

some mammals will respond. Attracted thus, the jays come nearer and nearer out of the deep woods, sailing on spread wings from one tree to a lower branch of another, fluttering up again and once more sailing down, talking as they come in soft and murmurous voices. When they reach the thicket in which the observer stands and calls they peer down unafraid, like great, fluffy chickadees; they move here and there on noiseless wings, 'light as a feather', then, curiosity satisfied, drift back into the forest.

The Canada jay is a generally harmless and attractive bird, well deserving the affection that it in general is accorded. The hunter knows it as a forager about the camping place, picking up bread crusts and morsels of meat or scraping congealed fat from the frying pan, and here too it is sociable and unafraid.

MAGPIE

Pica pica

At first glance the magpie passes as a wholly black and white bird. Actually only the head, neck, and part of the back are black; the closed wings are iridescent blue; the great wedge-shaped tail, as long as the body, is iridescent green.

This species is an inhabitant of Europe, Asia, Africa, and the interior of western North America from Yukon Territory to New Mexico. It is resident over much of its range, including the mountain parks. In North America the magpie is as western as a coyote, a cayuse, or a coulee. He is well known to every rancher in the foothills and every trapper in the mountain, and is often greatly disliked. In summer his flashing black-and-white form enlivens buffalo berry and saskatoon thickets in the grassland draws. Winter finds him, ever alert and watchful, lurking near farm-buildings and exploring cattle corrals and the richness of manure piles. He travels the open forest slopes; the first, perhaps, to find the carcass of a steer, or horse, or deer, the first to sound an alarm when a man walks the woods, the first to advertise the presence of a running buck. The magpie's nest of twigs, rootlets, dry grass, and mud, is encompassed within a much larger structure of sticks, through which an opening, on either side, six inches or so above the nest proper, provides entry and exit. Hawthorn and buffalo berry, studded with sharp thorns, are favorite materials for building this barricade, which serves to protect eggs and young within the nest. This is their sole defence and such measure of protection as it affords may be defeated by the great size of the structure, which renders it visible from afar. The site may be a solitary wild cherry or other low tree growing in a deep coulee, or it may be a dense thicket or perhaps a wide-crowned conifer. Frequently a nest is built low down; some are within arm's reach of a man standing on the ground. The eggs, which may number seven or eight, are white, uniformly and finely speckled with olive-brown or drab. The young remain in the nest until they are half or three-quarters grown; subsequently the family will frequent thickets and wooded draws adjacent to grasslands where grasshoppers and other kinds of animal food are abundant. Nests may be repaired and used a second year; sometimes they serve as nests for sparrow hawks, and pheasants have been known to use them

The magpie is a hearty and indiscriminate feeder, eating carrion and rotten fish, young birds taken from the nest, birds' eggs, mice, insects, fruit; indeed there is little that it will refuse. A magpie perched on the back of a horse, picking off and swallowing the partly-engorged wood ticks that have been sucking the animal's blood, is a common sight—and this habit is on the credit side of the record. Not so another habit which feeding on ticks has led to, that of picking fragments of living tissue from open sores on steers, or horses, or sheep. Magpies eat great quantities of grasshoppers and Rocky Mountain crickets, thus performing a valuable service to man. A precise evaluation of the species' good habits and bad habits and its translation into terms of economic relationship will no doubt be undertaken some time in the future. Meanwhile public sentiment is definitely anti-magpie. Perhaps the problem is academic, for the magpie continues to flourish in spite of wide spread attempts at extermination by payment of bounties, by encouraging magpie shoots, and by other devices.

AMERICAN CROW

Corvus brachyrhynchos

The American crow, familiar by sight or by repute to everyone, needs no description. It could be confused only with its larger relative, the raven.

Crows are common over most of North America. In parts of southern Canada the species is resident, in the sense that some individuals may be present at all seasons of the year, although summer and winter populations probably consist of different groups of birds. A summer population moves out in early autumn and is replaced by another population from a different, and usually a more northern, locality. This is the case in Banff National Park, where crows are plentiful in summer and where the presence of a smaller winter population is not unusual. If it is permissible to credit birds with intelligence, then the crow has more than the common share. Perhaps a long, and generally unhappy, association with man has made it so. At any rate, the crow is adaptable in its nesting and food habits to a marked degree. In a prairie or grassland habitat nests are built in the occasional willow and shrub thickets; in woodland tracts a tall conifer may be chosen; on some islands off the coast of British Columbia crows sometimes nest on the ground. Wherever the site may be, the nest is strongly built of sticks surrounding a deep cavity lined with fine, shredded bark or grass or some other substance that will ensure good insulation. This is a necessity, for the eggs are laid in early spring, when freezing weather is a condition to be met and overcome. The crow's *caw caw* is a familiar sound, but not so the spring love song of the male, which consists of soft, musical chuckles and gurgles pleasant to the human ear, as no doubt they are to the female crow.

Like the magpie, the crow is an omnivorous feeder, partial to wild ducks' eggs, and the eggs and young of other birds also. These items together constitute a seasonal food; the cutworms, wire-worms, grasshoppers, and other insects that are consumed in large quantities at certain times constitute another. Carrion is eaten and waste grain is gleaned from stubble fields. The destruction of ducks' eggs by crows takes place principally in the late spring and early summer, when there

is but scant vegetative cover to conceal ducks' nests. Robbed thus of their first laying, ducks usually nest a second time. The proportion of young raised from such second nestings is probably higher than the proportion of young raised by ducks whose first sets of eggs escaped destruction. The problem of the relationship between crows and ducks is not fully understood and is the subject of current investigation. The crows' consumption of noxious insects probably represents a definite contribution to the welfare of ranching and farming communities—to many farmers the crows are welcome visitors. The sportsman holds an opposite opinion—to him crow destruction is a worthy cause to be carried on at every opportunity. Well-organized and widespread attempts to exterminate the crow, by the payment of bounties on crows' eggs and crows' feet, and by other means, have not, however, been successful; it is doubtful if they ever will be.

CLARK'S NUTCRACKER.

CLARK'S CROW

Nucifraga columbiana

This is a crow-like bird, about twelve inches long, with grey body plumage and black wings and tail that show clear white markings when the bird is in flight. A raucous *kāaar*, the most common call, is distinctive and a reliable means of identification.

The Clark's nutcracker, a western bird discovered during the Lewis and Clark expedition to the Pacific northwest in the early part of the nineteenth century, is a dweller in the high hills from Alaska south to New Mexico and is a characteristic bird of the mountain parks. Like the magpie, it is a true westerner, but a mountaineer, not a plainsman, and far from being the scavenging pariah its larger cousin has proved to be. Nevertheless, in some places it does frequent the environs of town or village to live on man's bounty.

The habitat preferred by the species is semi-open forest of the type found just below timber-line. There, in some tall conifer, a pair will build a bulky nest of twigs and dry grass, lined perhaps with sheep's wool or with hair obtained from a dead moose, or with some other soft material. The eggs are greenish white, lightly dotted with brown and blue; three is the number usually laid. Nesting time is in March and April, when the generally noisy birds are silent and furtive. Their raucous cries no longer penetrate the woods; they slip away, careful to keep their presence hidden. Nests, consequently, are difficult to find; success may depend upon seeing a bird gather nesting material and tracing this bird to its nesting site. At other seasons nutcrackers are filled with a curiosity often strong enough to mislead them. An imitation of a horned owl's hooting will bring them from a distance and they will come quickly to the imitation of a mouse's squeak. A passing deer or coyote moves them to utter loud cries and thus proclaim the presence of these mammals—a habit of which the hunter takes advantage.

The seeds of conifers are the preferred food of these birds and a good cone year is a time of feasting and successful reproduction. Failure of a cone crop may cause the birds to move away and seek better feeding-grounds elsewhere. At such times individual birds or small flocks wander into regions far from their native home and there cause curiosity



American Crow



Clark's Nutcracker

and speculation as to their identity. Seeds other than those of conifers figure in their diet, as do fruits and berries, and they have been seen picking up oats newly-sown in a mountain valley. Carrion attracts them at times and they are reported to rob small birds of eggs and young. This pied crow is nevertheless held in affectionate regard by most travellers through the high hills, who ignore such lapses from an otherwise blameless life.

BLACK-CAPPED CHICKADEE

Parus atricapillus

This chickadee can be distinguished from other members of the family by its black cap, black throat, and contrasting white cheeks; the back and breast are pale grey, the sides buffy. The common and identifying song is a clear *chick a dee dee dee*. Another song, heard more often in spring, is a somewhat mournful *pee bee*, the first note higher than the second.

The black-capped chickadee is widely distributed in wooded sections of North America and resident over most of its range. In the mountain parks its preferred habitat is aspen bluffs and stands of deciduous trees which grow beside streams, swamps, and depressions in the lodgepole pine forest. Less often it is found in the spruces and alpine fir on the higher levels. The little chickadee is one of the commonest and best-loved birds, on the scene winter and summer; the first to come to the winter food-tray, and free always with the simple call that tells its name. The upside-down manner of feeding, with the bird clinging to some slender twig to search the under surface for what insect food may be concealed there, is an endearing trait and the friendliness to man, friendliness so trusting, so unafraid, wins affection from all. Chickadees nest in holes in trees, those which woodpeckers have dug in an earlier year, used, and then abandoned, or those which the chickadees themselves excavate with their tough little bills. To hew out these cavities with such a seemingly inadequate tool, even though decay has softened the wood in which they work, is a long and arduous process. In spring one hears them at their excavating, hammering with all the diligence of a downy woodpecker. One may be found at work inside some slight cavity, chipping out fragments of rotted wood, or it may be seen flying away with a chip held in the bill, to be deposited elsewhere. A birch stub with strong bark but rotted wood is a favourite site for a nest. Chickadees will also nest in man-made bird-houses, more often in those which have been fashioned to simulate a tree trunk and placed in appropriate surroundings of trees and shrubbery. Wherever the cavity, a well-made nest of fine grass, lined with feathers, mouse hair, rabbit fur, or other soft stuff, covers the bottom and lower walls. The eggs, of which there may be eight in a set, are white, marked with small brown spots.



Black-capped Chickadee



Brown-headed Chickadee

HUDSONIAN CHICKADEE.
BROWN-HEADED CHICKADEE

Parus hudsonicus

This is a dark chickadee with brown back, with dark-brown cap, silvery-white checks, and black throat. Its song does not clearly enunciate *chick a dee* notes; it is slower, more wheezy, than the song of the black-capped chickadee.

The brown-headed chickadee is a truly Canadian bird, resident in the spruce and alpine fir forests of the northland and in a similar habitat along all the mountain ranges. Although common enough in the mountain parks, and a resident there, it must be sought out, for this dusky chickadee is not endowed with the friendliness so characteristic of the brisk black-capped species. It shuns, rather than cultivates, association with man. Sometimes it remains high in the tree-tops, ignoring all attempts to induce a descent. At times, however, one may be encountered close enough to detect the brown head and the other characters which serve as identification marks. The nesting habits of this chickadee are similar to those of its better-known cousin. Brown-cap or black-cap, the chickadee lines some cavity in stump or tree with fine grass, plant-down, fur, or whatever similar material can be found. The white eggs, speckled with brown, are also similar in both species. Living as they do in northern and mountain woods, where relatively few people travel, the life history of brown-headed chickadees is comparatively little known. It is known, however, that insects form the bulk of their food, so that, in addition to their value as rare birds to be sought out for the pleasure of finding them, the brown-capped chickadees are of value in the forest economy.

RED-BREASTED NUTHATCH

Sitta canadensis

This is a diminutive bird with relatively long bill; the body is blue-grey above and buffy-orange below; a black mark crosses the face. The common call, a nasal *yan-k yan-k*, and the bird's habit of creeping up and down tree trunks, as well as travelling upside-down on the lower surfaces of branches, are aids to identification.

The red-breasted nuthatch is a common resident of coniferous forests over most of North America; many find conditions to their liking in the mountain parks. One of the forest birds which use tree cavities as nesting places, it will pre-empt what is ready at hand or chip out a fresh cavity in some decayed tree stump and line the bottom with fine grass, moss, shredded bark, and feathers. At frequent intervals during the incubation period the nest entrance is smeared with liquid gum from some conifer, for what purpose can only be conjectured. The four to six eggs are white, speckled with reddish brown. Nuthatches are well-known members of a small-bird community that habitually seeks insect food in bark crannies and along the slenderest twigs of forest trees. Hidden in, or attached to, such places are destructive insects in the larval and pupal stages, which the active nuthatches find without difficulty. Marvellously active and agile, they run over a tree-trunk, exploring its surface in minute detail, stopping to search the innermost crannies and, if need be, using the sharp bill to chip away bark fragments under which insects may lurk.



Red-breasted Nuthatch



American Dipper

AMERICAN DIPPER. WATER-OUZEL *Cinclus mexicanus*

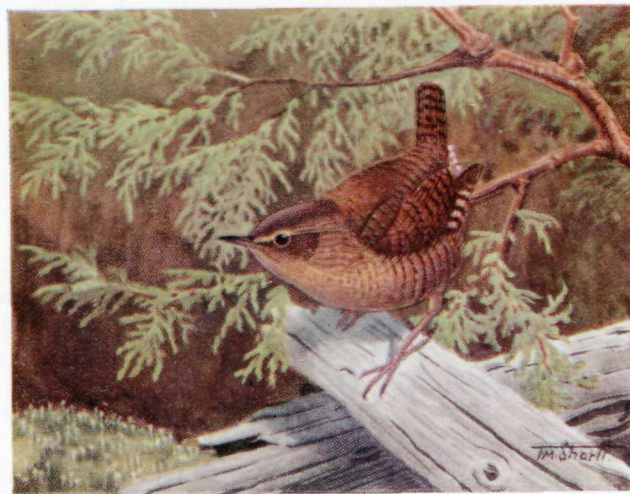
The dipper, a rotund, bob-tailed, slate-coloured bird, about seven inches long, is found always along streams in summer, and about rapids, springs, and ice-free pools in winter. The odd shape, the dark colour, and the choice of habitat make it unmistakable. The song is a clear, well-sustained warble.

This is another western bird, inhabiting mountain territory from Alaska and northern British Columbia to Arizona and New Mexico. In our mountain parks the dipper is a familiar, and sometimes shadowy, sprite, of foam-flecked pools and cascades, where the grey shape blends with the water-drenched boulders. It flies low in shadowy outline over the water to some rock-top in midstream that diverts the current, and there the grey form jerks up and down as if its feet were coiled springs expanding and contracting. It flies through the spray of water-falls; it swims on the surface and below; and actually walks along the bottom of the stream, a trick no other bird can do. In this habitat of fern and moss-hung rocks and dashing waters, where cool mists temper summer's heat, the dipper builds a nest in some deep rock-crevice or where mossy boulders provide shelter. The nest, which may be ten to twelve inches in diameter, is a ball of moss, kept green by constant mist and spray. The entrance is on the side, and well within the mossy walls a dry-grass lining holds secure the five white eggs. Dippers feed almost exclusively on animal matter, a diet that may include small fishes, which are captured with ease and dispatch. In season they eat the surplus drifting salmon eggs which litter the gravel bottoms of the streams on the Pacific slope where these fishes spawn; but caddis larvae and other insects that inhabit streams are eaten at all seasons. Thus a small levy on trout and salmon fry is charged against the dipper in an accounting that seems to show a balance in the bird's favour. For though the dipper does eat salmon fry, it also eats the eggs and fry of sculpins, which are enemies of the salmon; other foods it takes weigh little on the economic scales. Perhaps food habits, good or bad, are trivial matters, to be set aside in such accounting; for in golden coin, minted for no material usage, the dipper pays full well through summer and winter in song that is truly golden and a delight to all who hear it.

WINTER WREN *Tannus hiemalis*

This is a tiny bird, the smallest member of the wren family; the rich brown plumage is barred and freckled, but these markings are not apparent at a distance. A fashion of holding the short tail inclined forward over the back, or at right angles to the body, is characteristic. The song is a high, light warble, often long sustained; the alarm note is a metallic tic tic.

Winter wrens are distributed across Canada and most of the United States. In the more southern localities and along the sea they are resident, in the mountain parks and the north country they are summer visitors only. This wren shows preference for moist, cool, evergreen woods, where tall fern or bracken grows, and mosses cover prostrate and rotting logs. There it runs about like a small, brown mouse, or



Winter Wren



American Robin

flutters from log to stump and back again, giving its sharp *tic tic* note if disturbed by a man's presence. Under a stump or beside a sheltering log or, should cliffs be present, in some rock cranny, a globular nest of moss, twigs and grass, sometimes lined with feathers, is built unhurriedly—a green or golden-brown mass blending with the surroundings, whatever these may be. The small entrance is on the side. The eggs are white, sparingly marked with small brown dots. Males seem to outnumber females; at any rate, one finds them building nests destined never to be occupied, and singing songs which no female heeds. The winter wren is indefatigable in its search for insects, which compose almost its entire food, and for this reason, if for no other, rates high in the list of beneficial birds.

AMERICAN ROBIN

Turdus migratorius

The American robin, one of the commonest and best known birds, needs no introduction other than to note that it is a member of the thrush family. To translate bird-music into words is a favourite pastime and the robin has been more than commonly honoured in this respect.

A few bird species are capable of adopting their primary functions of reproduction and feeding to almost any type of environment, and the American robin is one of these. It has, through a period of time not readily measured, colonized the North American Continent from the Atlantic to the Pacific, from the northern limit of trees to the deserts of lower California. It nests from sea-level through all intervening types of habitat to timber-line and higher; nests have been found on mine buildings 7,000 feet above the sea and a mile or more from the nearest tree. Few areas in the mountain parks are without a robin population. Nests are built in tall trees, in low bushes, in hollow stumps, on cliff-sides, on the ground, in outhouses, barns, stables, and chicken-houses, on window-ledges, and on bird houses which have flat tops. The strong nest, reinforced by an inner mud-wall that looks for all the world like the half of an empty cocoon, is built of grass, plant-stalks, string, and a variety of such other material as the bird may readily carry; on a lining of fine grass, coming within a half-inch or so of the mud-walled top, the blue eggs shine like turquoise. Sometimes the durable nests are refurnished to accommodate a second brood or even a third, and a nest may be used for several successive years or may form the base for a succession of nests, one above another.

As in its nesting, so in its food habits the American robin is adaptable to an unusual degree. Robins eat tiny fish, and all manner of small animals found among loose gravel on the beaches of ponds and streams; they eat cutworms, wire-worms, grasshoppers, beetles, and other kinds of insects too numerous to mention; they eat the seeds of many plants, wild fruits, and tame fruits, including strawberries, as many a grower will testify. The robin's appetite, so diversified, has brought high praise; it also has brought condemnation. The species is so numerous that its potentiality for good or for harm is great; that



Varied Thrush



Hermit Thrush

the good it does in helping to control insects which destroy man's crops and nature's forests outweighs the harm it otherwise may do seems to be established beyond any reasonable doubt.

**VARIED THRUSH. OREGON ROBIN.
SWAMP ROBIN**

Ixoreus naevius

This is a robin-like bird with a shorter tail and with wings that are barred instead of plain; a black band across the reddish-brown chest is a further distinction. The characteristic call, unique among bird voices, is a long 'policeman's' whistle, now on one note, now on another higher or lower. It is another of the mysterious sounds of the deep woods. In the high hills the call of the varied thrush is sometimes hard to distinguish from the whistle of the hoary marmot.

The varied thrush is a forest dweller along the Pacific coast and in the mountains from Alaska to California. It is a summer visitant to the mountain parks, frequenting, in nesting time, deep, shaded woods. Its nest, often placed in evergreen trees and more often low than high, is not too skilfully fashioned of moss, plant-stalks, dry grass, and twigs. The eggs, usually four in number, are greenish-blue, spotted with brown. The young are spotted on the breast and closely resemble young robins in the same stage of growth. Young birds sometimes leave a crowded nest while still short-tailed and relatively helpless. Thus the first short flight, from one tree to another, may fail in its objective and the youngster may drop to the ground, to the great distress of the parents, who fly to its side with cries of distress that induce it to further effort.

The insect food of the varied thrush is obtained, in great part, among the fallen leaves and vegetable debris on the ground in shrubbery and forest. In such places are insects in the larval stage, including many of those listed in the category of noxious species, and these fall victims to this industrious searcher. On wintering grounds along the coast the search for insects continues until, or unless, snow blankets the ground. Should this occur the varied thrushes must of necessity rely on wild berries to supply their needs; berries that in autumn were merely a welcome addition to an insect diet now become a necessity and the birds seek them in the lowlands. Then it is that 'strange robins' appear about town and city, brighten many a garden, and share with the junco and the song sparrow the contents of winter food-trays that their friends supply. Varied thrushes are beautiful, well-mannered song birds, industrious in the destruction of harmful insects and well deserving the protection extended to them.

HERMIT THRUSH

Hylocichla guttata

The hermit thrush is a slim bird of graceful proportions, somewhat smaller than a robin, olive on the back, reddish-brown on the upper surface of the tail, and heavily spotted on the creamy-white breast. The reddish-brown tail distinguishes it from the similar olive-backed thrush and grey-cheeked thrush.

The species is found in many parts of North America; in Canada and the northern United States it is a summer visitant only. Nests,

commonly placed on the ground, are made of dry leaves, grasses, and plant-stalks; in some the lining is firmly belted with moss. The three or four eggs are light blue-green.

The song of the hermit thrush has brought fame to the singer. Many an enthusiastic lover of the bird has tried, unsuccessfully perhaps, to recast the liquid notes in words or music-phrases. Many a poet, gifted or otherwise, has fashioned hymns to celebrate the song, the singer, the emotions they evoke. No such attempt will be made here. One is advised to seek, at nesting time in early June, the high places in the mountain parks—to hear, to feel the song. Doubtless he will succeed; doubtless also he will return another year.

Apart from, and in addition to, the value accorded to the hermit thrush as a member of the leading group of Canadian song birds, there is a material value to be considered—the credit of destroying noxious insects. This species is one of a group of birds which seek much of their insect food among the leaves on the forest floor. In so doing they find, and consume, many individuals of insect species which are detrimental to man's interests and affairs. To an insect diet are added, in late summer, many kinds of wild fruits such as huckleberries, black twin-berries, and saskatoons.

MOUNTAIN BLUEBIRD

Sialia currucoides

The male of this species of bluebird is clear bright blue above, lighter blue below, and white. These particular shades of blue closely match the 'heavenly blue' variety of morning glory now so popular. Both mountain bluebird and morning glory decorate many a rural home in Western Canada. The song is a low, murmuring warble.

The summer range of the mountain bluebird includes most of western North America, from Yukon Territory to California and from the east slope of the Cascade Mountain Ranges to Manitoba and the mid-western United States. In the north it is a summer visitant only. In the mountain parks this welcome guest appears early and stays late. The first spring travellers arrive in early April; migration continues through that month and by the time June comes many semi-open places up to timber-line have been occupied by nesting pairs. Bluebirds nest in holes in trees, often those which woodpeckers have made. The last seem particularly desirable and there is competition between different pairs of bluebirds, and between bluebirds and tree swallows, for their possession. Sometimes spirited encounters take place; if between two pairs of bluebirds one can perhaps conclude that the best pair wins. A woodpecker's hole is irresistible to a bluebird; one has been seen attempting to build a nest in a hole already occupied by its rightful tenants—a brood of young woodpeckers. Whatever the cavity may be, the nest is an accumulation of dry grass, plant fibres, string, shreds of bark, and feathers. The eggs are pale blue.

The mountain bluebird belongs to the family of thrushes and like all its kin it consumes both insects and wild fruits. In late summer bluebirds gather in rather large flocks and in some places feed almost

exclusively on grasshoppers, which are among the most active and destructive insect enemies of man. Many other kinds of noxious insects, including the codlin moth, are eaten.

TOWNSEND'S SOLITAIRE

Myadestes townsendi

This bird is a slim, grey, and slightly larger version of the mountain bluebird, to which it is related. The grey is of a neutral shade, relieved by white on outer tail feathers, and by buffy markings on the wings that become apparent when the bird is in flight. The song is a long, musical warble, heard in winter as well as at nesting time. The alarm note is a sharp *chuck, chuck*.

The Townsend's solitaire is another characteristic bird of the far west, from Eastern Alaska to New Mexico and from Vancouver Island and the coastal slope to the Rocky Mountains. A mountain nester, given to frequenting cut banks and rock cliffs, it descends to the valleys in late autumn. Some individuals remain there, others drift farther south. In most of the mountain parks it is a summer visitant only. The nest, loosely made of grass and rootlets, is placed in some rock crevice or under the overhang of a clay and rubble bank. The four or five eggs are white, spotted with pink. The young, when fully-feathered, are much more handsome than the parents, being marked on head, breast, and wing coverts with numerous large pale golden spots that produce an unusual and harmonious blending like pale gold sequins on a silver gown. Too soon these markings disappear and by early autumn parents and young are indistinguishable.

The food of the Townsend's solitaire, during spring and summer months, is composed largely of insects. From early autumn to spring wild fruits satisfy its needs. The several kinds of huckleberries so abundant in the mountain parks, the scarlet berries of kinnikinnick, and other mountain fruits are eaten; in winter the hard, blue, acrid berries of the juniper are favourites. This bird is not known to eat cultivated fruits; such of its habits as are not neutral in effect undoubtedly are of benefit to man, but it is for the beauty of its song that the solitaire is acclaimed. Discerning critics insist that the spring and summer melody is unrivalled by any other in Canadian woods, and they pay due homage to the sweet, clear winter song as well.

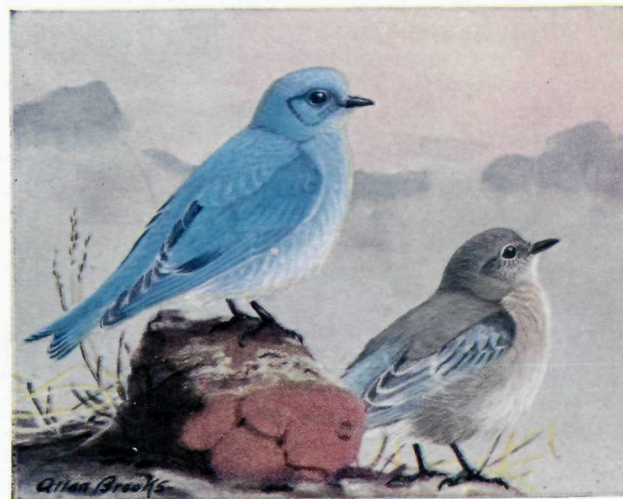
GOLDEN-CROWNED KINGLET.

GOLD-CREST

Regulus satrapa

The golden-crowned kinglet, one of the smallest woodland birds, is yellowish-green above and greyish-white below. The head is adorned by a black-edged crown that is yellow on the female, orange and yellow on the male. The song is a faint *tsee tsee tsee tsee ti, ti, ti, ti, ti, ti, ti*.

This diminutive sprite is a dweller in evergreen forests across Canada and the United States, a summer visitant to northern latitudes, and a resident in parts of Southern Canada. It is one of the commonest birds in the mountain parks, yet the nests it builds are exceedingly difficult to find. They are large and pensile, somewhat loosely made of moss and strips of bark, and closely resemble other mossy, ragged objects that commonly decorate the branches of close-ranked conifers



Mountain Bluebird



Townsend's Solitaire

in shady woods. The nest lining is sometimes soft with feathers and fine bark shreds; soft to protect the fragile eggs, warm to protect the tiny, naked young. As many as ten eggs, white with brown and lavender freckles, are laid by one bird.

Except when nesting, golden-crowned kinglets are sociable little birds, moving about through the woods in groups composed of several families and forming seemingly close association with troupes of chickadees, red-breasted nuthatches, and perhaps a brown creeper. They also mingle freely with parties of ruby-crowned kinglets, which are close relatives. All these small birds, the golden-crowned kinglet no less than the others, are insect-eaters almost exclusively. As such they constitute an element in the forest community beneficial to its health and vigour. None has habits that adversely affect man's interests.

ALPINE PIPIT. TITLARK

Anthus spinoletta

The pipit is a slim, fawn-coloured bird with white tail feathers that show only when the bird is in flight. Like the horned lark, it is a ground bird that walks instead of hopping, as sparrows and many other ground birds do, and, again like the horned lark, it travels in large flocks. The presence of white tail feathers and the bird's constant habit of walking with a see-saw motion are good aids to identification.

This is a circumpolar bird, a visitor to northern latitudes in Europe and Asia, and to North America, where the summer home includes high mountain territory over which arctic-alpine conditions prevail, from British Columbia to New Mexico. None spends the winter north of California. Pipits nest commonly on the alplands of the mountain parks. Here the song *tee chee, tee chee*, heard clearly in the high light air, may lead one to a nest hidden in some slight ground cavity near saxifrage or mimulus. Perhaps one may see the male in marriage-flight spiral aloft, and hear the tinkle of his love song dropping from the sky before he plunges back to earth in swiftest flight. To find the nests diligent search is required, and many a search brings no reward. They are built of grass and plant stalks that match the ground, as do the eggs so thickly freckled with minute dark spots they seem like pebbles. Young birds resemble their parents in slimness and general fawn colour, but their breasts are spotted.

Pipits feed on insects and the seeds of many plants, including those of introduced noxious weeds. Travelling, as they do, in large flocks, and sometimes on their migrations remaining a week or two in localities where weed-infested fields attract them, pipits make a worthwhile contribution to weed control.

All summer they are absent from the lowlands, then some morning in September a company of the fawn-coloured, fairy birds is seen in flight over a meadow. The flock does not assume the compact form so noticeable in flocks of certain finches; nor do its members seem dominated by the flock-impulse to wheel, ascend, or descend in unison. Rather the flock seems a loosely associated aggregation of birds, each possessed by individual impulses stronger than any that are communal.

Ruby-crowned Kinglets



Golden-crowned Kinglets

Seldom are all the birds aloft at once; some are continually dropping to the ground, then as suddenly rising, perhaps to join the flock again, perhaps to alight on rocks or fence-posts. At another time they may be strung out along a roadside, or on the sun-dried mud along the margin of a pond—and here the mincing steps, the bows, the flirting tails suggest an avian minuet. A poet might say these pilgrims from the High Places trip to the measure of some fairy tune whose notes no human ear detects.

CEDAR WAXWING. CHERRY-BIRD *Bombycilla cedrorum*

Two kinds of waxwing, similar in appearance, are likely to be met with in the mountain parks. Both are slick, trim, crested birds, fawn and grey above, pale yellow and white below. Both have small, red, wax-like spots on the tips of the middle wing feathers; both have a terminal yellow band on the tail. The cedar waxwing is best distinguished by its smaller size, and the presence of yellow, instead of cinnamon brown, below the tail. The voice is a soft and gentle lisp.

The cedar waxwing is a summer visitant to open, wooded habitat over most of Canada where such environment is found; it is resident in parts of southern British Columbia and in many localities in the United States. It is a regular visitor to the mountain parks from June to September. The nests, bulky and untidy, may include grass, plant-stalks, twigs, string, sheep wool, or any other substance capable of being woven into their fabric; in some the nest lining is composed of fine rootlets exclusively. The eggs, numbering four or five, are blue-grey, marked with oddly-shaped spots and lines of dark brown and black. The social instincts of waxwings seem highly developed. Gentle and urbane, they seem never to grab, or snatch, or quarrel among themselves; indeed a habit of passing a small fruit from one bird's bill to another is not uncommon. When summer and nesting time come, they seem loath to break contact with their fellows, and flock association is again resumed just as soon as the spotted young are large enough to fly. Waxwings eat insects, but feed to a much greater extent on wild fruits, such as saskatoons, black twin-berry, wild cherry, and the like. In orchard country they take tame cherries but seem to prefer the native wild fruits when such are available. A more important consideration to some people is the fact that the cedar waxwing is a beautiful and charming bird that children love and men admire.

WARBLING VIREO *Vireo gilvus*

Vireos are coloured in harmony with the green woodland habitat they frequent. This particular species is small and slim, with grey-green upperparts, a light mark above the eye, and white underparts. In colour and size it resembles some of the greenish-yellow wood warblers, but the bill is larger and stouter, with an upper mandible slightly hooked. The song is a soft finch-like warble, often well-sustained. The alarm note is a rasping zeeee.

The warbling vireo is a summer visitant to the southern half of Canada and to most of the United States. Its winter home is in Central America. In the mountain parks the little grey-green bird is most at



Alpine Pipit



Cedar Waxwing

home in the aspen wood, where, in a rose bush or rhododendron perhaps, it weaves an open-topped nest that hangs from some slim crotch or from two parallel twigs that give firm anchorage. The workmanship with which the little artisan uses the conventional materials of bark-strips, grass, plant fibres, and conifer needles results in a beautiful and durable nest well concealed and difficult to find, even when an excited parent vireo scolds, with that wheezy voice so like an angry kitten's, and thus proclaims a nest is near. The three or four eggs are white, sparingly freckled with small, reddish-brown spots. The lepidopterous larvae called 'loopers', and other larvae that are responsible for serious economic losses because they feed on the leaves of forest trees, form a large part of the food eaten by vireos. Some kinds of these destructive caterpillars work on the under surface of leaves, where they pass undetected by the majority of insect-eating birds, but not by vireos. One may see a vireo among the green foliage, which in colour it matches so well, clinging to the slender twigs, peering here and there, above and below, then stretching its neck to full extent to seize a writhing caterpillar. Thus vireos are important members of the insect-eating group of birds whose vigilance helps to protect our forests.

AUDUBON'S WARBLER

Dendroica auduboni

The wood warbler family, which is found in North America only, is made up of numerous species similar in structure but differing widely in colour and pattern; the smallest warbler is slightly less than five inches from tail end to bill tip, the largest a little more than six inches. In some species the males are much more vividly coloured than the females. The male Audubon's warbler is slate-blue above, chiefly white and black below; yellow marks on crown and sides, another above the tail, and a solid-yellow throat are distinctive. The last distinguishes it from the similar myrtle warbler, which has a white throat.

The Audubon's warbler, named in 1837 for the great naturalist John James Audubon, is a western bird exclusively—a summer visitant to the woodlands from northern Saskatchewan to the Pacific coast and southward to New Mexico. In the mountain parks it is one of the commonest summer birds, the earliest warbler to arrive in spring and the latest to depart in autumn. The preferred habitat is the park-like stands of lodgepole pine, and here in the pines the nests are built, often high above ground and well out on a horizontal branch which provides adequate cover and concealment. The nest material commonly used includes dry grass, moss, plant fibres, and pine needles. The eggs, three to five in number, are pale blue, finely spotted with lavender and blotched with different shades of brown.

Warblers from wintering areas in Mexico and Central America begin to appear in Western Canada during late April; the migration continues through May to early June and parallels in time the emergence of certain insects from the pupal stage. Thus the first Audubon's warblers arrive in late April, before trees have leafed out, but at a time when early hatched midges are dancing away their few brief days of adult life over meadow, marsh, and woodland. Eagerly harvesting this abundant crop come these trim warblers, conspicuous now in leafless



Warbling Vireo



Audubon's Warbler

trees and on the grey-brown sod. One sees them launching out from tree or bush, fly-catcher fashion, to capture midges in the air, or examining each grass clump, or hunting through the dry cattails and sedges in lake shore marshes. At the other end of the warbler procession, in early June when trees are all leafed out and the insects which feed upon their leaves constitute a never-failing food supply, comes the Macgillivray's warbler.

MACGILLIVRAY'S WARBLER

Oporornis tolmiei

The male Macgillivray's warbler is mostly green above and light yellow below; a clearly patterned hood, black on the head, black touched with grey on the chest, and small white crescents above and below the eye forming an interrupted eye-ring, are identifying field marks. The female is a pale edition of the male.

The summer range of this species approximates that of the Audubon's warbler; the winter range is in Mexico and Central America. The Macgillivray's warbler is a common summer visitant to the mountain parks and there as elsewhere its habitat is one of shrubbery and open glades where tall plants grow. Thickets of rhododendron near timber-line are favourite nesting places. Dry grass and strips of shredded bark are the common materials used in constructing the somewhat loosely woven nests, which are built in bushes close to the ground. The eggs are white, marked with various shades of brown.

This is a shy little warbler of the dense brush coverts and is rarely seen at any great height above the ground, even during the spring migration, when many kinds of warblers congregate in the tree tops to hunt insects among the fresh green foliage. On the nesting grounds the female of a pair remains hidden in the shrub thickets; the male appears more often above the greenery, to sing a simple ditty of five notes. He soon drops again into the dense foliage of mountain shrubbery, with which the green and yellow of his plumage harmonize so well, but he can be induced to reappear if the ever-useful mouse-squeak lure is used.

The Macgillivray's warbler feeds upon the many kinds of caterpillars and the adult and larval forms of other insects associated with the thick shrubberies and beds of tall mountain plants that form the species' summer home. Like all warblers, it does an incalculable amount of good in controlling plant-eating insects.

BLACK-CAPPED WARBLER. WILSON'S WARBLER

Wilsonia pusilla

Plain yellow-green above and yellow below distinguish this small warbler; a round, black crown patch decorates the male.

In summer the species has a wide distribution across Northern Canada and south through the mountains from Alaska to New Mexico and Texas. Its winter range is in Mexico and Central America. It is a regular summer visitor to the mountain parks, where it nests in shrubbery at high altitudes. A nest may be hidden under the shelter provided by a low bush or grass clump, its rim flush with or below the



Macgillivray's Warbler



Black-capped Warbler

ground. The materials used in its construction are shredded willow bark, plant fibres, dry leaves, and dry grass. The eggs are white, marked with streaky brown spots.

In the colourful warbler procession moving north in spring the black-cap occupies a position to the rear of Audubon's warbler and in advance of more tardy species, such as Macgillivray's warbler. It is given to following lake shores and streams and frequents the tall willows and alders that mark these northern waterways. Amid such growth, in early spring when trees are yet in half or quarter leaf, the bright-plumaged little bird is detected quite readily. Males, easily identified by the black caps they bear, travel in advance of the females, and when the females reach the nesting grounds they may find the males settled there, each on some territory proclaimed his own by song and vigorous defence. Nesting territories are centred about thickets of mountain shrubs, one that covers a small bench high on a bank above a tumbling glacier stream, or one that marks the bottom of some talus slope where soil has gathered through the years. The territories will be occupied for a few brief weeks, until the young have left the nest. Then the males, later the females, and finally the young in bright new plumage will commence the long journey to the south.

The food of the black-capped warbler consists entirely of insects, and in relation to man's affairs the birds' habits are entirely beneficial.

WESTERN Tanager

Piranga ludoviciana

The western tanager, about the same size as a hermit thrush but more stoutly built, is a conspicuous bird of the conifer and aspen woods. The male, with its yellow body, black wings and tail, and crimson head, is particularly striking. The female is more soberly dressed and lacks the crimson.

This is another of the truly western birds, a summer visitant to woodlands from Mackenzie District south through the mountains and foothills to northwestern Mexico. Its winter home is from Mexico south into Central America. In the mountain parks the western tanager, because of its bright, contrasting colours, is familiar to many who walk the trails in summer. It seems most at home in semi-open conifer forests, where sunshine penetrates and berry-yielding shrubs grow in sunny openings. The nests, generally ill-shaped and unsubstantial platforms of plant-stalks, rootlets, and grasses, are built in conifers, usually high above ground; the eggs are greenish-blue, variously marked with brown.

The song of the western tanager resembles that of the robin, but is sweeter in tone and delivered with less emphasis—a warbled rather than a whistled song. In addition to the regular song there is a conversational *pretty dick* call that is most attractive. Usually the birds are full of curiosity and it requires no great skill to entice them within easy range of observation. Attracted by owl-call or mouse-squeak one will come nearer and nearer in short flights through the woods until, close at hand, it peers down through green leaves and shaded twigs at the observer below. In late summer some groups, travelling together on a leisurely migration southward, are composed of young that may



Western Tanager



Pine Grosbeak

represent the total of several broods. Adult females are scarce at that time and adult males have long since started on the journey to their winter home, where they will wear a winter plumage less bright than that of summer.

Western tanagers feed on insects and on fruits, both wild and cultivated. Around orchards of stone-fruits they can be a nuisance and an expense; elsewhere their food habits are neutral or beneficial.

PINE GROSBEAK

Pinicola enucleator

The pine grosbeak is a robin-sized bird, the old males grey and rosy-red, the females grey with olive-yellow markings on head and lower back; both have indistinct white wing-bars. The song is a clear, mellow whistle of three notes.

This bird has a wide summer range through coniferous forests from Newfoundland west to Alaska and south through the mountains to California. To most people it is known chiefly as a bird to watch for in the winter, one that may come one year and not the next—in mountain valleys it may appear with the first snow. The nesting grounds are in northern coniferous forests and high in the mountains, where northern forest conditions are duplicated. In the mountain parks one must seek pine grosbeaks in semi-open, sub-alpine forests, where the tall spires of spruce and fir stand clear against the sky; where heliotrope and tall false-hellebore grow, and small rills tunnel slopes gay with red paint-brush and yellow arnica; where rhododendron thickets are spaced among grey rocks. This is their summer home. Here nests of rootlets, moss, and grass are built in alpine firs or spruces. The bird lays but few eggs, usually three; they are blue-green, handsomely marked over much of the surface with spots and streaks of brown and tints of lavender.

Pine grosbeaks eat insects and feed them to their young, and this food is necessary to their well-being in summer time. They like the soft, wild fruits and the seeds the pulp conceals; such is their autumn and winter food, sought for in the lowlands when mountain fruit crops have diminished. The bright red berries of the rowan tree, in city streets and gardens, attract them; they eat all manner of fruits that dry upon the bushes and so provide a winter harvest for the birds. In spring they eat the softening aspen buds and fruit buds on the apple tree. This last, about the only fault of which this fine bird stands accused, may cause some protest from the orchardist.

ROSY FINCH. PINK SNOW-BIRD *Leucosticte tephrocotis*

Rosy finches are sparrow-like birds, beautiful in a dress of brown feathers tipped with rose, and wearing a black cap and a grey crown.

In summer the species is a visitor to the high alplands, cliffs, and ice-fields of western North America from Alaska to Colorado and California. In winter it descends to the mountain valleys and to the plains of Western Canada and the United States. Like some other alpland birds, rosy finches travel in flocks, sometimes containing several hundred individuals, and frequently associate with horned larks on a common feeding ground. In the valleys of the mountain parks such



Gray-crowned Rosy Finch



Pine Siskin

flocks may be seen in spring; later they will be met below the snow-line, foraging for early-hatched insects. In full summer the high alplands are the feeding grounds; still higher are the nesting places. Only a few nests of the rosy finch have been found; some were in rock crevices high up in cliffs and inaccessible without the aid of mountaineering equipment; others were under sheltering rock slabs in talus slopes among ice-fields just below a mountain crest. Nests are formed of fine grass and plant-stalks, and are lined with the cotton of arctic willow. The eggs are pure white.

During early summer and through the nesting season rosy finches live upon insects to a considerable extent and feed insects to their young; the midges which hatch early in enormous numbers and sometimes show conspicuously on the snow are a favourite food. At other times seeds of native plants and of introduced weeds constitute almost the entire diet. For that service alone rosy finches are entitled to man's protection, but other reasons for man's interest will be appreciated by many. Rosy finches so harmoniously dressed in brown, soft rose, and softer grey are among America's most beautiful birds. To seek them out in summer over alpland and ice-field is an ever-exciting adventure; to meet them in a great flock on a winter day is an experience no bird student can forget. None can foretell the time or the place of their arrival; none can foretell what their behaviour will be, whether wild and unapproachable or tame and confiding. One may recall a day in late winter, when sun shone through falling snow, and a flock several hundred strong rose suddenly and unexpectedly from a wide patch of pigweed and lamb's quarters. The birds left the ground in an open formation that drew together into a compact cloud and spiralled upward, circled high up, erratically, dropped towards the earth some little distance away, then approached in undulating flight to settle again among the tall, dry weeds.

PINE SISKIN

Spinus pinus

The pine siskin is a small, trim, sparrow-like bird with a sharp bill, the plumage streaked with olive-brown, the wings and tail marked with yellow which is not usually apparent except when the bird is in flight. The song is a light warble, and the birds have several call notes that are characteristic. Siskins are seen more often in flocks than singly or in pairs.

This finch is another inhabitant of the evergreen forests from Quebec to Alaska and south through the mountains to Mexico. In winter it may be present, in flocks of fifty to one hundred, almost anywhere in southern Canada and the United States. It is a summer visitant to the mountain parks, and its habit of flocking, even in summer, renders it conspicuous. The siskin is erratic in its nesting, which may take place at any time from March to July or even later. Flocks containing full-grown, active young, identified by a plumage darker than that of the adults, are much in evidence while mated pairs are still engaged in courtship or busy rearing nestlings.

Siskins eat many kinds of seeds and feed shelled seeds, softened in the parent's gullet, to their nestlings. One sees them on the beds of

dandelion, in spring stripping the yellow blooms, in summer reaping a harvest of seeds. It is the seeds of conifers, however, that the bird seems to prefer to any other food. In summer spruce cones, tight and green and sticky with gum, are opened and the unripe seeds extracted by the siskin's sharp bill; in winter it is easier to harvest seed from the ripened cones of spruce and fir, and flocks of siskins that may number one hundred or more levy this toll on the forest. They are restless and ever active; disturbed from the crown of some conifer they burst out and, in a tight little flock, circle about in erratic flight, calling as always with their sweet, clear voices, then fly upward and settle in the crown of another tree. Siskins are accused of eating the seeds of garden plants and of vegetables grown commercially. Apart from this habit, in which perhaps relatively few indulge, they are harmless and attractive birds, possibly of little economic importance in an economy dominated by man, but of priceless worth in the minds of those who love the woods.

RED CROSSBILL

Loxia curvirostra

Red crossbills are medium-sized finches, the old males showing much brick-red colour in body plumage, the females duller and less noticeable in tones of yellow to pale olive. The curiously crossed mandibles are identifying characters should the birds be seen close at hand, as often they are. Any sparrow-like bird with much red in the plumage seen clinging upside-down to a fir cone (an exceedingly common habit) is likely to be a male of this species, or a male white-winged crossbill. The last can be distinguished by the rosy red colour and the white bars on the wings of both sexes.

Red crossbills are birds of the coniferous forests from Newfoundland west to Alaska and south through the mountains to Mexico. The species is notorious for vagrant wanderings, during which a population of several hundred pairs may colonise a section of coniferous forest and remain there for a year or more, to nest and raise their young and then depart for distant regions. Extremely sociable, they travel and feed in flocks, even in summer. Their time of nesting is very variable. Some may nest in February or March and others in July, August, or September of the same year. Early spring nesting is preceded by a period of courtship, during which it is common to see four or five birds chasing one another in circles around the tree tops and singing on the wing. The song, heard through the medium of clear, frosty spring air, seems almost to equal the best vocal performance of the Townsend solitaire. In the height of the nesting season several males, each at the top of a tall conifer, with bills pointed to the sky and all the body plumage expanded so that the birds look larger than they really are, may sing in chorus. In early morning they sing continually, and on a still day the song can be heard at a distance of two hundred yards or more. Nests are handsome objects made of tree moss, dry grass, plant-stalks, and fir twigs decorated with vivid green lichen; the lining may contain a few feathers. The three or four eggs are pale bluish-green, marked with spots of brown and lavender.

Crossbills depend upon the seeds of fir, pine, and spruce as main articles of diet. Their crossed mandibles are admirably adapted to extract the winged seeds from hard cones, to shear off the wings and crack the husk. In nesting time the white kernels are held in the crop until softened and are then pumped into the throats of the young. In the still, cold days of winter, before courtship and nesting begin, feeding crossbills work busily and silently, so that their presence high up in the trees might escape notice were it not for the winged seeds, each with its kernel neatly cut out, that lie scattered on the snow. Crossbills eat insects also in both the larval and the adult stage; they have been seen in aspens, clinging upside-down, parrot-fashion, systematically clearing from the undersurface of the leaves innumerable small larvae that were feeding there. Crossbills are decorative in form and colour, interesting in habit, and so far as known do no harm to man's interests.

OREGON JUNCO. SNOWBIRD

Junco oreganus

The Oregon junco is a medium-sized sparrow, reddish-brown on the back and pinkish on the sides. A black cowl, clearly marked, covers head and chest; white tail feathers and a rosy white bill are other identifying characters. The song is a monotonous but sweet-sounding trill.

In summer this junco inhabits open coniferous forests, aspen woods, brush thickets, and the open woods adjoining meadows, from Alaska to Mexico and from the eastern slope of the Rocky Mountains to the Pacific Ocean. It is a ground bird, travelling in small flocks from autumn through winter into spring, visiting the weed patches and farm yards, and welcomed by children as the dear snowbird. In some of the mountain parks it is known only as a transient, in others as a summer visitant nesting from the valleys at base-level to the edges of the alplands. Nests of grass and plant fibres, lined with horsehair, are built on the ground, the rim sunk well below its level, and are screened by grass or flowering plants. Sometimes the site is a steep-sloping bank or the space under a rim of turf that overhangs a man-made trail through the woods. The four or five eggs are greenish white, marked with a reddish brown wreath of spots about the larger end and but faintly marked elsewhere.

Like finches and sparrows everywhere, the Oregon junco eats insects in the summer-time, industriously hunting caterpillars on low-growing plants and scratching among dry leaf mould in search of larvae. Spring, autumn, and winter find it harvesting the crops of weed seeds on grass-land and cultivated fields. It frequents farmyards and pastures to feed on waste grain and is a steady customer of the winter food-tray. The Oregon junco is one of many ground birds which assist man in his constant fight to conquer noxious weeds.

CHIPPING SPARROW

Spizella passerina

This is a small, slim sparrow, streaked on the back, grey on the breast, and crowned with a reddish-brown patch, which is bordered on the sides by a white line above a narrower line of black.



Red Crossbill



Juncos

The chipping sparrow is a common summer bird in most of Canada and the United States. Its wintering grounds are in the southern United States and Mexico. In the mountain parks, from the lower valleys to the upper edges of timber-line, it is one of the more common bird species. Nests are built in the lower branches of conifers and in bushes; well made of dry grass and plant stems they invariably contain horsehair in the lining. One wonders how long ago this habit of using horsehair started and what material was used before the horse was brought to America! The four or five eggs are pale blue, speckled with brown, chiefly about the larger end.

Both parents guard and feed the young while the small birds grow in the nest; nor does their task end when the nest's relative security is abandoned for a larger world, full of constant hazard to inexperienced young birds. For a week or longer the family group occupies some thicket or stretch of woodland, the young birds still dependent, the parents still brave and vigorous in defence.

The nesting season is a time of stress and uncertainty, more so perhaps for the chipping sparrow than for many other of the small bird species less friendly to man in their manner of life. The relatively large nests are conspicuous and easily found by such crows and squirrels as are eaters of eggs and young, and by other predatory animals as well. The chipping sparrow often is victimized by the parasitic cowbird, a bird that lays one or more eggs in the nest of a sparrow or warbler, leaving incubation and care of the young to the selected foster parents. Usually the results are another one or two parasitic cowbirds, and a smaller number of young sparrows and warblers than otherwise would have been produced; for the young cowbird, larger than its nest-mates, crowds the rightful occupants from the nest. Young chipping sparrows when full grown are slim and graceful like their parents, but the juvenile head is striped, not crowned with rusty-brown, and the underparts are streaked. On the southern migration many young travel the country roads, as some other kinds of sparrows do, and become common birds in roadside thickets.

This is the little 'hedge sparrow' friend of the country boy; at home in gardens where insects abound; nesting in ornamental shrubs and hedgerows; coming to the kitchen door for crumbs. He is, or should be, quite familiar. Whether at home in such rural or suburban scenes, or at the edges of deep muskegs, or in some pine forest, or high up in mountain shrubbery, the chipping sparrow is the same gentle, friendly bird. He is more of an insect-eater than are most sparrows, and no bad habits are charged against him.

WHITE-CROWNED SPARROW

Zonotrichia leucophrys

Adult white-crowned sparrows are streaked on the back with brown and grey, the breast is grey, the lower parts white, the head broadly striped in contrasting black and white. In autumn the young are dull editions of the adults but lack the black and white crown. The song is three or four clear notes followed by a softer tremolo.



Chipping Sparrow



White-crowned Sparrow

The summer range of the white-crowned sparrow extends across Canada to Alaska and south through the Mountain States to Mexico. In winter the species is found from the coast of southern British Columbia south to Mexico. In the mountain parks it is a summer visitant only, nesting about burns and in open places up to timber-line. Nests of dry grass and bark strips are built on the ground in the shelter of logs or shrubbery. The four or five eggs are bluish-white, specked with fine spots of cinnamon or reddish-brown.

To the parks' lowlands during late April come large flocks of these grey-and-brown sparrows, all with white crowns prominent. Many are transients that linger for a few days, feeding on weed seeds which have shelled out and lie among the litter on the ground, then pass on to northern nesting grounds. Relatively few will ascend the mountains to spend the summer there. On the return migration in September the open places again will be thronged with transients, but now a white-crowned head is a rarity, the brown-headed young of this year's hatching outnumbering adults in the ratio of approximately thirty to one. In spring, when the food supply of seeds has dwindled, these transient flocks may do damage to new-sown gardens by scratching out the seed. This seems to be the one bad habit of the white-crowned sparrow. In other ways it performs a useful service, destroying weed seeds and, in summer, helping to hold in check an insect population of which many species are destructive.

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