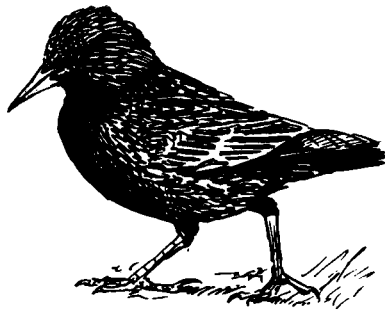
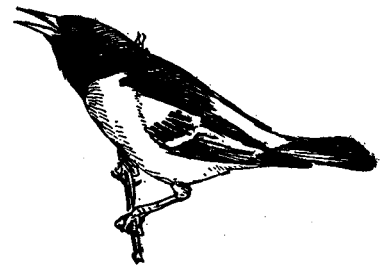




BLUEJAY



STARLING



BALTIMORE ORIOLE

Feathered Plebians

By E. LAURENCE PALMER

Illustrated by Louis Agassiz Fuertes

This is the seventy-sixth in NATURE MAGAZINE'S series of educational inserts.

UNLESS I write this insert, I may be criticised as being inconsistent. For years, I have recommended that we first study in Nature those things that are common. Then I write inserts for you that include the prothonotary warbler, a bird that only a few of you will ever see. Why should I leave out robins, thrushes, blackbirds and bluejays. The reason is simply that we have tried to make the inserts deal with a unit. We have had inserts on sparrows, warblers, game birds, shore birds, domestic birds and so on. In each category, it was easy to get eighteen life histories, but it was impossible to get eighteen common thrushes, eighteen common blackbirds or eighteen common flycatchers.

So, I decided to have an insert that dealt with eighteen birds common to garden and woodland, and which might be considered as songbirds. When I drew up a list of these, I found that I had enough species for at least three such mixed groups. Consequently, it is not improbable that, given time, you will get more of this type of insert. These will bring in the vireos, titmice, kinglets, nuthatches, and so on. Also we are planning an insert on the woodpeckers. With these ideas in mind, you may have some basis for understanding the selections made for this insert.

In this general discussion we will try to help you make the most of your bird neighbors these next few months. Since this feature will appear in May, it is appropriate that the general discussion concern what these birds may be expected to do during this part of the year. You may wish to do some extra reading to use with this insert. To this end, we make the following suggestions of books that will be definitely helpful.



WOOD PEWEE



BOBOLINK



LEAST FLYCATCHER

For field recognition of birds, consult either the eastern or western volumes of Peterson's *Field Guide to the Birds*, published by Houghton Mifflin, or Pough's two guides to land birds and water birds, published by Doubleday. There are many special books for different States and areas that cannot here be listed, but a fine recent book is *Songbirds In Your Garden* by John K. Terres, published by Crowell. I hope that some of you may elect to see my own *Fieldbook of Natural History*, published by McGraw-Hill, in connection with your bird studies, and I am sure some of you who are just beginning will want to consult Zim and Gabrielson's *Birds*, published by Simon and Schuster.

Referring to my personal library of more than five hundred volumes on birds, I would suggest that you examine, if possible, a few books in addition to those already suggested. These would include Hickey's *A Guide to Bird Watching*, published by Oxford University Press; Pettingill's two volumes of *Guide to Bird Finding* also published by Oxford Press. Also important would be Lincoln's *Migration of Birds*, published by Doubleday, and Howard's *Territory In Bird Life*, published by Collins of London. This last book is European, of course, but the principles mentioned are equally significant in America. An excellent recent book is Saunders' *The Lives of Wild Birds*, published by Doubleday. As another suggestion, I would list Noble's *The Nature of the Beast*, also published by Doubleday. These books should give you enough suggestions to keep you physically and mentally alert for some time.

To help you further in your bird studies this spring, I recommend without reservation that you try using

the bird song records by Kellogg and Allen, published by Comstock Press, Ithaca, New York. These records, properly used, may help you to identify some of the birds that you do not even see, also to confirm through the evidence of your ears some of the suggestions that your eyes bring to you.

For a good reference of a general nature, I recommend that you read *North with the Spring*, by Edwin Way Teale, published by Dodd, Mead.

Now, let us get down to a few things that we can see for ourselves. Four of these probably stand out above most other items as to the behavior of birds in late spring and early summer. These include establishment of territory, migration, song, and home building. We might add courtship, feeding, loss of fear while young are being reared, heat regulation and sanitation of the nest, and many other particulars. Examination of the abundant literature on birds will show many areas where information is lacking. In most of the books you read you find little specific information on the weight of birds, or reasonably detailed descriptions of the appearance of newly hatched young, of the territory defended by nesting birds, of polygamy and polyandry in birds, of specific parasites, of the competition established at feeding stations by different members of a flock of a given species, or of different species, competing for the same food supply. It is true that a wealth of material on some of these subjects may be in existence in isolated studies of different species, but rarely is this material brought together in a book or pamphlet available to the general student, except, of course, in Bent's great series of *Life Histories of North American Birds*, published by the Smithsonian Institution.

In some ways, this general lack is fortunate, because it should encourage learning as much as possible direct from Nature. To my mind, Noble's little book, *The Nature of the Beast*, is one of the most challenging in this respect.

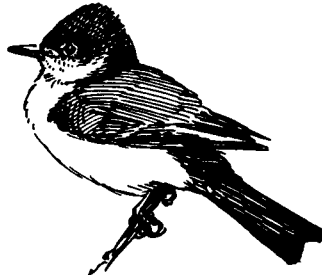
Some photographers, and others interested in birds, use stuffed birds near nests of live birds of the same species as the stuffed bird. Such mounted birds stimulate all sorts of behavior, ranging from display of plumage, increase of calls, violent attempts at destruction, and even attempts to mate with the in-



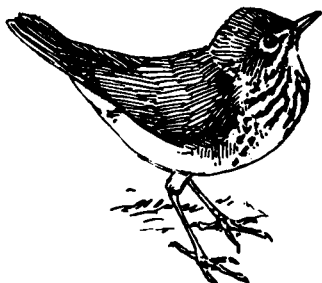
RED-WINGED BLACKBIRD



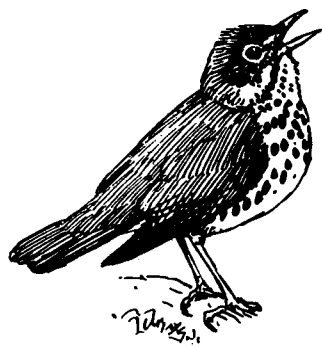
BRONZED GRACKLE



PHOEBE



HERMIT THRUSH



WOOD THRUSH

truder. One of the most interesting movies I saw in Copenhagen last summer at the meeting of the International Congress on Zoology centered almost wholly on the behavior of a nesting bird towards a stuffed "rival." However, this device is possible only when stuffed birds are handy, which is, perhaps fortunately, less frequently. A supply of suitable food and water for birds where these necessities of life are not otherwise available, may make a great difference in what happens in an area where you are making observations.

If you have not tried it, put a mirror up near a nest to see if it creates a situation that is worth watching. The robins and song sparrows that attack your windows repeatedly may merely be defending territory that they have established nearby. They just do not want a rival of their own species near at hand. This might suggest that you investigate to see if birds defending their territory do it only against members of their own species or against all invaders.

While you are investigating the defense of territory, see if your birds resent not only the intrusion of other birds of the same, or of different species, but whether they resent equally the presence of other animals. Does a rabbit near a nest produce results similar to those caused by a house cat? Does a dog cause the same concern as does a cat? And how about a human being?

If you use a blind in your study of birds, you might like to join those who have been trying to learn whether or not birds can count and how far. If two persons are seen going into a blind and only one is seen coming out, does this satisfy the bird that both have gone away, or must two go away? If two persons and a dog go out, does this satisfy a bird as intelligent as a crow? How long does a person have to remain in a blind before normal reactions are resumed, even though the person does not come out?

You may become interested in feeding birds, whether they are house sparrows, chickadees or hummingbirds. Food preferences will be expressed by your different visitors, and these may be useful to you in attracting other birds to your vicinity. While you are at this, you might care to learn whether or not birds show any preference for colors. If they come to a feeding site, try putting the food on

one color or another, such as squares of something that is red, blue, green and yellow. Does it make any difference if the food is placed on any one of these colors? If it is regularly placed on only one color and then whatever the food is on is changed to another color, does this upset or confuse the birds?

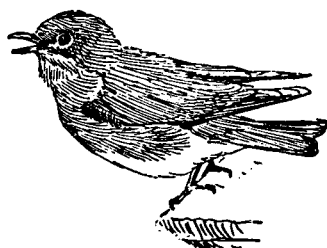
A common practice with hummingbirds is to provide them with honey, or sugar and water, in small vials, to the throat of which is attached a real or imitation flower simulating the flowers the birds would normally visit. If you establish such a hummer feeding station, try to see if it makes any difference what the color of the visited flower may be. Do the birds visit regularly one particular flower, and do the visits continue if the color of the flower is changed? Again try red, blue, green and yellow to see what results you get.

If you have a set of the bird song records to which I referred earlier, see if the birds seem to pay attention more to songs of their own species, or whether they object to or favor the songs of other species. You might become interested in the way in which some birds mimic the songs or calls of other birds, or the sounds made by other animals. The Comstock Press has just released a new record entitled "The Mockingbird Sings," which might be stimulating to use in this connection. In it, you hear a mockingbird imitating at least thirty other species of birds. If you do not have mockingbirds near you, then try to make your own study of the mimicry of the jays of your neighborhood. If you come from the West, do not get the idea that good recordings are available only for calls of eastern species of birds. The Comstock Press has just released a new album of the calls and songs of western birds. Any of these records may be purchased through the American Nature Association in Washington.

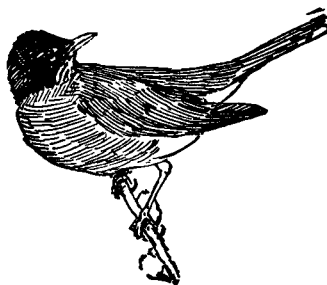
I could continue asking you to find the answers to many questions about birds. I am sure that if you started out to find these answers yourself, you would have much more fun than if I told you about them. Certainly we have suggested a few things to do that will convince you that birds do defend territory about their nesting sites. In some species, this territory may be a few acres, as it is with the meadowlark. In some, as with the



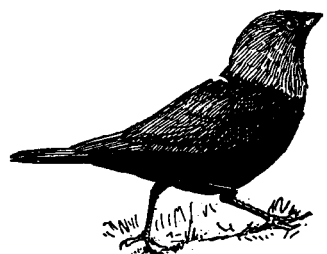
MEADOWLARK



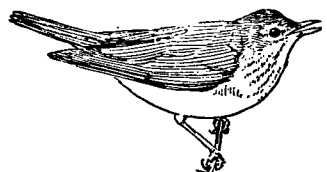
BLUEBIRD



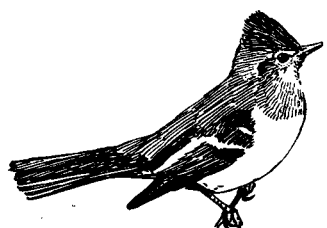
ROBIN



COWBIRD



VEERY



CRESTED FLYCATCHER

hawks, it may be much larger. With a few it may be only an area a few feet square. Some birds even desert their territory if disturbed, so, of course, cannot be considered as having a strong territorial instinct. In the chart section of this insert we have given you some information on these points.

One of the more interesting things to observe this summer with respect to territory is how, during the nesting season, a bird like a robin may resent the presence nearby of another robin. Yet, a few weeks later, we may find robins forming into flocks of small size and these flocks getting larger as the autumn approaches, and becoming enormous in the winter feeding grounds. Apparently the defense of territory urge is definitely a seasonal matter. This behavior, of course, is not limited to robins, or even to birds, or, for that matter, to wild mammals.

Some of you may wish to become bird banders. To get a permit to do bird banding, you should apply to the United States Fish and Wildlife Service, Department of the Interior, Washington, D. C., and provide them with the information they will request. If approved, you may then band the birds of your area and be in a position to report on what individual birds do. You may be sure that the phoebe that nests under your porch this year is the same one that comes back next year. Some people may wish to put more conspicuous markings on their birds. Some use colored celluloid leg bands for this purpose. Others use household cement to fasten small, colored chicken feathers to the birds trapped. Thus adorned, the birds may be identified at a distance greater than is possible with any sort of leg band. These identifying feathers are not likely to stay long on your birds, but, while they remain, they will be helpful to you. You might even be able to decide whether a male house wren is loyal to the lady in your bird house, or whether he maintains more than one love nest. The house wren may surprise you, as it has many who have studied him. Some bird lovers have learned so much about the wren they are host to that they resent the behavior of these birds.

I find that, so far, I have raised more questions than I have answered. I must confess that I have done this deliberately. I know that (Continued on page 256)

NAME SCIENTIFIC NAME	KINGBIRD <i>Tyrannus tyrannus</i>	CRESTED FLYCATCHER <i>Myiarchus crinitus</i>	PHOEBE <i>Sayornis phoebe</i>	LEAST FLYCATCHER <i>Empidonax minimus</i>
DESCRIPTION	Length, to 9 inches. Wingspread, to 15 inches. Tail, to 3¾ inches. Weight, to 1-3/5 ounces. Sexes similar in size and coloration. Slaty black in general, with white to yellow-tipped black tail, inconspicuous orange crown patch, which is smaller in the female. Tail often held like a broad fan. Underparts, white.	Length, to over 9 inches. Wingspread, to 14 inches. Conspicuous reddish-brown tail, wide spread and to 3½ inches long, sometimes appearing to be loosely hung. Back, brown. Throat and breast, gray. Belly, yellow. Sexes similar except that male is the larger. Young like adults by first winter, but duller at first.	Length, to 7¼ inches. Wingspread, to 11¼ inches. Tail, to 3½ inches and loosely hung, movable up and down and sidewise. Weight, to 1/10 ounce. Sexes colored much alike but male slightly larger. No eye ring or wing patch. Throat and breast gray, pale. Belly, pale yellowish, more yellow in spring.	Length, to 5-2/3 inches. Wingspread, to 8½ inches. Back grayer than close relatives, and breast and underparts lighter, with dark lower part of beak. With white eye-ring and 2 white wing-bars. Related Acadian and alder flycatchers are longer and with greater wingspread. Call of least flycatcher a distinct <i>chebec</i> .
RANGE AND RELATIONSHIP	Order Passeriformes. Family Tyrannidae. Nests from Southern British Columbia to Nova Scotia and south to central Nevada, southeastern Texas and southern Florida. Winters from southern Mexico to Colombia, Peru, British Guiana and Bolivia. Ordinarily seen flying from high exposed perch over field or orchard.	Order Passeriformes. Family Tyrannidae. A northern and a southern subspecies with the northern breeding from New Brunswick to central Manitoba and south to Texas and South Carolina. Winters from eastern and southern Mexico to Colombia. Southern subspecies breeds from South Carolina to Florida.	Order Passeriformes. Family Tyrannidae. Nests from Prince Edward Island to central Mackenzie and south to southeastern New Mexico and Georgia highlands. With closely related subspecies extending range. Winters south of 37° N. L. to Vera Cruz in Mexico. In migration may extend range particularly to westward.	Order Passeriformes. Family Tyrannidae. Nests from Cape Breton Island to central Mackenzie and south to eastern British Columbia, Wyoming, Missouri and North Carolina. Winters from northeastern Mexico to Panama. It is found in open country with mixed trees, shrubs and grasslands, rather than in deep woodlands.
REPRODUCTION	Nests in borderlands between wooded areas and open country, to 20 feet above ground. Outside ragged, inside well made. Eggs, 3-5 marked with brown, lavender and purplish spots near larger end, ¾ by 1-1/16 inch, weight 1/6 ounce. Incubation mostly by female 12-13 days, and there may be 2 broods a year.	Nest made in deserted nest of a woodpecker in a dead tree or pole or even in a bird box. Elaborate courtship display and pursuit. Nest, usually contains shed snake-skins. Eggs, 3-8, 1 by 2/3 inches, cream to pinkish with brown or blackish marks. Incubated 13-15 days by both sexes. 1 to rarely 2 broods a year.	Nest built of mud, lichen-covered, on gorge walls, under verandas, under bridge, in abandoned building. Well lined with soft material. Eggs, 3-8, usually plain white, or with faint reddish spots, ¾ by 3/5 inches, incubated 12 days by both parents. 1 to rarely 3 broods a year.	Nest, usually from 8-40 feet above ground, commonly in a shade tree, firmly attached to a crotch, to nearly 3 inches across, deep, thin-walled. Outside of plant material but may have feather lining. Eggs, usually 4, creamy, unmarked, 2/3 by ½ inch, incubated about 12 days by both sexes. 1 to 2 broods a year.
ECOLOGY	Sometimes called bee-martin because of the fact that it kills many bees, sometimes haunting a hive for food, but also shows some preference for robber flies, each of which may kill many bees in a day. 26 robber flies were found in 19 kingbird stomachs. Almost all of this food is taken on the wing in flight from an exposed perch.	Feeds almost exclusively on insects caught in full flight. Known forms eaten include flies, beetles, bugs, boll weevils, moths, crickets, grasshoppers and katydids. But one record of a honey bee as contrasted with that of the kingbird. It is more inclined to be found in wooded territory than is the kingbird.	Food almost exclusively insects taken in full flight. Click of bill when capture is made may frequently be heard. May take insects from backs of horses and cattle. Known insects include pests such as brown-tail moth, gypsy moth, cotton-boll weevil, cucumber beetle, ants, crickets, and corn leaf beetle.	This noisy little flycatcher calls repeatedly from its arrival in spring through the early nesting period, tossing its head and jerking its tail. Like the other flycatchers it lives almost, if not wholly, on insects caught on the wing. The "gorge" niche is cared for by phoebes, the woodlands by pewees and crested flycatchers.
ECONOMY	Aside from its bee-eating habit the kingbird is one of our most valuable insect destroyers. Defends its nest area effectively and conspicuously, chasing larger birds for a considerable distance even though these may be as large as eagles, herons or hawks. Most commonly seen chasing crows. Call, a prolonged, high-pitched, squeaking chatter.	Based on its food habits, it is probably overwhelmingly useful to man's interests. To many of us the <i>wheep</i> call, given from late spring until the late summer or fall departure, is one anticipated during the rest of the year. Its northern migration is usually later than that of the phoebe. Long may we have this bird.	Because of food habits is almost wholly helpful so far as man's interests are concerned. Known to take ticks as well as insects. Whistled phoebe song is often confused with the love song of the chickadee. Because of its friendliness to man it is beloved by many, as it should be. Entitled to every protection.	Caring for mixed brushland by the least flycatcher is a useful function from the viewpoint of man. Obviously presence in an area is limited by its food habits to periods of the year when insects may be taken on the wing.

WOOD PEWEE <i>Contopus virens</i>	BLUEJAY <i>Cyanocitta cristata</i>	ROBIN <i>Turdus migratorius</i>	WOOD THRUSH <i>Hylocichla mustelina</i>	HERMIT THRUSH <i>Hylocichla guttata</i>
Length, to 6¾ inches. Wingspread, to 11 inches. Tail, to 3 inches. Male, larger than the female but colored similarly. Two white wing-bars and lower bill light colored. Young with yellowish rather than whitish wing-bars. Tail does not wag as it does in most other flycatchers. No white eye-ring.	Length, to 12½ inches. Wingspread, to 17½ inches. Tail, to 6 inches. Weight, to 3 ounces. Male slightly larger than the female. Conspicuous blue, black and white. Tail, broad fan-shaped but round-tipped. A conspicuous crest. Noisy, active, inquisitive. A variety of calls and imitations of other birds.	Length, to 10¾ inches. Wingspread, to 16½ inches. Tail, to 4¾ inches. Cock bird usually slightly larger and with more brilliantly colored breast, but not always so. Breast, tan to chestnut. Head black but grayer in hen. Back, gray. Belly, light gray to white. Young, with spotted breast.	Length, to 8½ inches. Wingspread, to 14 inches. Tail, to 3½ inches. Bright brown above but redder about the head, with tail and back similar. Sexes, colored similarly and young like adults. Gray breast and sides, heavily spotted with large black roundish dots. Has almost always a plump appearance.	Length, to 7-3/5 inches. Wingspread, to 12 inches. Tail, to 3 inches. Most conspicuous because of its tail, which is much redder than the back, which is brown, and it is not so red on the head as is the wood thrush. Throat and upper breast with dark to black spots, smaller than in wood thrush. Sexes alike.
Order Passeriformes. Family Tyrannidae. Nests from southern Manitoba to Prince Edward Island and south to central Florida and central Texas and west to central Oklahoma and Kansas and eastern North Dakota. Winters Costa Rica, Peru and Colombia. Two related wood pewees extend range to Alaska and Lower California.	Order Passeriformes. Family Corvidae. Of the 3 subspecies the northern nests from Newfoundland to southern Alberta and south to Virginia and Texas. In winter, the species may move further south, but over most of the range individuals may be resident. Defends a home territory ½-mile across.	Order Passeriformes. Family Turdidae. Four subspecies recognized. Breeds from Newfoundland to northwest Alaska and south through South Carolina, Arkansas, Mexico and Guatemala. Winters from Maine to British Columbia and south through range beyond Mexico. Eastern subspecies winters south of Kansas and Mass.	Order Passeriformes. Family Turdidae. Nests from central New Hampshire through Ontario, central Wisconsin and southern South Dakota to eastern Texas and Florida. Winters from southern Mexico on to western Panama and sometimes in Florida. Sometimes found in Cuba, Jamaica, Bermuda and the Bahamas.	Order Passeriformes. Family Turdidae. 7 subspecies cover much of the continent, south of a line from the Yukon to southern Quebec and Labrador. Nests as far south as Lower California. Winters through much of United States and south to Guatemala, but not common in southern Florida or in colder mid-continent.
Nest in woodlands, orchards or shade trees, on a horizontal limb, a shallow saucer of plant materials usually with lichens on outside. 2-4 creamy eggs blotched or spotted with brown, lavender or purple, 4/5 by 9/10 inches. Incubation mostly by female for 12 days or wholly by her. 1-2 broods a year.	Nest commonly but not always found in evergreen trees in crotch, or on branch to 50 feet above ground. Nest of sticks and lined with roots and other fine plant material. Eggs, 3-6, green-gray with brown blotches. 1-1/5 by 9/10 inches. Incubation by both sexes and from 1 to 2 broods a year.	Male fights rivals, even his reflection in window. Nest of plant material, smooth-lined with mud, placed in tree, under bridges or about buildings. Eggs, 3-5, blue, 1¼ by 5/8 inches. Incubation, by hen or by both parents, 11-14 days. Young cared for by both. 2-3 broods a year. May form family flocks late summer.	Nest in a tree or shrub, on horizontal limb, to 12 feet above ground, of mud, leaves, paper and even cloth, with finer plant material lining. Eggs, 3-5, plain green-blue 1½ by ¾ inch, usually a bit darker than those of robin. Incubation 12-13 days by both parents. 1-2 broods a year.	Nests on or close to ground, in wooded area or near woodlands. Nest of grasses, bark, leaves, moss, with fine plant lining, well hidden usually. Eggs, 3-5, pale green-blue, 9/10 by 7/10 inches being slightly smaller than robin's egg. Incubation 12-13 days. 2-3 broods a year. Deserts nest easily if disturbed.
Food almost solely insects, mostly caught on the wing as with other flycatchers. Its plaintive <i>pee-a-wee</i> differs from the more incisive <i>chebec</i> of the least flycatcher and could hardly be confused with other flycatcher calls. Estimates give the food as 99% animal matter, mostly insects.	Food is about 75% vegetal. Animal matter may be spiders, snails, insects, frogs, salamanders, young birds, eggs rarely, nuts and fruits, particularly acorns, which may sometimes be nearly 50% of the food. While bluejays may rarely rob nests of other birds, on the whole they at times may serve a useful function to man.	Food largely earthworms when they are available, but may consist heavily of fruit, especially cherries or grapes. Over half food is probably vegetal. Insects include grasshoppers, crickets, locusts, cutworms, tent caterpillars, cankerworms, army worms and leaf beetles. Have been known to eat small snakes.	Feeds almost exclusively on insects, but may eat some cultivated fruits. Insects eaten include potato beetles, gypsy moths, forest tent caterpillars, May beetles, weevils, grasshoppers and browntail moths. Song divided into 3-5 notes with pauses between the phrases, with a high-pitched trill.	Food is chiefly insects, although it may eat some berries. The bird is not commonly near where cultivated crops are found, and, because of its shy nature, could hardly ever be considered a pest. Most of its insect food comes from under leaves on the ground. Food in fall and winter is largely from plant sources.
A useful destroyer of insects that for the most part may be injurious to useful trees and shrubs. This species is essentially a woodland bird much like the crested flycatcher. It has been known to catch small fish, but not to any great extent. Known to feed and rear abandoned young of other species.	In some areas bird lovers may resent the domineering nature of bluejays, but no one can complain that they are not interesting at all times. The attempt by man to interpret the language of jays is always challenging but not too successful. Birds may visit feeding stations.	Economic importance may be great in some fruit areas where strawberries, cherries, mulberries may be ruined as crops. In spite of this record the birds are beloved by most persons. Cats are their worst enemies, but they maintain populations where cats are abundant. State bird of Michigan and Wisconsin.	An excellent remedy for nervous strain, since the thrush by its song at least rarely seems to be in a hurry. Its behavior on the nest and off is usually that of a peaceful individual and its beauty is unquestioned. It is the official bird of the District of Columbia.	Popular with bird students and nature lovers generally, who hold its song at dusk to be one of the finest expressions of Nature. When excited, it gives a mewling sound or a cluck. The lack of haste in giving the bell-like series of notes is one of its beauties. It is the State Bird of Vermont.

NAME SCIENTIFIC NAME	VEERY <i>Hylocichla fuscescens</i>	BLUEBIRD <i>Sialia sialis</i>	STARLING <i>Sturnus vulgaris</i>	BOBOLINK <i>Dolichonyx oryzivorus</i>
DESCRIPTION	Length, to 7¾ inches. Wingspread, to 10 inches. Tail, to 3-1/3 inches. Back, head and tail, uniformly cinnamon brown. Few spots on throat and upper breast and these smaller than in hermit thrush and much smaller than in wood thrush. Sexes and young colored superficially alike.	Length, to 7-2/3 inches. Wingspread, to 13¼ inches. Tail, to 3-1/3 inches. Female, smaller than male. Male, about size of house sparrow, with reddish breast and blue back, much brighter in the cock bird. Young, speckled breasted as in young robins, and lack red of breast and blue of back.	Length, to 8½ inches. Wingspread, to 15½ inches. Tail, to 2-9/10 inches. Weight, to 3½ ounces. Male, slightly larger. Appears like a short, stubby-tailed blackbird, with relatively long bill. Bill, dark in fall and almost yellow in spring. General color, glossy black, flecked with brown and white.	Length, to 8 inches. Wingspread, to 12½ inches. Tail, to 3-1/6 inches. Weight, to 1-4/5 ounces. Female, smaller than male. Male, in breeding plumage, black below with conspicuous white above, except on crown. Hen and young and male in fall, like large yellow-brown sparrows, dark marked above.
RANGE AND RELATIONSHIP	Order Passeriformes. Family Turdidae. Nests from Newfoundland to Quebec and British Columbia and south to New Jersey, the Corn Belt, northern New Mexico and central Oregon. Winters in South America as far south as Brazil, migrating through Yucatan and Central America.	Order Passeriformes. Family Turdidae. Eastern form breeds from Newfoundland to southern Montana and south to southern Florida and Honduras and west to southern Arizona. Winters from southern New England to southern Michigan south to the Gulf of Mexico. The Azure Bluebird of the Mexican Plateau, is a subspecies.	Order Passeriformes. Family Sturnidae. Native of Asia, Europe and Africa. Introduced into North America at New York City in 1890 and has established self from southern Quebec to central Manitoba, Alberta, California, northern Florida and northern Mexico. Introduction at Cincinnati in 1872, failed.	Order Passeriformes. Family Icteridae. Nests from Cape Breton Island to southern British Columbia and south to Pennsylvania, Missouri, Colorado and northern California. Winters in South America to northern Argentina and Paraguay. One of the longer migrations of our smaller birds.
REPRODUCTION	Nests in wooded areas, usually on the ground, and frequently at tree base, but rarely up to 10 feet above ground. Nests made of leaves, twigs, grass and bark, with lining of fine material. Eggs, 3-5, green-blue, nearly an inch long and 7/10 inch through. Incubation, for 10 to 12 days and 1-2 broods a year.	Nests in hollow trees or bird boxes, usually in open wooded areas such as orchards or parks. Favors an old woodpecker hole, 3-30 feet above ground. Eggs, 3-7, pale blue to white, 7/8 by 2/3 inches. Incubation, by both parents for about 12 days. 2-3 broods each year.	Nest, a bulky loose structure of plant materials about a building, in a nesting box or hollow tree, lined with feathers and soft material. Eggs, 5-8, pale blue to white and glossy, 1-1/5 by 9/10 inch. Incubation, for 11-14 days by both sexes. 1 to 3 broods a year. A rapidly growing population.	Nest, built in grasses on ground, well concealed and roofed, lined with finer plant materials. Eggs, 4-7, variable gray, bluish or brown, with brown or lavender spots or blotches, 4/5 by 2/3 inches. Incubation is by female for 10 days, but male stands guard against encroachment of territory. 1 brood a year.
ECOLOGY	Food is mostly animal matter and some wild fruits. Insects included are caterpillars, bugs, beetles, moths and other woodland insects. Few weed seeds are taken. Male defends nesting territory vigorously, more effectively than does female. Song is an oft-repeated descending scale.	Food, about 70% animal matter, including many kinds of injurious insects. Plant foods include small fruits particularly elderberries, sumac, Virginia creeper and Mountain ash. House should have floor, 5" by 5"; depth, 8"; entrance, 2" to 6" above floor; entrance with 1½ inch diameter.	Food variable and including, by weight, probably more animal than plant material. May destroy grain, fruits like cherries and strawberries and definitely drives out the more useful bluebirds from an area, in part by occupying desired nesting sites or breaking up existing nests.	Food, on nesting, is largely insects, which then equal 70% to 90% of total. By September, this may change, but in the winter range in South America the food is almost exclusively grain, particularly rice, hence the common name "ricebird" and the specific name " <i>oryzivorus</i> ."
ECONOMY	Because of ground-nesting habit has difficulty in surviving attacks of cats in woodlands near homes of man, but where it can survive it is a welcome neighbor. Undoubtedly useful as a destroyer of insects injurious to woodland plants.	A beautiful harbinger of spring that has decreased alarmingly with increase of starlings, which compete for nesting sites, and house sparrows similarly. Much less destructive of fruits than the equally popular robin. Is State Bird of New York and Missouri.	In cities, it becomes a serious pest, flocking in great numbers to public buildings, fouling both buildings and sidewalks and producing an annoying amount of noise. Strangely enough, in some areas in New Zealand, where bounties are paid children for destroying eggs of birds, the starling is exempt.	Not the slightest doubt but that in the North it is a useful species and in the South an enemy of grain growers. Used to be sold in market for food. In 1912 more than 700,000 were killed and sold, in South Carolina alone. Now the species is protected by law. When sold in the market, the birds brought 2 cents each.

MEADOWLARK <i>Sturnella magna</i>	RED-WINGED BLACKBIRD <i>Agelaius phoeniceus</i>	BALTIMORE ORIOLE <i>Icterus galbula</i>	BRONZED GRACKLE <i>Quiscalus quiscula</i>	COWBIRD <i>Molothrus ater</i>
Length, to 11 inches. Wingspread, to 17 inches. Tail, with white outer feathers, to 3½ inches long. Bill, to 1½. Weight, to 5 ounces. Cock, much larger than the hen. General color spotted brown, with conspicuous black bib and yellow throat and breast. Dark line extends backward from eye. Crown, dark.	Length, to 9½ inches. Wingspread, to 14½ inches. Tail, to 3-7/10 inches. Weight, to 3 ounces. Male larger than female. Breeding male, black with scarlet shoulders bordered with yellow or white. These colors change appearance by wearing off of feather tips after single molt. Females generally mottled brown.	Length, to 8-1/6 inches. Wingspread, to 12½ inches. Tail, to 3½ inches. Weight of hen, to 1½ ounce. Cock, a brilliant black and orange in breeding season. Hen and young, dull yellow beneath and olive yellow above, with 2 light wing-bars. Dark, rather long, pointed bill a good characteristic.	Length, to 14 inches. Wingspread, to 19 inches. Tail, to 6½ inches with longer feathers in middle. Male weighs to 5 ounces; female, to 4. Black, with bronze color that is iridescent in strong sunlight, the color varying from blue, through green to purple. Female duller and young uniform dull brown.	Length, to 8¼ inches. Wingspread, to 13¾ inches. Tail, to 3-1/3 inches. Cock, black with brown head. Hen, more uniformly gray. Both, with relatively short stout bill for a blackbird. Tail also appears shorter than in most blackbirds. Female, smaller than the male.
Order Passeriformes. Family Icteridae. An eastern and a western species; 3 subspecies in eastern. Eastern breeds from New Brunswick to Minnesota and south to Texas and North Carolina. Winters from Ohio Valley and Maine to the Gulf of Mexico. Western species extends to Pacific Coast.	Order Passeriformes. Family Icteridae. Breeds from Nova Scotia to Alaska and south to Florida and the Gulf of Mexico and into central Mexico. Winters from the Ohio Valley and Pennsylvania through Kansas, Utah and British Columbia south to Costa Rica. Known in Florida from Pleistocene times.	Order Passeriformes. Family Icteridae. Ranges in breeding season from Nova Scotia west to southern Alberta and Manitoba and south to southern Texas and northern Georgia, including central Montana and Colorado. Winters from southern Mexico on south to Colombia.	Order Passeriformes. Family Icteridae. The 3 subspecies include the purple, the bronzed and the Florida grackles. Bronzed nests from Newfoundland through northern Ontario to southern Mackenzie and south to Florida and Texas along the Gulf Coast. Winters from Maryland to Kansas and southward.	Order Passeriformes. Family Icteridae. 4 subspecies include the eastern, Nevada, California and dwarf. Breeds from Nova Scotia to central British Columbia and south to Virginia, Tennessee, Louisiana and southern Mexico. Winters from Maryland through the Ohio Valley to Texas, California and southern Mexico.
Nest, in open grassy land, on ground, usually well hidden in tuft of grass and roofed, lined with fine grass materials, sometimes with 2 tunnel entrances. Eggs, 3-7, white, spotted with brown, purple and lavender, 1-1/5 by 9/10 inches. Incubation for 15-17 days by both parents. Home territory of several acres.	Nest of grasses usually woven into a grass clump that is surrounded by water, but may be in a bush or tree or on the ground, almost always near water. Nest has lining of fine material, is deep, with 3-5 pale blue eggs, 1 by 7/10 inches, plain or with black-purple dots, blotches and lines.	Nest a suspended bag of woven plant materials that closes at top when occupied, hung from tips of slender branches to trees like elms. Often has hair woven in. Eggs, 4-6, gray-white spotted, streaked and blotched with brown, black and lavender, 1 by 2/3 inches. Incubation for two weeks by female. 1 brood a year.	Nest commonly found in groves and parks, on ground, in hollow tree or stump, or even in a building, made of grasses and weeds with some mud but with a fine lining. Eggs, 4-7, pale green to light brown, marked with brown or lavender spots or markings. Incubation, 2 weeks by female. 1 brood a year.	Does not build a nest. Hens promiscuous in the extreme. Lays eggs in nests of other birds, usually smaller birds, leaving these birds to incubate and rear the young of the cowbird which often crowds out, or starves out the rightful young.
Food, in breeding season is 99% insects, mostly injurious to crops raised by man. In fall and winter, food is more largely seeds, but even in December insects may be to 40% of food and January, 24%. Call of eastern a series of clear whistles; of western a loud bubbling series easily distinguished.	Young birds are commonly brown-headed. Food is about 1/3 animal matter. Incubation is for 11-14 days by female. May form huge flocks made up of family groups flying to roost and feeding grounds in long ranks as contrasted with files of grackles. Arrive early in spring migration.	Food largely insects gleaned from the finer parts of woody plants and taken from flowers such as apple blossoms, more than 1/3 often harmful caterpillars or adult cankerworm moths, gypsy moths or brown-tail moths. May injure grapes if they ripen before the birds leave for the South.	Food, about 30% animal and 70% vegetal. Animal matter includes worms, crayfish, mice, carrion, birds' eggs, frogs, salamanders, clams and many kinds of insects. Plant foods include grain, weed seeds, nuts and other fruits. Migrate in long files from roosting to feeding grounds often horizon to horizon.	Food is insects and grain. May often be found in and on herds of cattle feeding on associated insects. About 22% of food is animal matter, mostly insects. Grain represents small portion of year's food supply. However, the birds starved in competition in the nest are usually better enemies of insects.
Estimated that by killing insects a pair may save 2½ to 5 tons of hay a year. Its song and behavior are worth more than that to many. Used to be killed for use in pot pies. State bird of Kansas, Montana, Nebraska, North Dakota, Oregon and Wyoming. This is evidence of widespread popularity.	May feed over marshes and grain fields. The good it does probably much outranks the injury it may cause to grain crops. The <i>kong-keee</i> call of the male in the spring is always welcomed by outdoor folk who learn to know and to love it. In spring migration, adult males arrive first, then females.	Naturally is State Bird of Maryland, since it bears Lord Baltimore's colors, orange and black. It is almost invariably highly popular with bird lovers. Its brilliant colors, active behavior and robust whistling call all help it get the popular support it not only has, but deserves.	Probably more injurious than helpful to man's interests, particularly when large numbers may settle down on an area yielding food for man and for wildlife. However, does much good in nesting area where young are fed largely on insects. Adults have yellow eyes; the young, brown eyes.	On basis of food habits of adults probably would be listed as a useful species, but one cannot forgive the despicable habits of letting other birds assume all parental care to the sacrifice of their rightful young. It is not the State bird of any State, and probably should not be.

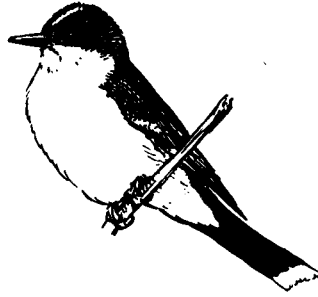
(Continued from page 251)

if you find one answer yourself it will be more valuable than if I told you all of them. Anyway, I told you in the beginning about a group of books in which you may find most of the answers.

I find, also, that most of the investigations I have suggested have been about defense of territory and family life. You should find plenty of other good studies dealing with migration. With the advent of the big migration season, all sorts of things may happen. If you live in a city where there are huge skyscrapers, or in a locality where there are high church steeples or towers, make a practice of walking around the base of these structures on mornings after there has been a rainy or cloudy night during the migration season. Not a few crippled birds may be found, having blundered into the structure during the night journey. Remember that unless you hold a permit from the Federal government it is probably not legal for you to keep these birds, but you can at least record what you find.

Other evidence of night migrations may be evident if you take early morning bird trips. Not infrequently on such trips you may see birds that seem to be completely exhausted. They go to sleep "on their feet," much as teachers sometimes do in faculty meetings, or deacons in church, or students in college lectures. If you had spent the night flying north you undoubtedly would appear equally sleepy when it came time for you to let down.

Keep some record of the new arrivals during the migration season. Notice whether female Baltimore orioles come before, with, or after the more brilliant



KINGBIRD

and vociferous males. Were the first robins and first red-winged blackbirds males or females? How does this hold with other species, and do you find any species in which an inconspicuously colored female comes in from the wintering quarters before the brilliant males?

Speaking of brilliant coloring of birds, why not watch your neighborhood birds to see how long their brilliant breeding plumage lasts. Goldfinches suddenly appear like feathered dandelions. Do they look the same way in late fall? When

this copy of *Nature Magazine* reaches you, purple finches may be singing in the treetops. Early in the season they may be entitled to the descriptive adjective purple, but how does this hold as the season progresses? What other common birds that you may see change their colors conspicuously between the time this issue reaches you in May and the time another number reaches you in August? Many tremendously interesting things happen during those few months. I only hope that this different kind of insert alerts you to some of these things.

Jackman, one of the earliest of our Nature study teachers and one of our best, used the method of asking questions, as I have done here. He was not popular because most persons were too indolent to find the answers themselves. Maybe you did not like the method here followed. If so, do not worry. Unless I get a flood of requests to follow the same method in the future, I will go back to the commoner method of telling what is what in Nature. You may like that better. However, we can learn much from young people, who are great question-askers, if we will follow their example and seek answers to our own queries.

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Paging Ornithologists

By OLIVE C. LEARY

Will someone kindly name for me
Two birds that shun a low-branched tree,
And shyly keep themselves behind
The highest leaves that they can find?

The first's I thought a bluebird's song,
But no blue glints proved I was wrong;
His flittings give him warbler mien,
With fancied yellow, though not seen.

The second, also seeming gray,
Though larger, sings no roundelay,
Repeating, like a robin's call,
A slowly measured rise and fall;
It sounds as if he sings by rote
And turns a page between each note.