Homes for Birds

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HOMES FOR BIRDS

MANY people love songbirds and would like to do something to attract them to their place of dwelling. The birds are fascinating to look at and listen to. Habits of nesting and rearing and feeding the young can be studied. Growth of the young can be observed from emergence from the eggs to time of departure from parental care.

Building the bird house thus can lead to an immensely rewarding hobby—bird watching—and at the same time satisfy an urge by many to do something to attract our feathery friends. Many types of designs for bird houses are available, including several that are definitely simple to build. Almost anyone with a minimum of tools and materials can complete such a project given a simple design. Choice of specific design for the bird house is essential, however, as certain types will attract certain species of birds while other homes will not.

This pamphlet reviews some of the principles of bird house design, the materials necessary to build the homes, and their location around the dwelling. Specific likes and dislikes of various species of songbirds are reviewed. Ample simple designs are given that can lead to successful attraction of songbirds, particularly during nesting.

Building the House

The actual needs of hole-nesting birds are few, and may often be met by a small expenditure of time and effort. To make the nesting facilities safer, however, and probably more comfortable for the occupants, certain principles of construction, design, and location should be observed. A well-built bird house should be durable, rainproof, cool, and readily accessible for cleaning. Furthermore, by adopting high standards of neatness in construction, bird houses may be made not only to serve the strictly utilitarian purpose of encouraging beneficial species but also to add a touch of attractiveness to the dooryard.

Materials.—For anyone wishing to construct his own bird houses, wood is by all means the best building material. Except for special types, such as martin boxes, metal should be avoided, as it gets intensely hot when exposed to the rays of the sun. Pottery nest boxes have some points in their favor but are not readily made in the average home workshop. Nest boxes constructed of tar paper or similar products have no particular advantage over

wooden ones, and the use of these materials is impracticable for some of the larger houses. In the choice of wood, an easily workable kind—cypress, pine, or yellow poplar—is preferable; the first-named is the most durable. Sawmill waste (rough slabs with the bark on) furnishes cheap and satisfactory material for rustic houses.

Paint.—Paint greatly enhances the weathering qualities of bird houses. Modest tones, such as brown, gray, or dull green, are generally preferred. Martin houses and others that are placed in exposed situations, however, may be painted white to reflect heat.

Protection From Rain.—Roofs should be made with sufficient pitch to shed water readily; or if level, or nearly so, they should have a groove cut across the under face of the overhanging part (fig. 1, A) to prevent water from draining back into the interior of the house.

The overhang should extend to 3 inches to protect the entrance hole from driving rain. The opening of the nest cavity itself may be bored at an upward slant to aid in keeping out water. A strip of metal or roofing paper often helps to make the ridge of the nest box thoroughly waterproof; flat roofs should either be wholly covered with some such material or else heavily painted.

In latitudes where freezing weather is the rule in winter, bird houses will last longer if the sides are prolonged beyond the bottom of the box, thus draining off water that otherwise might freeze in the crack between bottom and sides and wedge them apart. To provide for the contingency that some water may get inside the box, a few small holes should be made in the bottom.

Protection From Heat.—If attention is paid to the principle of cool construction, the suffering of adults and nestlings during periods of excessive heat may be lessened. Wood is in itself a fairly good heat insulator; but remember that the interior of the average nest box is small, and a single opening near the top permits little ventilation. One or two small auger holes through the walls near the top of the box will give limited circulation of air without producing drafts. A double roof or a compartment above the nest proper will serve as an excellent insulator. In the colony houses built for martins this feature can be easily included, and the added comfort and safety afforded the nestlings will more than repay for the extra work.

Accessibility.—All bird houses should be placed so as to be readily accessible and built to be easily opened and cleaned. To those interested in studying the life history of nestlings, a readily opened box is a great aid. A number of arrangements may be used to permit inspection of the nest, several of which, as applied to simple houses, are illustrated in figure 1. A pane of glass sliding in a groove just beneath the removable side will allow observations without subjecting the birds to exposure or disturbing the nest material.

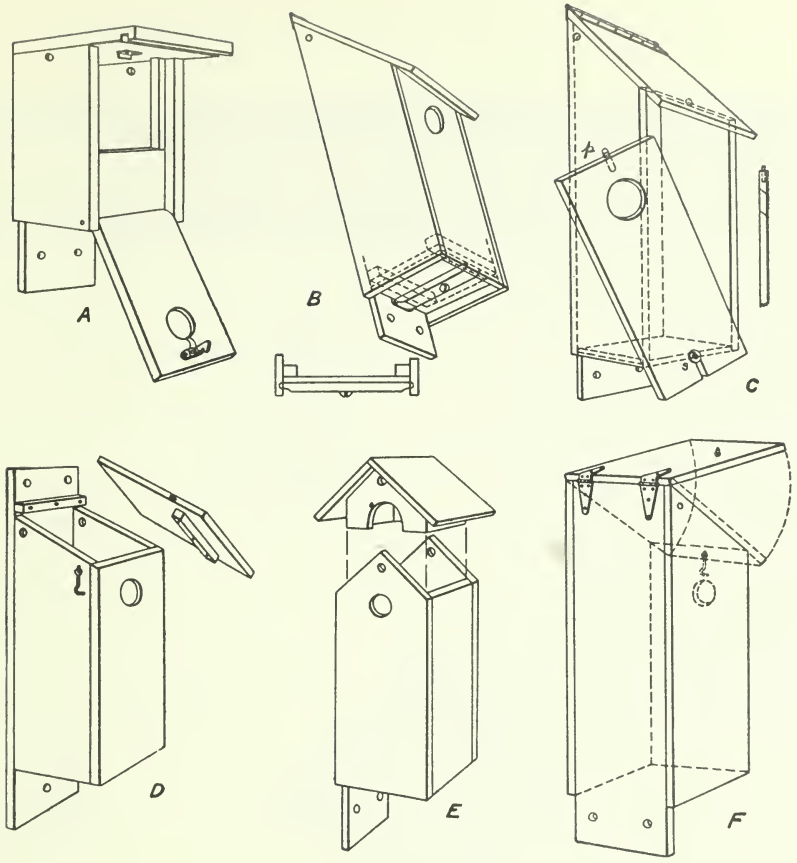

***Figure 1.*—Accessible nest boxes: *A*, Hinged front held up by a catch; *B*, removable bottom, released by the slight turn of a cleat; *C*, swinging front, held in place by the pin *p* and by tightening the screw *s*; *D* and *E*, removable tops; *F*, hinged top.**

Entrances.—Since entrance holes for bird houses are usually made near the top, the lumber used, if dressed, should be roughened, grooved, or cleated to assist the young in climbing to the opening. Houses longer than high are comfortable and convenient and seem to be liked by some species, particularly by birds that do not have an inborn preference for the type used either by woodpeckers or by birds that are partial to old woodpecker holes (fig. 4, B). Perches at the entrances seem more of an assistance to enemies than a requirement for the occupants.

Dimensions and Elevation.—The simplicity of construction of the single-room bird house does away with the necessity of detailed working drawings in most cases. Table 1 gives the proper dimensions for the various species and the height at which the boxes should be placed above the ground. The design may follow any of the types recommended in succeeding pages.

BIRDS IN YOUR BACKYARD

Woodpecker house

'Apartment' house for purple martins

House made of a gourd

Wren house

Bluebird house

Bird bath

TABLE 1—*Dimensions of nesting boxes for various species of birds that regularly use them, and the height at which they should be placed above the ground.*

Species	Floor of Cavity	Depth of Cavity	Entrance above Floor	Diameter of Entrance	Height above Ground [1]
	Inches	*Inches*	*Inches*	*Inches*	*Feet*
Bluebird	5x5	8	6	1½	5–10
Robin	6x8	8	([2])	([2])	6–15
Chickadee	4x4	8–10	6–8	1⅛	6–15
Titmouse	4x4	8–10	6–8	1¼	6–15
Nuthatch	4x4	8–10	6–8	1¼	12–20
House wren	4x4	6–8	1–6	1–1¼	6–10
Bewick's wren	4x4	6–8	1–6	1–1¼	6–10
Carolina wren	4x4	6–8	1–6	1½	6–10
Violet-green swallow	5x5	6	1–5	1½	10–15
Tree swallow	5x5	6	1–5	1½	10–15
Barn swallow	6x6	6	([2])	([2])	8–12
Purple martin	6x6	6	1	2½	15–20
Prothonotary warbler	6x6	6	4	1½	2–4
Starling	6x6	16–18	14–16	2	10–25
Phoebe	6x6	6	([2])	([2])	8–12
Crested flycatcher	6x6	8–10	6–8	2	8–20
Flicker	7x7	16–18	14–16	2½	6–20
Golden-fronted woodpecker	6x6	12–15	9–12	2	12–20
Red-headed woodpecker	6x6	12–15	9–12	2	12–20
Downy woodpecker	4x4	9–12	6–8	1¼	6–20
Hairy woodpecker	6x6	12–15	9–12	1½	12–20
Screech owl	8x8	12–15	9–12	3	10–30
Saw-whet owl	6x6	10–12	8–10	2½	12–20
Barn owl	10x18	15–18	4	6	12–18
Sparrow hawk	8x8	12–15	9–12	3	10–30
Wood duck	10x18	10–24	12–16	4	10–20 [3]

[1] Many experiments show that boxes at moderate heights mostly within reach of a man on the ground, are readily accepted by many birds.

[2] One or more sides open.

Location of Bird Houses

Because a bird house is not used the first season it is erected is no indication that it is faulty in construction or improperly placed. There may already be more nesting facilities than the resident bird population can occupy.

Often failure to attract feathered tenants can be attributed to the following faults: (1) Entrance holes too small for the birds desired; (2) boxes put up in dense woods; (3) boxes placed in trees, and therefore accessible to birds' enemies, instead of on posts or poles; and (4) care not taken to protect birds nesting in boxes. Three of these faults concern site—the second and third obviously, and the fourth indirectly—for it is manifestly easier to protect a bird house and its occupants if it is readily reached.

To be easily accessible, bird boxes should not be beyond the reach of an available ladder; those placed higher inevitably will be neglected. Houses on poles seem more acceptable than others to various birds, probably because they impress the birds as being safer. Isolated trees can actually be made safe with tree guards, but perhaps they do not look so to the birds.

To sum up, houses should be fairly low, should not be put in dense woods, and seem more acceptable on poles than in trees. If possible, they should be placed in partial sunlight, the opening away from prevailing winds.

It is not well to have a large number of boxes on a limited area; birds insist on territorial rights, especially in competition with other individuals of the same species. If houses are too close together, conflicts between prospective tenants may result in no houses being occupied. The purple martin is the only native gregarious species that nests in bird boxes, and houses for colonies of these birds should be on poles well separated from trees or buildings. Tree swallows, however, are sociable and several individual boxes for them may be near each other.

Types of Birds to Attract

Bluebirds.—These are among the least particular of bird tenants. Any of the types of nest boxes shown in figure 1 will meet their needs when built to the proper dimensions and well situated. Houses of rustic construction are also acceptable. Suggestions along this line may be found in figure 2. Bluebirds are partial to abandoned orchards, and nest boxes may be placed either in the trees themselves or on nearby fence posts, provided measures are taken to prevent attack by cats. A rather open and sunlit situation is preferable. The nest material, consisting mainly of dry grasses, is procured by the bird from natural sources. Where house sparrows are numerous, competition for the nest boxes can sometimes be alleviated if they are mounted 4 or 5 feet above the ground, rather than the normally recommended 5 to 10 feet.

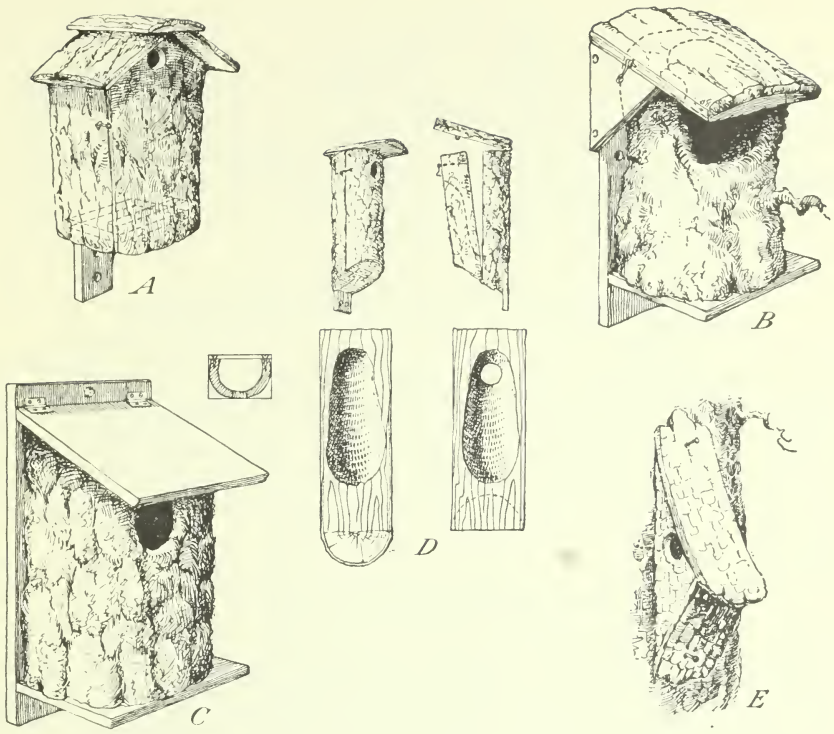

Figure 2.—Rustic boxes: *A* has a removable front; *B*, a top held by two hooks; and *C*, a simple hinged top. In *D* there is a removable top that releases the front half of the cavity in the manner pictured. The principle embodied in *B* can be applied to the type shown in *E*, made of rough slabs.

Robins, Catbirds, and Thrashers.—Where such natural sites as well-formed crotches are lacking, robins may use nesting platforms erected for them (fig. 3). These should be either of weathered lumber or of rustic type. They should be placed in partly shaded spots along the main branches of trees or else in the shelter of the overhanging eaves of a shed or porch roof. The birds will gather their nesting material from natural sources, though in periods of dry weather they may be aided by wetting a spot of bare clay nearby to supply the mud used in the foundation of their nests.

Catbirds and brown thrashers use nesting shelters acceptable to robins.

Chickadees, Titmice, and Nuthatches.—The needs of chickadees, titmice, and nuthatches are very similar. Being creatures of the woodland, all seem to prefer rustic homes built to simulate their natural abodes, but they will not refuse boxes made of weathered lumber. Any of the types illustrated in figure 1, when covered with bark and built to the proper dimensions, will answer the purpose. Suggestions for rustic houses may be found in figure 2. Old orchards and the borders of woodlands are the favorite hunting grounds of these birds, and nest boxes placed there are likely to be investi-

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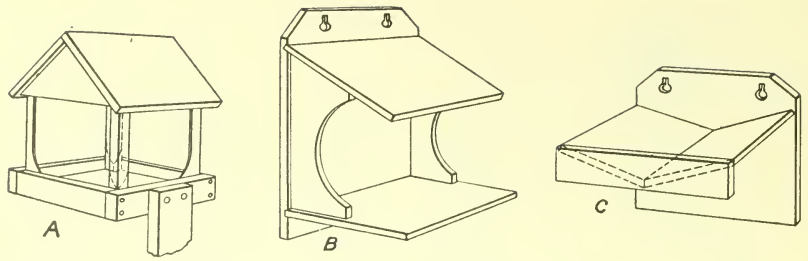


***Figure 3.*—Nest brackets and shelves for robins and phoebes.**

gated. Chickadees often nest within a few feet of the ground, but nuthatches and titmice prefer a site of medium or considerable elevation. Food stations providing suet and nut meats placed on nearby trees are added inducements to these birds to take up residence, although one should remember that predators might also be attracted and negate the benefit of this practice.

Creepers and Warblers.—Small bark-covered houses closely fitted to the trunks of trees, as suggested in figure 2, E, may be attractive to brown creepers in the far north. Creepers have nested behind curved pieces of bark fastened to the trunk of a living tree. Natural nesting sites for these birds must be decreasing rapidly as the older shaggier-barked trees disappear. Warblers sometimes nest over water in the southern swamps and are readily attracted to nest boxes.

Wrens.—These are the least fastidious of the hole-nesting birds. Almost any sort of a cavity will meet their needs, though boxes of small size with a horizontal slot instead of a round hole for an entrance (fig. 4, A and C) are best. Wrens take equally well to houses of smooth lumber or of the rustic type. Longitudinal boxes (fig. 4, A and B) make picturesque and very acceptable homes. Security for nestlings against the house cat may be provided by the structure pictured in figure 4, A, in which a passageway of variable length serves as an entrance to the nest lying below.

Nest boxes of the dimensions recommended in table 1 are better than larger ones, as it seems to be the desire of house wrens to fill with a jumble of sticks whatever cavity they select. The slot opening (fig. 4, C) permits the birds to carry in cumbersome material more readily. The slot or hole can well be 1 to 1½ inches in diameter rather than the quarter-dollar-size (⅞ inch) opening often recommended.

Almost any partly sunlit spot about the dooryard or orchard is agreeable to house wrens. A supply of slender twigs about 3 inches long handily placed will aid the birds in collecting nest material. An abundance of wren houses is desirable, as frequently the birds will build "dummy" nests or leave one or more unfinished nests before completing one to their liking.

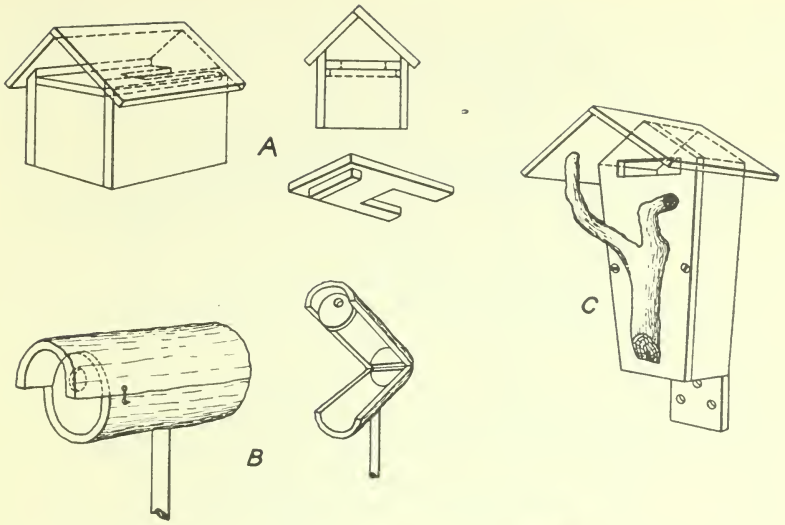


Figure 4.—**Nest boxes suitable for wrens. In *A* the nest cavity is made accessible by removal of a notched board.**

Swallows.—Tree swallows may be induced to foresake their natural nesting places in old woodpecker holes by the erection of nest boxes in suitable spots. Boxes of the types shown in figures 1 and 2 will suffice very well for these birds when constructed to the proper dimensions. A dead tree is an excellent site for such nests, and a number of boxes may be nailed to the same stub. Bodies of water hold a great attraction for swallows, and even a small pool in which they can bathe by dipping in flight will assist greatly in efforts toward establishing a colony in artificial homes.

Barn swallows will avail themselves of the open or partly covered nest shelves shown in figure 3, B and C, when these are placed under the sheltering eaves of buildings. Long shelves on brackets capable of supporting a number of nests will satisfy the gregarious tendencies of these birds, and similar shelves under the roofs of barns or sheds will be utilized if entrance holes are provided in the gables.

Cliff swallows may be encouraged to nest under overhanging roofs by providing a narrow shelf or cleat of rough unpainted lumber, which will give them a place to attach their mud nests.

Purple Martins.—The gregarious nesting habits of purple martins afford the builder of bird houses opportunity to employ his skill and ingenuity in construction, and in the matter of design he may let his fancy run free. All too often, however, such fancies are allowed to overshadow the important factors of accessibility and coolness in the structure. Martin houses are always an attraction to house sparrows and European starlings, and during the period of the year when the rightful tenants are not present,

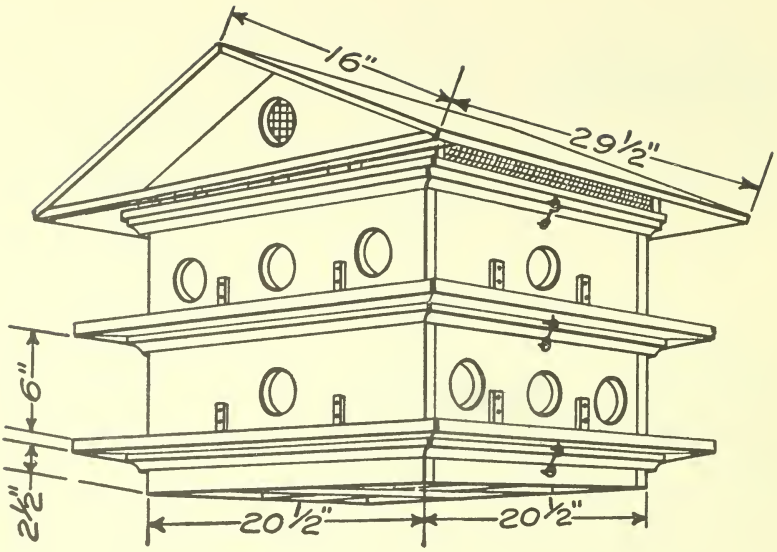


Figure 5.—**Martin house in which the foundation, roof, and each story are built as units of uniform lateral dimensions, permitting the addition of more stories as the colony grows and allowing ready access for cleaning. A central air shaft and an elevated roof, permitting the passage of air beneath the eaves, assure a cool temperature for the interior. A cove molding around the under side of the roof and each story holds the parts in alinement and pairs of hooks and screw eyes fasten the units together.**

the entrances to the nest cavities should be blocked or the houses taken down and stored. During the nesting season martins are apt to be successful in maintaining their property rights.

An idea that may be employed to advantage for a growing colony is illustrated in the house shown in figures 5 and 6. Each story is made a unit, and the uniform size permits the addition of other stories as needed. A colony may be started in one story of eight rooms; three stories, providing 24 rooms, will accommodate about as many martins as would ordinarily be desired in one colony.

The roof, built to the same lateral dimensions, attaches to the top story, all being held together by hooks and screw eyes. To clean, simply take the house apart and dump out the debris.

The temperature within the house is kept down by air circulation through the passage formed by cutting out the floors of what would otherwise be central compartments. The roof, raised slightly above the top of the upper story, also permits the passage of air from the central shaft.

The entire house with its support may be arranged for lowering in the manner illustrated in figure 7, or if the pole is set firmly in the ground, a ladder leaned against it will permit taking down the house section by section. If built of soft pine, a two-story house of this kind will weigh about 65 pounds.

Houses for martins should be situated in open spaces and are usually painted white with neat trimming of another color. Like other swallows, these birds are attracted by water, and probability of their establishing colonies will be increased if a pond or stream is nearby.

The material for the walls and floors should be ¾ inch thick and that for the roof and interior partitions ½ inch. Lightweight roofing paper cut into shingles makes an efficient and neat roof covering. When facilities for gluing are available, the 3-inch porches may be made as extensions of the floors; otherwise they may be attached with angle irons as illustrated in figure 6.

A guard rail completely surrounding each of the porches may help prevent young martins from falling before they are old enough to fly. A ½ inch diameter dowel elevated ¾ inches above the outside edge of the

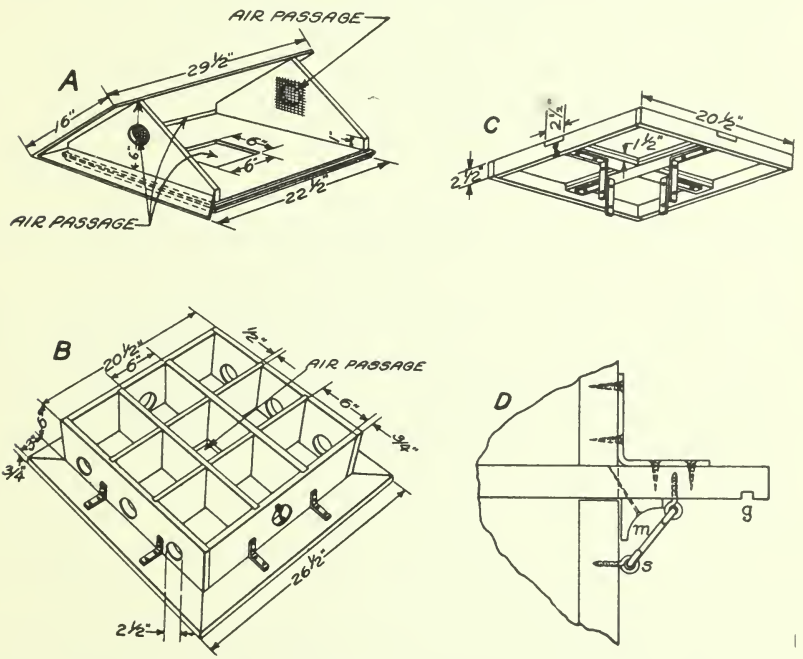


Figure 6.—**Construction details of the martin house shown in figure 5: *A*, Roof with one side removed to show central air shaft. Air also passes through a 1-inch slot under the eaves and through two screened holes in the ends. *B*, One of the stories. The chambers are 6 by 6 by 6 inches, inside dimensions, and the bottom of the central chamber is cut out. *C*, Foundation, in which the central cross is built up of double thicknesses of ¾-inch oak and the rest of the frame is of ¾-inch pine. Four heavy angle irons fasten this to the supporting pole. *D*, Detail of porch when attached with angle irons; the molding *m* fits about the top of the lower story; the screw eyes and hooks *s* fasten the units together; and the groove *g* is made to prevent water from draining inward. A modification of this plan involves the attachment of the floors and porches to the top, rather than the bottom of each story. This will facilitate cleaning at the end of the nesting season but precludes the possibility of evicting objectionable tenants once nesting has started.**

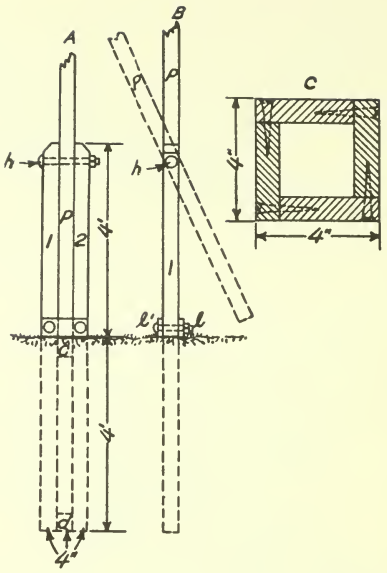


Figure 7.—Martin-house pole. *A* and *B*, The supports (1 and 2) are 8 feet long and 4 inches square. They are held in alinement by the 4-inch blocks *c* and *d* and are buried 4 feet in the ground. A heavy bolt or section of pipe (*h*) serves as a hinge, and the base of the pole is held in position by the two hardwood blocks or iron plates (*l* and *l'*) bolted together. *C*, Cross-section of pole built of 7/8-inch hardwood. In case of large houses the pole and supporting posts should be 6 inches in outside diameter.

porch helps keep young martins safe as they totter about uncertainly, particularly on hot days.

House Finches.—These do not normally nest in boxes, but sometimes will use homes of simple design. Any of those pictured in figure 1 will answer the purpose. Orchards or dooryards abounding in shrubbery, where brilliant sunshine alternates with cool shadows, are the house finch's favorite habitat. Nest boxes may be placed in trees or on posts or attached to buildings.

Phoebes.—In common with certain other highly insectivorous birds, phoebes show a liking for the vicinity of bodies of water. The broad timbers beneath a bridge are always an attraction, and when once these birds have taken up their abode in such a situation, they are certain to return to it year after year. Away from this favorite environment, nesting sites in the shape of mere shelves (fig. 3, C) may be offered. These may be placed on the wall just within the large open doorway of a barn, or higher along the rafters, and even outside beneath the eaves, where protection may be had from above. In more exposed situations nest shelters like those in figure 3, A and B, may be used.

Crested Flycatchers.—Very different from the phoebe's needs are those of its relative, the crested flycatcher, whose original nesting sites were old woodpecker holes and natural cavities in trees. For these holes there may now be substituted boxes made of weathered or dull-painted lumber or fashioned from natural stubs or slabs. The latter types, when placed in typical situations, as in orchards, open woodland, or in trees in pastures,

probably have a greater appeal than do homes made of lumber (figs. 1 and 2).

Woodpeckers.—Of all the woodpeckers, flickers respond most readily to the lure of artificial nest boxes and will use boxes of painted or weathered lumber if other conditions are satisfactory. Boxes built to proper dimensions and conforming to any of the types illustrated in figure 1 are acceptable. A roughened interior is preferable to a smooth one, as it permits the growing young to clamber up to the entrance.

A quantity of coarse sawdust, ground cork, or better, small chips, should cover the bottom of the box to a depth of 1 or 2 inches, so that the birds may shape a cavity for the eggs. The chips also assist the birds in keeping the nest clean. Should furnishing these be neglected, the birds are likely to mutilate the box in their efforts to produce their own supply.

Flicker boxes should be placed above any immediately surrounding foilage. A dead stub makes an excellent support for the box and even a pole of the desired height will serve the purpose. The erection of boxes for flickers may be a means of preventing the damage caused by these birds when they persist in drilling holes into buildings in attempts to excavate nesting sites.

Red-headed woodpeckers, although preferring nest holes they themselves make, have been known to occupy man-made homes. Those fashioned from a natural stub (fig. 2, D) are most acceptable, although barkcovered boxes (fig. 2, A and E) also will serve the purpose. As with flicker houses, they should be placed above the immediately surrounding foliage. These birds are especially partial to oak groves.

The needs of downy and hairy woodpeckers are similar and vary only in the slight difference in size of nest cavity and entrance. Boxes of the types shown in figure 1, covered with bark or made from natural stubs or slabs (fig. 2), are sometimes accepted when attached to the trunk of a tree not densely shaded. In the bottom of each box should be placed a small quantity of fine chips. A bit of open woodland or an orchard will furnish a desirable site for the nests.

Owls.—Screech owls are not at all averse to using nesting facilities provided by man. Boxes of the types illustrated in figure 1, made of weathered lumber and of proper size and stained a dull color or covered with bark, are acceptable. A grove, or even better, an apple orchard, furnishes excellent sites for screech owl boxes. The birds will supply the few bits of wood and feathers needed to form a nest.

Barn owls, now rare throughout much of their former range, may still be found in Southern and Central States. They take readily to man-made structures, often nesting in barn lofts, towers, or off-shore duck blinds. Simple wooden boxes (fig. 1) of appropriate dimensions will answer the needs of these owls which will furnish the scanty nest material used. The boxes may be attached to the trunks of rather large trees or may be placed about barn cupolas or in other little-frequented spots on buildings.

Protection From Enemies

Cats.—These pets are one of the greatest obstacles in efforts toward increasing bird life in urban or suburban communities. The mere presence of a cat, even if it is not a habitual bird killer, has a "demoralizing" effect on nesting birds and may entirely defeat the most energetic efforts to attract them and increase their numbers. Young birds just out of the nest are easy prey and may arouse the predatory instincts of the most docile and well-mannered house cat. During the nesting season even well-trained house pets must be kept away from the vicinity of bird nests, and vagrant animals must be carefully guarded against or dealt with summarily.

A bird house may be protected by use of a sheet-metal guard encircling the supporting pole or tree. This may be either a cone or a cylinder about 18 inches long, tacked closely to the support (fig. 8), and placed high enough to prevent cats from springing from the ground and gaining a hold above it. Iron pipes as nest supports are catproof. A far-overhanging and sloping roof close over the nest opening also is a partial protection against cats. In some situations wire screen of a mesh large enough to permit the passage of the bird may be used to enclose the box in such a way as to prevent cats from reaching the nest.

Vagrant cats often obtain much of their food during spring and summer from bird life and had best be eliminated from areas where birds are being encouraged. In thickly settled regions, traps can be used effectively.

Dogs.—These pets are also a hazard to nestlings in spring, but because they kill with one swift bite and because they almost never carry their victim around as the cat does, they usually escape detection. Pet dogs should be restrained during nesting time.

Squirrels and Mice.—At times white-footed mice and squirrels, particularly red squirrels, become a serious menace to nesting birds. Both eggs and young birds are eaten, and in search for these the squirrels frequently enlarge the opening to the nest box. The tree guards illustrated in figure 8 will keep squirrels from ascending isolated trees or posts, and circlets of sheet metal placed around entrance holes will prevent them from enlarging entrances. Metal circlets make it difficult for birds to obtain a footing at the nest hole, but this objection can be overcome by fitting them on the inside. See that the circlets have no sharp edges or jagged projections to injure the birds.

Houses suspended on wires beyond jumping range from solid objects are immune to attack by squirrels, cats, and mice and are occupied by some birds.

House Sparrows.—The ubiquitous house or English sparrow, a source of much exasperation to those seeking at attract native birds, also must be discouraged. Competition of sparrows with other hole-nesting species can be prevented effectively only by reducing their numbers. Persistent destruc-

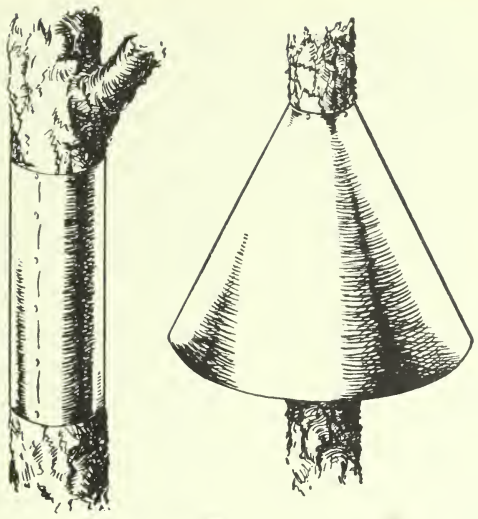


Figure 8.—Sheet-metal tree guards.

tion of their nests will discourage these birds, but at the slightest relaxation in vigilance they will reestablish themselves. When sparrows have taken up an abode in a bird house, the female may be caught by closing the entrance during the night.

Solution of the difficulty, however, lies in an aggressive campaign against the sparrow, carried out preferably during the winter months, with the object of materially reducing or eliminating the breeding population for the next season.

European Starlings.—These present a problem somewhat similar to that of the house sparrow in their transgressions against native species. They are extremely persistent when engaged in a controversy over the ownership of a nesting site and are usually victorious. Their insectivorous habits, however, place them in the van of birds that are considered controlling agencies of ground-frequenting insect pests. When not too abundant, starlings are an asset about the garden. They usually will not bother boxes that are within 5 feet of the ground.

House Wrens.—Although praiseworthy as to food habits, house wrens sometimes interfere seriously with the nesting operations of other birds, even to the extent of puncturing and thus destroying their eggs. It is possible that these little busybodies have received too much encouragement in some localities. Where trouble is observed between them and other species, bird houses suitable only for wrens can be reduced in number, or if necessary, removed entirely.

Other Enemies.—Blue jays, grackles, magpies, and crows occasionally

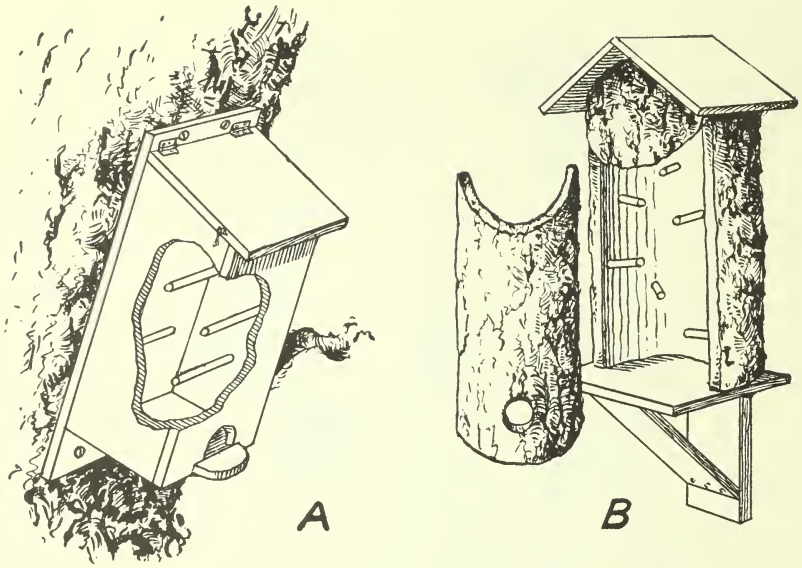


Figure 9.—**Roosting shelves that will serve as a much-needed protection during severe weather, particularly for winter birds.**

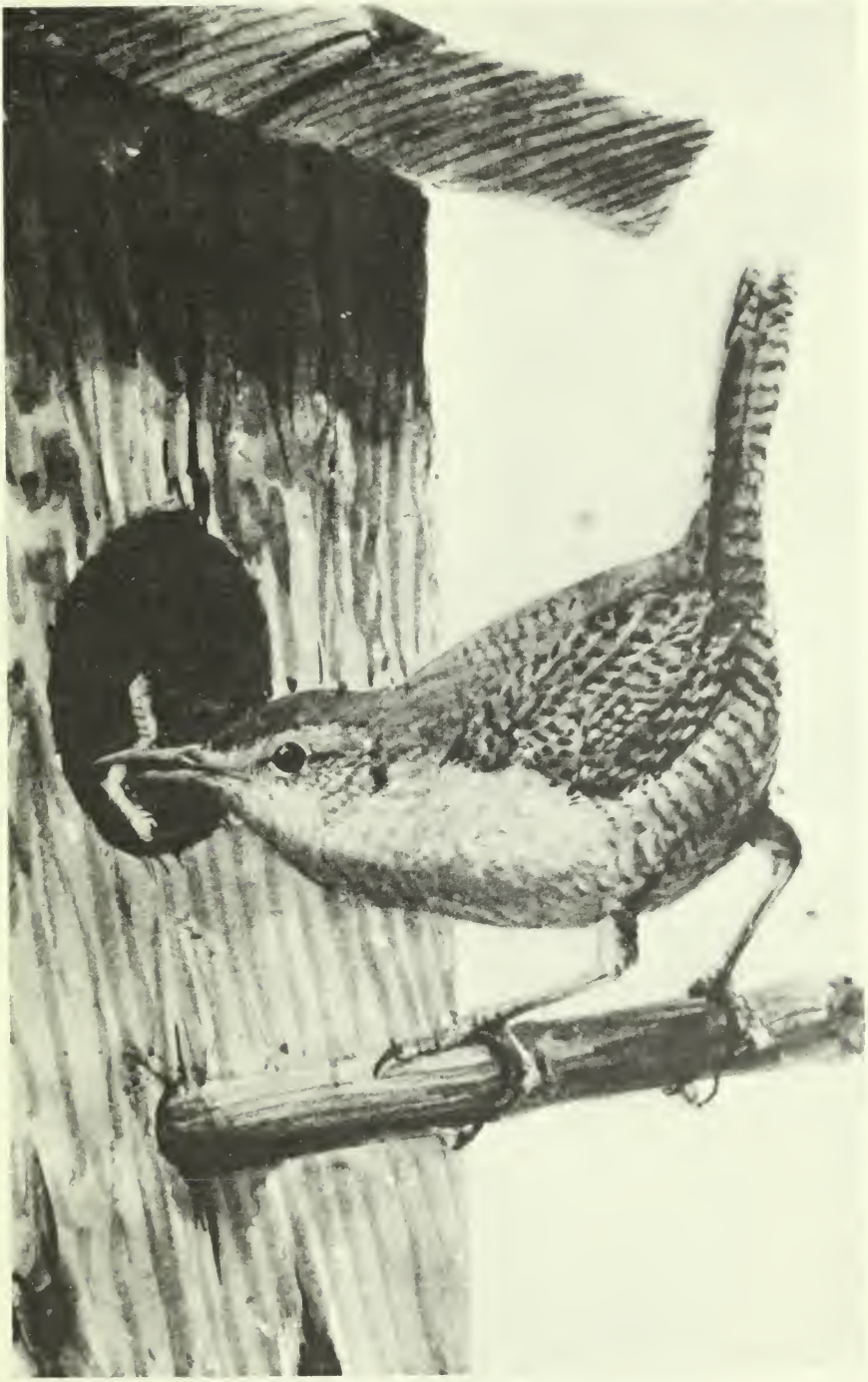
destroy eggs and young of other species, but seldom do they interfere with nests inside of nest boxes. Marauding raccoons and opossums often can be forestalled by the use of tree guards (fig. 8).

Sanitation of Bird Houses

The desirability of having all bird houses built so as to be readily opened for inspection is important. This feature is a necessity in regions infested by the gypsy moth, as all possible hiding places for the egg masses of this species must be examined. The tussock moth and other insect pests also may place their eggs or cocoons in bird houses, and it will be to the advantage of the owner as well as of the birds if the boxes are regularly inspected and cleansed of all intruders, including mud daubers and paper wasps, bees, mice, and flying squirrels.

The insects can be stupefied by fumes of carbon bisulfide, carbon tetrachloride, sulfur, or ordinary smoke and disposed of as desired. The small rodents can be dumped out unceremoniously in the hope that the birds will take possession before they return, or if it seems necessary, they can be killed.

Houses should be repaired and cleaned just before the nesting season and inspected periodically as long as birds are about. Birds are subject to parasites, some of which—fleas, bird lice, and bird flies—are usually mere nui-



Wrens are the least fastidious of the hole-nesting birds.

sances, though others, as the larvae of certain flesh flies, often are a menace to nestlings and sometimes are so prevalent as to cause general mortality over a considerable area. Houses infested by these pests may be treated with liberal applications of derris or pyrethrum powder, special attention being given to the nest. The feathers of nestlings also can be powdered. In case fly larvae are discovered in time, any that are actually attached to the nestlings may be removed and a mild antiseptic applied to the wounds.

It is advisable to clean nest boxes immediately after broods have left, even if the parent birds show signs of using the house for another family. Old eggs and dead nestlings will thus be discarded and parasites kept down. The material removed should be placed on a paper and burned. So far as bird parasites are concerned, sanitation of the houses can be profitably supplemented by ample provision for water and for dust or sand baths. These are nature's means of keeping down body vermin. On the whole, clean nest boxes have a better chance of being occupied, and certainly the prospects for rearing the next brood are improved.

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