CHAPTER 2

Housing, Management and Care

Adequate Housing

Adequate housing represents a crucial part of what is needed for success in the bird fancy. A major reason is that good housing promotes proper environmental temperature, an important factor for breeding exotics, particularly finches.

Altogether, there are about 9700 species of birds in the world, and during the millennia they have become adapted to the conditions under which they have to live and raise their young. One major environmental factor that has affected the development of birds is warmth, and adaptations were made to provide proper protection against bitter cold or extreme heat. Penguins, for example, have a thick layer of fat that protects against cold and stores energy on which the birds can draw if it is necessary to survive for a time without food. By contrast, the tender exotics that live in the tropics have little to protect themselves against cold, and they must take in food frequently to maintain their body temperature.

One of the reasons why some fanciers lose their small exotics in winter is that they don't sufficiently realize that at that time of year there are at least 14 hours of darkness during which the birds can't eat. As a result, they cannot maintain their body temperature. Their crops are empty in the morning, and the cause of their death is often starvation. The solution is to provide several hours of artificial light in the evening, remembering, however, that a bird needs 10 to 12 hours of darkness each day to ensure adequate rest (sleep). However, since many birds in the wild, where there is never complete darkness, sometimes look for food or just fly about a little at night, it is essential that birds in captivity have this same possibility. Therefore a small night light should be kept burning.

It doesn't take any special gadgetry to supply exotics with the environmental temperature they need. If these birds are properly acclimatized, they can live and breed under almost any climatic condition. And we must add that although most birds can't stand being exposed to direct, bright sunlight, this doesn't mean that they can't withstand high temperatures. It is quite hot in most tropical areas, even in the shade of trees and shrubs. This heat is often accompanied by a very dry atmosphere that can't be compared with the hot, humid weather we experience here during a summer heat wave. In most instances, reports of successful breeding of difficult birds indicate that the weather during the breeding season was exceptionally hot.

The body temperature of birds is about 10ºF (5.6ºC) higher than that of humans. All in all, we must create a situation for exotic finches that closely parallels the weather in their land of origin. Since in many areas we ordinarily don't experience hot spells that last more than a few weeks, we must find ways to create and maintain a high daytime temperature. Night temperature is not as important, since even in the tropics, this can fall quite a bit.

What's the best way to go about this?

One way is to set up a bird room with a thermostatically controlled heating system and electric ventilators. But the average breeder can't afford this level of luxury. The most available source of heat is the sun, and the facility for raising birds

should be arranged so that maximum use is made of sunlight. The facility should not be too large, because a large volume of air is difficult to heat; also, heat is lost quickly if the surface area of the floor, walls, and ceiling is relatively large when compared to the volume of air the room contains. A space of about 12 ft. x 9 ft. x 6 ft. (approx. 4 m x 3 m x 2 m) is convenient and simple to heat. In a room this size, you can install a reasonable number of walk-in flight cages with, if possible, access to outside aviaries.

The building should be oriented with the front facing south, so that sunshine can warm it as long as possible. Also, the birds themselves enjoy the sun. It is amazing how much the indoor temperature can rise if exposed to even the relatively weak rays of the winter sun. If you have a bird house that uses available sunlight effectively, you then need to find a method to retain heat when the sun doesn't shine. It is a matter of proper insulation. There are several types of insulation available on the market to put on or between the walls. Yet, a basic requirement is that there is enough space between the outside and inside wall to retain a proper amount of still air. Pay special attention to windows. They are good to have, but if not made from double glass, lose heat easily. Therefore, install double glassed windows. A properly fitted door is also important for retaining heat and avoiding drafts.

A second important factor is proper ventilation. With higher temperatures, the atmosphere turns stale more quickly without a constant supply of fresh air. Air therefore needs to be circulated more frequently in the summer than in the winter, especially with an eye to retaining warmth in winter. The simplest method of ventilation is to have slots for air intake at the bottom on all four sides, with an exhaust slot in the roof, properly protected against rain. The slot should be closable with a slide so that the air flow can be regulated. The slots open to the wind should be closed immediately and the others should be completely opened. The openings should be covered with a fine, strong mesh to keep vermin out.

It is also essential to maintain proper heat and ventilation in winter if you want to keep your birds in good condition and in good health. Heating, however, should not be overdone. The major purpose of a high temperature is to stimulate birds to breed, and that, of course, is not advisable in winter, anyway.

The best way to avoid problems with heat is to retain an inside temperature between 65–82ºF (18–28ºC), plus access to an open walk-in flight, so that the birds can choose for themselves. Even if there is much to attract the birds to the outside flight, the higher temperature inside will draw them there when necessary.

High temperatures have some drawbacks, but these can be overcome. First, you need to guard against food spoilage, particularly egg foods such as rearing foods, nectar, and such ready-to-eat foods as dead insects. Green food wilts fast and dries out, so provide these items in small quantities and replace them often.

Another factor is that water evaporates more rapidly in higher temperatures. We have found that replacing water early in the morning and late in the afternoon is usually adequate. We also recommend automatic waterers, called water bottles in the pet trade, which actually lose very little water through evaporation. Another way to reduce evaporation is to buy chick waterers, as they hold more water; in these utensils, however, never put more than 2 in. (5 cm) of water as some birds, while sticking their head through the waterer's opening, manage to drown themselves!

Birds don't have sweat glands in the skin, like humans. They will show you when they are sweltering by sitting with open beaks and drooping wings. If you see these signs, you must take steps immediately to lower the temperature. Actually, installing a reliable thermometer is useful for avoiding such stressful situations. Hang the thermometer at the height of the main perches, because the temperature can vary considerably between the floor and the ceiling. Also, remember to disturb birds as little as possible when the temperature is high, because body movements cause body temperature to rise, which can have tragic results.

If you need to catch birds in warm weather, do this early in the morning, or in the evening when it is cooler. Remember that heat dries out the air. Even though the humidity should be kept low for

most finch species (approximately 55%), it pays to sprinkle water on the floor once or twice daily. Or you can place safe varieties of potted plants nearby and keep them moist to prevent the air from drying out.

Proper attention to environmental factors is extremely important, especially if you want to breed estrildines. Observe and experiment with the birds you want to raise, and you will be able to breed a variety of finch species. We want to urge you to progress from a keeper to a breeder of finches. Unless you've experienced it, it's hard to imagine how fascinating it is to observe courtship behavior and nest building, and how exciting it is to watch the laying of the eggs, the feeding of young, and the busy activities of enthusiastic bird parents.

Keep good notes and records to supplement published information about your birds. You will find an extensive list of reference books in the back of this book to discover all you need to know.

Well prepared and equipped, you will be able to extend the fellowship of breeders that are developing a good supply of birds independent of importation, which came to an almost complete stand-still recently. Responsible breeding in captivity can help prevent certain bird species from disappearing completely from the face of the earth. For example, many waxbills and Australian grassfinches are becoming increasingly popular, showing that the aviculturist can accomplish a great deal, when considering that importations of wild-caught specimens have been cut off for many years–since 1997 and 1964, respectively.

Acclimatizing Imports
(in case bans will be lifted or changed)

The importation of wild-caught finches for the pet trade has come to an almost complete stop; however, the importation of captive-bred estrildid finches from Europe and Japan is increasing rapidly in order to comply with the demand.

The cost of imported, captive-bred birds today is determined to a large degree by the cost of quarantine after their arrival in America. Government officials deem it necessary that every bird entering the country must be placed into quarantine for at least 30 days, whether it is an exotic finch or a parrot. The major concern is exotic Newcastle disease (VVND - Velogenic Viscerotropic Newcastle), a dreaded virus infection which several years ago caused major losses among chickens. There is no doubt that the poultry industry suffered millions of dollars in losses, so that it makes sense that the government releases imports into the domestic trade only after they have been medically examined and found to be free of this infection. Birds that die during quarantine are carefully examined and the cause of death is precisely determined. It is a system that works satisfactorily even though it raises opposition from time to time. There can be no doubt that it's important to bring healthy, virus-free birds into the domestic trade channels. And yes, it is expensive too, when you add all the direct and indirect costs involved, but much cheaper than acquiring an infected bird, and losing an entire collection.

While on the subject of regulations, be aware that in many places you need a permit or license to keep birds. There are neighborhood covenants that flatly prohibit the keeping of any pet whatsoever. There are also localities that limit the number of birds that you may keep in a residential neighborhood. Still other locations require that you get an occupational license before you can sell birds, even if you raise them yourself. Further, local ordinances may require commercial zoning if you want to sell birds. Some places permit the sale of birds, but not any advertisement on your property offering "Birds For Sale." If you live in one of these places, you have to place ads in the local newspaper, which is usually more effective, anyway. There are states requiring a state license to sell birds, even those you've raised yourself. Be aware of ordinances of this type. It may seem burdensome, but unless you stay informed, you may get into trouble sooner or later, which can be quite costly. Make inquiries from the local government and join a local bird club. Your fellow members will certainly provide you with full details about what may and may not be done. If they can't provide accurate information (and this has occurred far too often!), insist that the leadership informs itself fully and immediately on any restrictions and licenses that apply. Then insist also that all members be informed in detail on the existing sit-

uation. This approach will benefit the entire hobby.

If you do acquire imported, wild-caught birds, via legal permits or otherwise, it is important to give attention to their proper acclimatization. Birds arriving from other countries have been exposed to all manner of discomfort and danger during the trip. They will also be slow in becoming accustomed to new food sources, utensils, housing, etc.

Never house newly arrived birds with earlier arrivals. If they're housed in the same quarters, they could spread disease. Place the imports in separate, roomy cages and, if possible, house males and females separately. The best type of cage for this purpose is the so-called box cage that is well protected on all sides. Place an infrared lamp near the front. It will benefit those birds that "don't look so great" after a long, tiring journey, and it will also help those that appear well and in good condition. Place the lamp about 24 in. (61 cm) from the front of the cage and set things up so that the bird can move away from the heat if it so desires.

Almost all finches love panicum millet. Provide a dish of the small millet varieties, canary grass seed (= white seed), weed and grass seed, and niger seed. For drinking, provide tap water which has been boiled and allowed to cool. A disinfectant should be dissolved in the water, following the advice of your local avian veterinarian. We have had consistent success with fresh, cooled chamomile tea, which has a healthy quality which helps to offset mild intestinal and stomach disorders. We make it up fresh twice a day, and in the evening we replace it with the boiled and then cooled tap water with disinfectant. Remember that chamomile tea turns sour quickly in warm weather; that's why we make it fresh twice a day and do not allow it to sit in the cage overnight.

Place drinking cups in a location where no droppings can fall into the water. Overlooking this precaution can obviously lead to a lot of trouble.

After two weeks, we start providing only tap water. This is still boiled and then cooled to room temperature, of course. In areas with hard water, we suggest using spring water, which can be purchased in the super market or drug store.

Recently imported birds should not be allowed to bathe during the first two weeks. Wait till they perch healthy and lively before letting them bathe. Once again, we provide tap water at room temperature for this purpose and add to it one-third part of chamomile tea cooled to the same temperature. We do this because birds like to drink before they bathe. After a week, you can omit the chamomile tea. Chamomile tea also has a healing function in the bath water. If there are any patches of inflamed skin, which may be hidden from our view by the feathers, they will disappear when exposed to chamomile tea.

Since most finches feed, at least in part, on the ground, recently arrived birds will instinctively look for food on the floor. So when you provide food, sprinkle some on the floor and hang the seed dishes low in the cage or aviary, close to the main perches. Furnish drinking water in flat, earthenware dishes; the rim should be somewhat rough so that the birds won't fall into the water. Preferably, cover the dishes with wire mesh to prevent the birds from bathing in the drinking water.

To avoid intestinal upsets, don't feed new birds any greens or fortified food for the first four days. Sprouted seed, however, will be greatly appreciated.

Approximately one week after the arrival of the birds, scatter some sand on the floor of the cage. The sand should not be too sharp, and should be replaced daily. Or else, use fine oystershell grit. It can happen that recently imported birds take in too much sand or grit. If so, cover the floor with paper (not newspaper) because too large an intake of sand or grit can cause all kinds of stomach and intestinal disorders, as well as crop impaction. This can be prevented by giving the birds grit in an open dish once a week and letting them pick whatever they like for one hour only.

Keep the cage scrupulously clean, and wash all utensils at least once a day with hot water and then disinfect them with Clorox, Purex (1:32 solution; half a cup per gallon of water), One-Stroke, Environ, or Lysol.

Watch carefully for any sign of watery droppings, and if noticed, take immediate action. This symptom can be life threatening for birds. Add a 5–10% glucose solution to the drinking water and

Suggestions for a group aviary

1. Recommended for beginners who want a reasonable chance to breed successfully:
- British birds *(eg. European goldfinch, serin, linnet)*
- canary
- cardinal species
- crimson finch
- golden sparrow
- painted quail
- Pekin robin
- spice finch
- zebra finch

Keep all these birds in pairs and don't plan two pairs of any sort in the same aviary (to avoid constant bickering); three or more couples are okay.

2. Recommended for beginners who are not looking for immediate breeding results:
- cardinal species
- cut-throat finch
- doves *(eg. diamond dove)*
- Java sparrow *(eg. white, gray, pied)*
- painted quail
- weavers *(the larger species)*
- whydahs *(the larger species)*

A collection of this type could produce some breeding results, despite the description we gave it. Several species will breed satisfactorily, if they get the opportunity.

3. Recommended for somewhat experienced hobbyists:
- Australian finches and parrot finches
- canaries *(for song and color)*
- Chinese painted quail
- gray finch
- Pekin robin
- red-tailed lavender
- waxbills

4. Also recommended for somewhat experienced hobbyists:
- Australian finches and parrot finches
- Bengalese *(in several color mutations)*
- black-headed munia
- Chinese painted quail
- diamond dove *(or similar birds)*
- gray-headed silverbill
- yellow-faced grassquit
- zebra finch *(in several colors)*

5. Recommended for anyone who likes a well-stocked group aviary:
- Bengalese
- cherry finch
- Chinese painted quail
- common waxbill
- crimson-rumped waxbill
- golden-breasted waxbill
- gray finch
- gray-headed silverbill
- green avadavant
- green-singing finch *(Note, however, that this bird cannot be kept in an aviary also housing a pair of gray finches; these two species are almost always on the brink of battle with one another.)*
- Indian silverbill
- nun species *(the three popular species, black-headed, tricolored and white-headed, can be placed together without problems)*
- orange-checked waxbill
- red-billed firefinch
- red-checked cordon bleu
- red-eared waxbill
- red-tailed lavender
- spice finch
- star finch
- strawberry finch
- violet-eared waxbill
- zebra finches *(in various color mutations)*

6. Recommended for the experienced hobbyist:
- African glossy starling
- British birds
- bulbul species
- cardinal species
- crimson finch
- doves *(the large species)*
- pagoda starling
- Pekin robin
- quail *(the larger species)*
- shama thrush *(and other thrush species)*
- song thrush
- weaver species *(only the larger species)*
- whydah species *(only the larger species)*

7. Recommended for hobbyists who prize song and color (while maintaining reasonable chances for breeding):
- Bengalese *(in several color mutations)*
- black-headed canary
- British birds
- doves *(only small species)*
- golden sparrow
- Java sparrow
- saffron finch
- weaver and whydah species *(only the larger ones)*
- yellow-faced grassquit

8. Recommended for hobbyists wanting to combine song, color, and breeding:
- Bengalese *(in several color mutations)*
- black-headed canary
- black-throated finch
- cherry finch
- Cuban grassquit *(Note, however, that this bird should not be placed in the same quarters with the yellow- faced grassquit, even if there is more than enough space; sooner or later they'll start a "war.")*
- diamond sparrow
- indigo bunting
- Java bunting
- lazuli bunting
- long-tailed grass finch *(Note, however, that among this species there can be couples that are pugnacious, so it pays to watch them.)*
- nun species
- quail *(various species)*
- red-headed finch
- red-winged pytilia
- saffron finch
- weavers and whydah species
- zebra finch *(various mutations)*

The listed combinations reflect our personal preferences. They will however, serve as a guide for creating your own collection, taking into account the size of the aviary.

provide some poppy seed in the normal seed mix. And don't forget to consult an avian veterinarian immediately.

We recommend providing a night light (see above), say 4–7 watt, so that the birds can see enough to eat and drink at night if they want to. Sometimes the infrared lamp provides enough light, so if you use one, be sure to leave it on day and night.

For an antibiotic, we recommend oxytetracycline Hc1:20 percent, at a dosage of five grams per liter of drinking water for one or two weeks. Another popular antibiotic used by most veterinarians is fluoroquinolones; Baytril is an example. Always follow your veterinarian's instructions; not following the prescribed course can be life threatening to your birds.

Once you have had your recently imported birds in quarantine for at least two weeks, you can start offering them chickweed for green food, and also small amounts of egg food (CéDé, for example, available in most pet shops). By the way, you can commence feeding insects (ant "eggs," mealworms, white worms, fruit flies, etc.) approximately ten days after arrival, provided the birds look chipper and healthy. But remember that any time birds are offered any new type of food, they should be monitored carefully for diarrhea and intestinal upsets; if problems are observed, discontinue the new food for several weeks before offering it again.

After two weeks, you can limit the use of the infrared lamp to night time. However, if you have any weak birds, keep the infrared lamp on day and night for several more weeks.

Birds become accustomed quickly to a caretaker, so during the acclimatization process, always have the same person clean the cages or flights and provide the food and water. This helps keep things quiet, thus avoiding stress.

If you keep the birds out of doors, be sure not to expose them to temperatures below 72ºF (22ºC) at any time. Aviaries should have a protective sleeping coop, called a night shelter, with plenty of sleeping boxes. Cages should be moved indoors, if necessary, when evening falls. In early spring and in the fall, don't house recently acclimatized birds outside at all. And don't force the birds to breed the first year after arrival; this would weaken them too much.

Cages

You can get to know your birds, their behavior and life experiences, only if housing and care are well arranged. Good housing promotes careful observation and record keeping, and that's important for all types of birds. Don't think that because they are so common, zebra finches *Poephila guttata* or society finches *Lonchura striata* var. *domestica* don't need to be observed, that nothing new could be found out about them. That's by no means the case. We need to know as many details as possible about all our birds because there are already a great number of countries that forbid export of their birds. Additional regulations are coming our way, so that soon we can expect to be limited to birds that are bred in captivity.

Most estrildid finches are rather small, and people are tempted to think that they can be kept in small quarters. Not so! There should always be enough room for them to exercise adequately. Small quarters lead to fat and listless birds that won't breed. This is particularly true for the diamond sparrow *Zonaegintlus guttatus*. Even the smallest finches should be given a cage of at least 30 in. x 18 in. x 20 in. (75 cm x 45 cm x 50 cm) high. Finches should always housed in pairs, if possible.

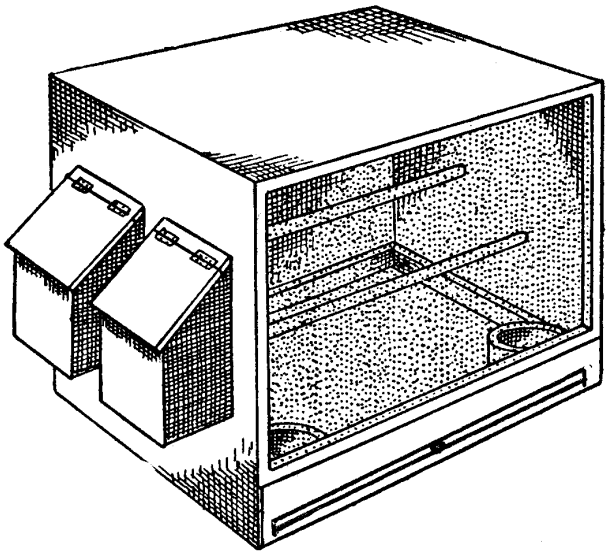
We prefer cages that are as long as they are wide, which would change the dimensions we just mentioned to 30 in. x 30 in. x 20 in. (75 cm x 75 cm x 50 cm). Cages of this size are appropriate for two pairs of different species (see page 00), or, in a pinch, for three pairs, provided the species are really small, like various waxbills. At that level of crowding, however, don't set your sights too high for breeding results.

Box Cage: The best type of cage is the so-called box cage, which allows birds to feel the most protected and the safest, as experience has shown. A box cage has some kind of wire mesh only on the front. The sides, roof and rear walls can be made of wood or other material. Paint the inside of the cage with a safe, lead-free, light colored paint. You can use paint intended for children's furniture, for example. This paint is easy to wash, which is an

important consideration. For the outside, you can use any type of paint you wish. Over the floor, build a second floor of metal (zinc), hardboard, or the like, that can slide in and out. Then take a sheet of glass or hard plastic about 4 in. (10 cm) high and put it along the entire front of the cage to prevent spillage of seed hulls, sand, and feathers. Make sure that this sheet is easy to remove for cleaning.

In the sidewalls (and the rear-wall too, if you like), install some doors, so that you can reach all areas of the cage. Ideally, the front of the cage also should be constructed so that it can be slid open; as this helps simplify feeding and watering. There are ready-to-use cage fronts in various sizes, even with sliding doors, available in the better pet shops. You can hang a water bottle or even one of the well-known plastic bath houses in one of these doors, although, for bathing, an earthenware dish set on the floor will also be very much appreciated.

The location of the cage is quite important. Be sure there is enough light and fresh air, but definitely no drafts! Never place a cage close to an open window, because it is almost impossible to avoid a draft there. Also, a window location could expose birds to strong, direct sunlight, which can rapidly raise the temperature in the cage.



A bird feels most at ease if kept in a partly enclosed cage, the so-called box cage, a unit in which only the front is covered in mesh, the rest—the three walls, floor and roof—is totally enclosed. Such a cage must stand in a brightly lit, draft-free spot. Not in full sunlight, as such a cage can, in a short time, become like an oven. Box cages are ideal for breeding, and come in many different sizes and types.

Vitrines

Vitrines are currently quite popular. They are often advertised in the commercial bird magazines. And indeed, vitrines make fine quarters, provided they are constructed correctly and are large enough, especially for the more fragile exotics. The front is made of glass or plexiglass. The sides and roof are made partially of wire mesh. These parts should be equipped with shutters to regulate fresh air and ventilation. There should be several doors in the sides to permit all necessary tasks.

A vitrine is excellent for a living room, den, or study. Add some suitable, safe, live plants and you will have a really attractive exhibit.

You will need a thermometer to check the temperature in order to maintain it properly. We recommend that the glass front slopes, so that the vitrine is wider at the bottom than at the top. This way, droppings and dirt are less likely to spoil the view. The glass front really should be removable, so that it will slide out easily for cleaning. Make two parallel grooves on each side of the vitrine's front frame, so that before removing the glass plate you can install a solid piece of cardboard or a similarly sized piece of glass to contain the birds. The bottom of the vitrine also should have a floor that can slide out, as with a box cage, for easy cleaning.

Equip a vitrine properly. Furnish some live branches, such as willow or apple, placed in jelly jars filled with wet sand to keep them fresh. Make a wire-mesh cover, so that you can insert the branches easily. Have some containers solely for green food, and supply separate dishes for food, water and bathing. Also, install several perches separated by an appropriate distance.

Cover the floor with so-called bird gravel, not too coarse sand with just a little charcoal, which somewhat combats hyperacidity and sweetens the stomach, and oyster shell, which supplies calcium, about 1 in. (2½ cm) deep, and put some small stones (flagstones and such) on top.

You can backlight the vitrine if you'd like. Some people decorate the walls with nature scenes, but we don't recommend this. You can become bored looking at these after a while. We suggest you use a neutral light blue or soft gray

color that will show off the birds well. Use washable paint, because the birds tend to splash while bathing and otherwise spread dirt. The glass front, of course, also gets dirty, and you need to count on washing it at least three times a week. Birds will be less alarmed if you insert the cardboard before sliding out the glass front.

Indoor Aviaries

An indoor aviary should have a surface at least 18 in. (0.5 m) square. Personally, we prefer aviaries twice that size, and even larger doesn't hurt. This size aviary can hold three to four pairs of estrildid finches. It is large enough even for the young that you expect later. Place the entire aviary on a platform at least 2 ft. (60 cm) high to avoid cold drafts.

As with any type of quarters, be sure that you have access to the inside of the aviary so that you can service it for food, water, nest boxes, clean up, etc., without disturbing the birds too much. Take this into account when you design and build the aviary.

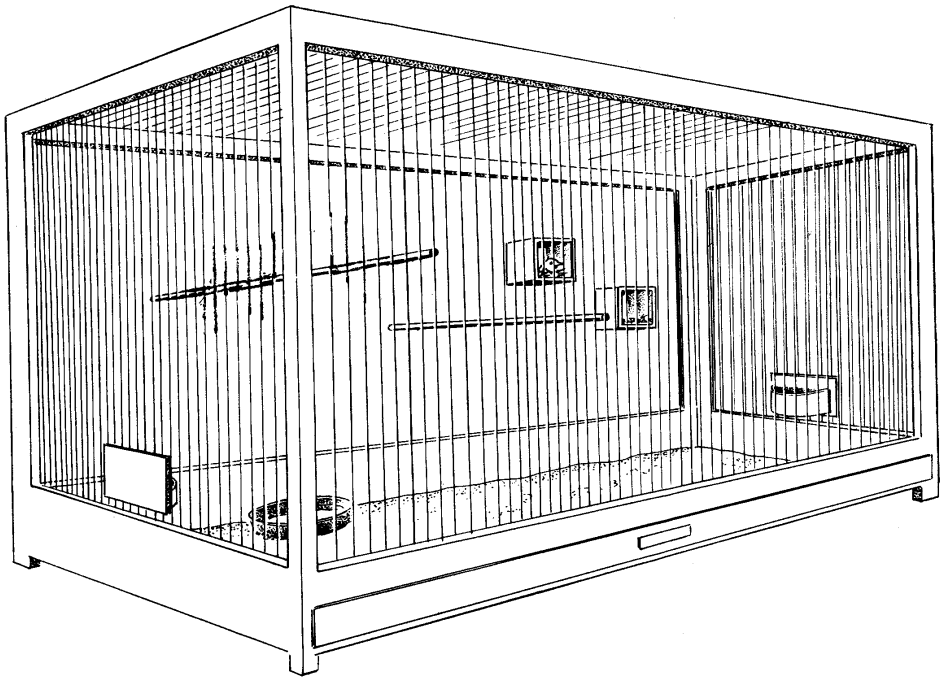
Bird Room: A bird room is fun to set up, if you have the available space, especially if it has several windows facing south, southeast, or southwest. Make sure the birds you house together are compatible. You must plan your collection carefully to satisfy this precondition. You want to avoid fights that cause commotion, particularly during the breeding season.

Once you have independent fledglings in the bird room, move them to separate quarters, because many parents have the habit of chasing their young-adult offspring around. This again disturbs the peace that you want to maintain during the breeding season.

You can split the bird room into two, four, or six aviaries with a service aisle along the middle. This way you are able to maintain several collections and to have separate quarters available for quarrelsome birds, newly independent young, or for other reasons. It is also easier to observe your birds with such an arrangement. If you place all the birds together in one room, you usually get a situation where the aviculturist has to sit with his nose against the wire mesh on the door frame, often exposed to a drafty hallway or causeway.

Be sure to put screens on all the windows, so that you can open them safely to let in fresh air and direct sunlight. This is of prime importance for your feathered friends. Paint the walls with washable paint in natural, quiet colors, like light green or gray, pale blue, and such.

Decorate the corners with live plants in pots and barrels (see page 00), and install fabricated perches there too. This way you preserve maximum flight space. You may consider planting elder, willow, roses, all types of philodendron, reeds, bamboo, privet, or dwarf conifers. You will have to count on some damage inflicted by the birds, so that now and then you will have to



Indoor cages can never be too large. Ideal for three (never two!) to four pair of finches.

replace the plants. But actually, the damage isn't as great as you might think. You will need to spray the plants regularly with a water mister. We consider a bird room complete only if proper attention has been given to plants. You have a good chance that many types of birds will build nests there in the open, which is highly interesting in itself.

An ideal situation is to have a bird room on the ground floor with an outdoor aviary attached. This is the most appropriate set-up of all. Even if the exposure isn't ideal in such a case, we would still advise you to consider it. With the aid of glass on the outside, you can correct a less than ideal exposure considerably. On pleasant, sunny, windless days, you can open the windows and the birds can enjoy the fresh air and direct sunlight to their heart's content, a vital factor for exotic finches, as we discussed earlier. Ultraviolet rays on the feathers are beneficial, and birds that have been kept indoors for a long winter improve visibly when they can come back out into the open air and enjoy a daily sun bath. The outdoor run should have plenty of plantings also, so that birds can hide in the shade of the greenery if they need to. An excess of sunlight is not good, either!

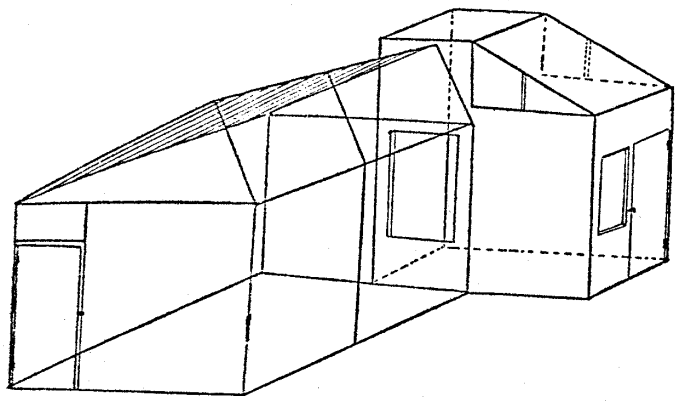


Diagram of a well-designed garden aviary with plenty of room for natural shrubs.

Garden or Outdoor Aviary

The outdoor or garden aviary is currently the most popular type of housing for the serious aviculturist. As a result, you have a great variety of well-constructed aviaries to choose from (see also the ads in commercial pet bird magazines).

First, the minimum size for an outside aviary should be 6½ ft. high x 6½ ft. wide x 10 ft. long (2 m x 2 m x 3 m). A good outdoor aviary usually has a covered section and an open section. Let us discuss the open section first, which is often called the run. Situate the front of the run toward the south as much as possible; if you need to deviate, southeast is better than southwest. Even if the front is properly oriented, we would still suggest making part of it from glass, using only non- reflecting glass. Naturally, you want to place the aviary where you can view it easily, set attractively among some flowers, plants or bushes.

From the start, plan to make the outdoor aviary attack-proof against the entry of all vermin, wildlife, cats and owls. First, pour a concrete foundation. The upright sides should be supported by metal T-beams. Wood is not so easy to make attack- proof, but if you need to use it, fortify the edges with metal strips. Build a wall of brick or cinder block on the foundation, about 12–18 in. (30–50 cm) high, on which you'll lay the floor. The best flooring is concrete, especially for the sleeping coop or night shelter. You can also use creosoted flooring and tiles. For solid walls or sections, we suggest using tongue-and-groove pine boards, but this can be rather expensive. The roof should be somewhat sloped. We recommend using roof tiles. If you build the aviary against an existing wall or fence, make sure that the roof extends over the wall, so that water doesn't gather in the cracks, although you could minimize this problem with a sheet of tarpaper.

Other materials you'll need are strong ½ x ½ in. (25 x 25 mm) wire mesh, wire, nails, and glass. For the semi-covered part of the outdoor aviary, use safety glass. We recommend a good metal or plastic gutter, also.

We suggest letting the environment dictate the size of the aviary. You're not keeping chickens or ducks, where it makes sense to let the size of the flock dictate the size of the coop. See what size aviary would suit the surroundings, then decide the number of birds you can keep. If you have enough space, you can try colony breeding, with several pairs of the same species, which is recommendable for many of the exotic finches, anyway, as certain species naturally breed in colonies.

In designing an aviary, maintain simple lines and construction that fits into the surroundings as

Some Poisonous Plants

acocanthera (fruit and flowers)
amaryllis (bulbs)
amsinckia (or tarweed; foliage, seeds)
anemone (all parts)
angel trumpet (flowers, leaves)
apple (seeds)
apricots (pits, inner seed)
atropa autumn crocus (bulbs)
avocado (foliage)
azalea (leaves)

balsam pear (seeds, outer rind of fruit)
baneberry (berries, roots)
beach pea (all parts)
belladonna (all parts, especially black berries)
betel nut palm (all parts)
bird of paradise (seeds)
bittersweet (berries)
black locust (bark, sprouts, foliage)
bleeding heart (foliage, roots)
bloodroot (all parts)
bluebonnet (all parts)
blue-green algae (some forms are toxic)
bottlebrush (flowers)
boxwood (leaves, stems)
buckeye horse chestnut (sprouts, nuts)
buckthorn (fruit, bark)
buttercup (sap, bulbs)

calla lily (leaves)
caladium (leaves)
cardinal flower (all parts)
Carolina jessamine (foliage, flowers, sap)
cassava (roots)
castor bean (or castor oil-beans; leaves and beans)
chalice vine (or trumpet vine; all parts)
cherry tree (bark, twigs, leaves, pits)
cherry laurel (foliage, flowers)
Chinaberry tree (berries)
Christmas berry (berries)
Christmas cactus (sap)
Christmas candle (sap)
Christmas rose (foliage, flowers)
coral plant (seeds)
crocus (bulbs)
croton (foliage, shoots)
cyclamen (foliage, stems, flowers)

daffodil (bulbs)
daphne (berries)
datura (berries)
deadly amanita (all parts)
deadly nightshade (all parts)
death camas (all parts)
death cap mushroom (all parts)
delphinium (all parts)
deiffenbachia (or dumbcane; leaves)
dogwood (fruit)
Dutchman's breeches (foliage,roots)

eggplant (all parts except fruit)
elderberry (foliage)
elephant's ear (or taro; leaves, stem)
English ivy (berries, leaves)
equisetum (all parts)
euphorbia (or spurges; foliage, flowers, sap)

false henbane (all parts)
fiddleneck (or senecio; all parts)
fly agaric (or amanita; all parts)
four o'clock (all parts)
foxglove (leaves, seeds)

gelsemium (all parts)
ghostweed (all parts)
golden chain (or laburnum; all parts, especially seeds)

hemlock (all parts, especially roots and seeds)
henvane (seeds)
holly (berries)
horse chestnut (nuts, twigs)
horsetail reed (or equisetum; all parts)
hyacinth (bulbs)
hydrangea (flower bud)

impatiens (or touch-me-not; all parts)
Indian turnip (or jack-in-pulpit; all parts)
iris (or blue flag; bulbs)
ivy (all forms; foliage, fruit)

jasmine (foliage, flowers, sap)
jasmine star (foliage, flowers)
jatropha (seeds, sap)
java bean (or lima bean; uncooked bean)
Jerusalem cherry (berries)
jessamine (berries)
jimsonweed (foliage, flowers, seed pods)
Johnson grass (all parts)
juniper (needles, stems, berries)
laburnum (all parts)
lambkill (or sheep laurel; all parts)
lantana (immature berries)
larkspur (all parts)
laurel (all parts)
lily of the valley (all parts including water in which they have been kept)
lobelia (all parts)
locoweed (all parts)
lords and ladies (or cuckoopint; all parts)
lupine (foliage, pods, seeds)

machineel (all parts)
marijuana (leaves)
mayapple (all parts except fruit)
mescal bean (seeds)
milkweed (foliage)
mistletoe (berries)
moccasin flower (foliage, flowers)
mock orange (fruit)
monkshood (leaves, roots)
morning glory (all parts)
mountain laurel (leaves, shoots)
mushrooms (most wild forms; caps, stems)

narcissus (bulbs)
natal cherries (berries, foliage)
nectarine (seeds, inner pit)
nicotine bush (foliage, flowers)
nightshades (all varieties; berries, leaves)

oak (acorns, foliage)
oleander (leaves, branches, nectar of blossoms)

peach (fruit pit)
pear (seeds)
pennyroyal (foliage, flowers)
peony (foliage, flowers)
periwinkle (all parts)
philodendron (leaves and stem)
pikeweed (leaves, roots, immature berries)
pine needles (berries)
plum (foliage, inner seed)
poinsettia (leaves, flowers)
poison hemlock (foliage, seeds)
poison ivy (sap)
poison oak and sumac (foliage, fruit, sap)
pokeweed (or poke cherry; roots, fruit)
poppy (all parts)
potato (eyes, new shoots)
privet (all parts, including berries)

redwood (resinoids, leached wet wood)
rhododendron (all parts)
rhubarb (leaves)
rosary peas (seeds)
rosemary (foliage in some species)
Russian thistle (foliage, flowers)

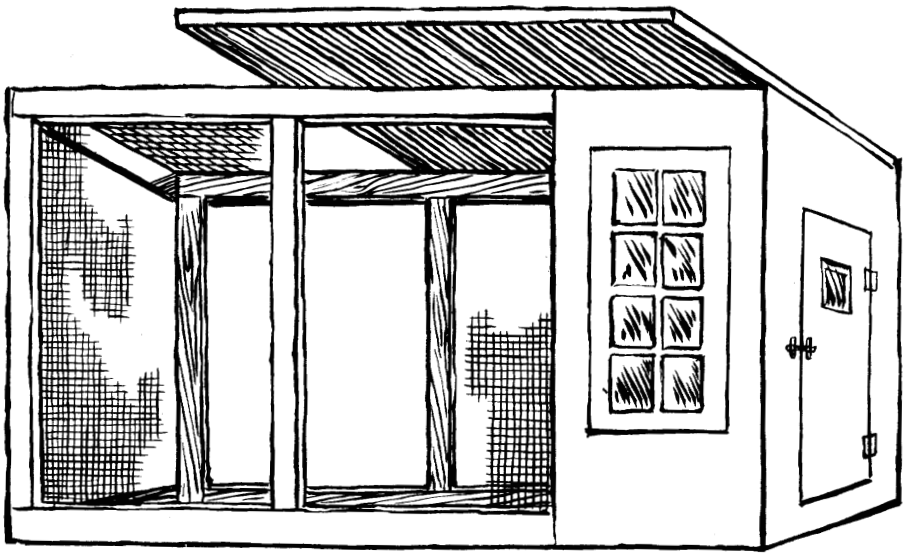
sage (foliage in some species)
salmonberry (foliage, fruit)
scarlet pimpernel (foliage, flowers, fruit)
Scotch broom (seeds)
senecio (or fiddleneck; all parts)
skunk cabbage (all parts)
snapdragon (foliage,flowers)
snowdrop (all parts especially buds)
snow on the mountain (or ghostweed; all parts)
Spanish bayonet (foliage, flowers)
Sudan grass (all parts)
star of Bethlehem (foliage, flowers)
sundew (foliage)
sweet pea (seeds, fruit)

tansy (foliage)
taro (or elephant's ear; foliage)
tiger lily (foliage, flowers, seed pods)
toad lax (foliage)
tobacco (leaves)
tomato (foliage, vines)
touch-me-not (all parts)
toyon berry (berries)
trillium (foliage)
trumpet vine (all parts)

Venus flytrap (all parts)
verbena (foliage, flowers)
Virginia creeper (sap)

wild parsnip (roots, foliage)
wisteria (all parts)

yam bean (roots, immature roots)
yellow star thistle (foliage, flowers)
yew (American, English and Japanese varieties; needles, seeds)



A garden aviary consisting of three sections:

1. Open section, the flight or run.
2. Covered section, the partially enclosed flight (the roof is covered with corrugated plastic sheeting or something similar
3. Enclosed shelter in the form of a sleeping coop or attached indoor aviary to serve as a night shelter.

much as possible. Actually, this advice also applies for other types of bird housing. The emphasis should be on the contents of the facility, and you should not install such "improvements" as projections, turrets, and the like. Try to let the aviary blend into the environment and adapt itself to its surroundings. Strategically, place plants, bushes, and flowers in the manner described earlier.

The standard aviary has, as far as we are concerned, three sections:

1. a completely open section, the flight or run;
2. a covered section, the partially enclosed flight;
3. a completely enclosed shelter in the form of a sleeping coop or attached indoor aviary to serve as a night shelter.

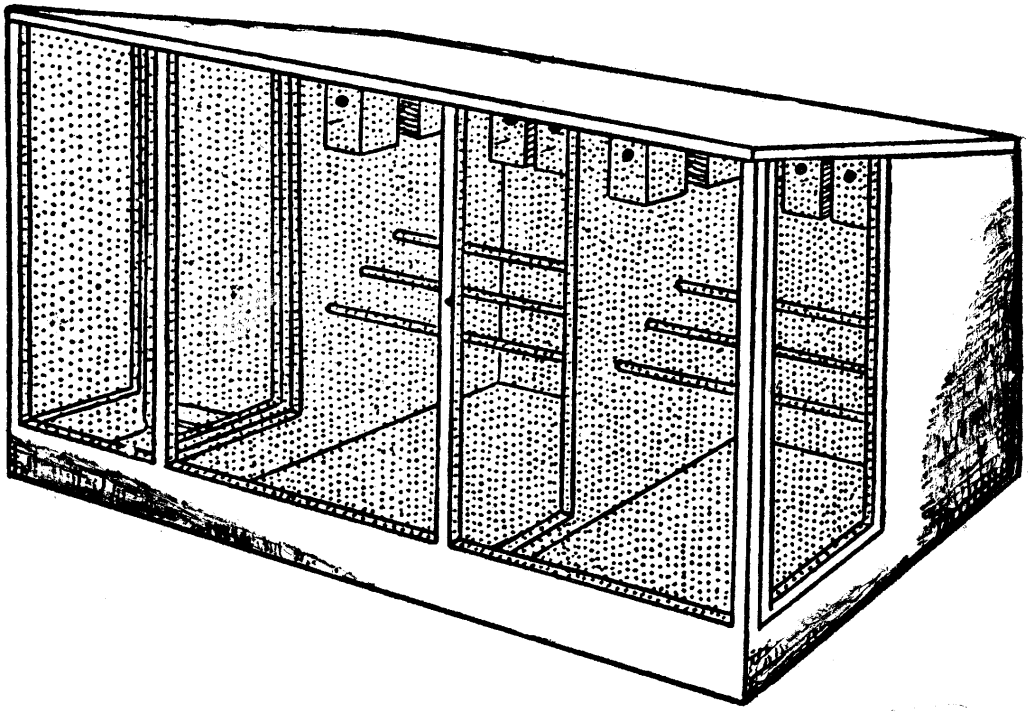
Sleeping quarters should always be furnished, if only to have a place to install heaters and lights. The covered section should have a watertight roof. The rest of the aviary is covered with wire mesh. The floor can be sand, but a floor of cement tiles covered thickly with sand also works excellently. If you use concrete or tile floors, place the plants in barrels. Bring in fresh willow branches, fruit tree branches, and such, plus various dense bushes that can be replaced when necessary. Be sure to supply sufficient perches.

The open area of the aviary should have perches even if you supply plenty of natural plantings to perch in. All artificial perches should be sanitized regularly. Those in the open run will, of course, be washed by the rain. When you water the plantings, you can still rinse the perches with a soft spray from the hose. Check their condition regularly.

The windows in the night shelter should have reinforced glass, so that the birds will notice the glass and not fly into it. Plexiglass also works well. You can stick some colored tape or plastic decals to the glass so the birds will see it.

Separate a section of the coop as an entryway with a double door, to avoid escape. When entering, close the outside door before opening the inside door that enters into the run. No free-standing aviary should be without this safety feature.

The next section of the coop should have a floor, half of which should be raised. The upper part is the real sleeping area. The lower part can be split into two compartments, one to serve as a mating area, quarantine area, cooling off area for those who breach the peace, observation area, and so forth. The other section can be a storage place for nest boxes, perches, bowls, water bottles, and such. The floor of this lower section is best when made of cement or tile. The floor of the sleeping quarters should be cement, covered with a 2–3 in. (6–8 cm) thick layer of sand mixed with small sized grit and oyster shell.



A covered aviary in two sections. Note the safety porch on the left which is an essential requirement to prevent the birds from escaping.

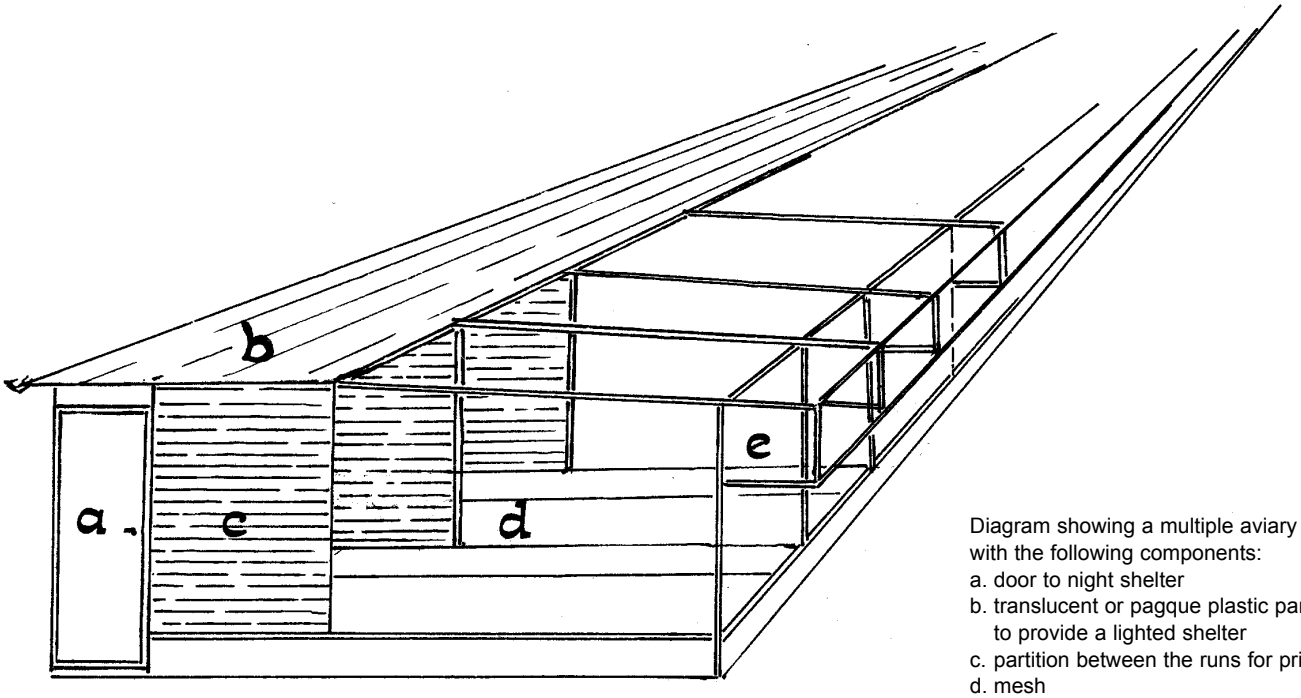
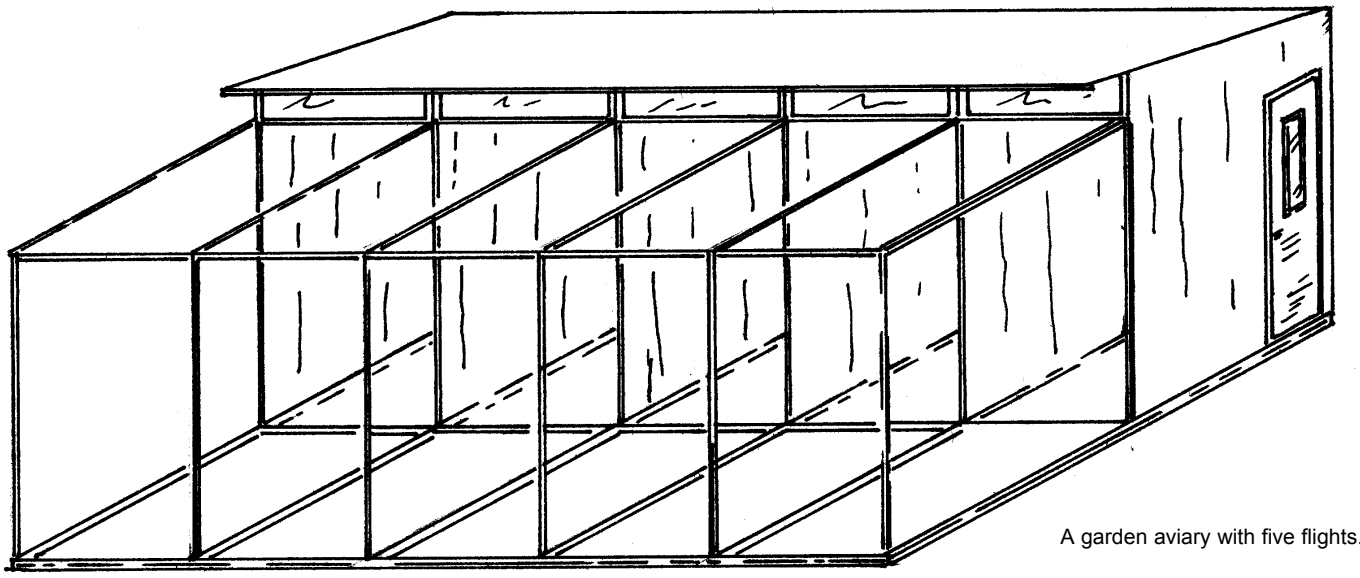


Diagram showing a multiple aviary unit with the following components:
a. door to night shelter
b. translucent or pagque plastic panels to provide a lighted shelter
c. partition between the runs for privacy
d. mesh
e. feeding area

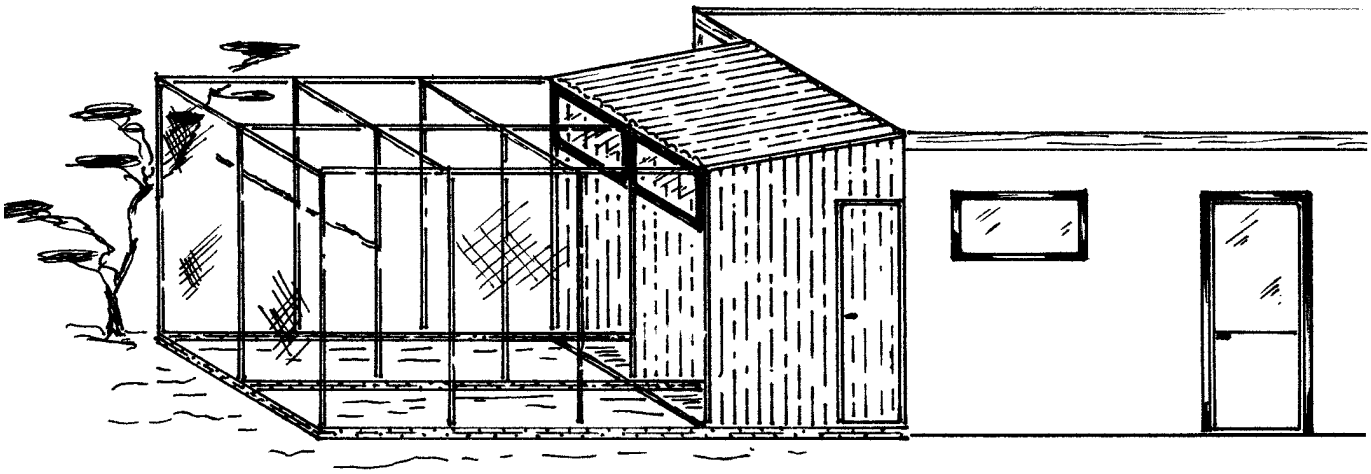


A garden aviary with five flights.

Bird House

The somewhat complex bird house is becoming common among more experienced bird fanciers and aviculturists. This consists of an indoor aviary in a separate building, with a quarantine room, an acclimatization room, and several attached outdoor aviaries. All these must be built and furnished in the same manner as a basic garden or outdoor aviary. We would recommend constructing the aviary relatively wider than longer. This allows young or weak birds to find a haven more easily if that becomes necessary, and you will be more able to make the necessary observations. A stretched-out aviary encourages the birds to make long flights, one after the other, and you will not be able to enjoy seeing much of their behavior and colorful appearance.

A bird house is best built of masonry and should have a good number of windows which can be opened. The windows should be covered with permanent screens to make sure the birds can't fly out when the windows are open, or hurt themselves by flying against the glass. The inside aviary can be arranged as described above for indoor aviaries (see page 00).



A practical design for a double finch aviary.

Catching Birds

Trying to catch an exotic finch in an enclosure is always a nerve-wracking task. If you tackle the task with a plan, it will certainly become easier after you have gained some experience.

Get a good net with a short grip. The rim should be heavily padded. Then get some lessons from an experienced aviculturist or watch how an experienced pet store manager does the job, and talk over his method with him.

Catching birds in a roomy aviary is easier than doing the job in a cage or small vitrine because you have more operating room. Remove all artificial perches and other utensils from the aviary before going to work because you don't want anything in your way. You'll have enough trouble with just the plants!

We catch our birds in stages when there are several to catch, as when they need to be brought indoors for the winter. As one person enters the aviary, a number of birds will naturally fly off into the sleeping coop. Close the door on them, and go to work on the birds that remain in the run. When you have caught them all, open the sleeping coop again, step inside, and let another group of birds fly into the run. Then, close the door once more, and catch those birds. You keep up this routine until you have caught all of your birds. We always catch them in flight, not while they are resting on a perch, or hanging against the wire netting.

Be sure that you don't have a net with too large a mesh because the birds can get terribly tangled. If that ever happens, it causes a real strain on your nerves, not to speak of the effect on the birds before they are properly disentangled.

Purchasing

When examining birds you're considering buying, never put your nose right up against the wire mesh of the cage holding a bird you're interested in. Even if the bird is at death's door, it will sit straight and hold its feathers in tight when it suddenly sees a human face several inches away.

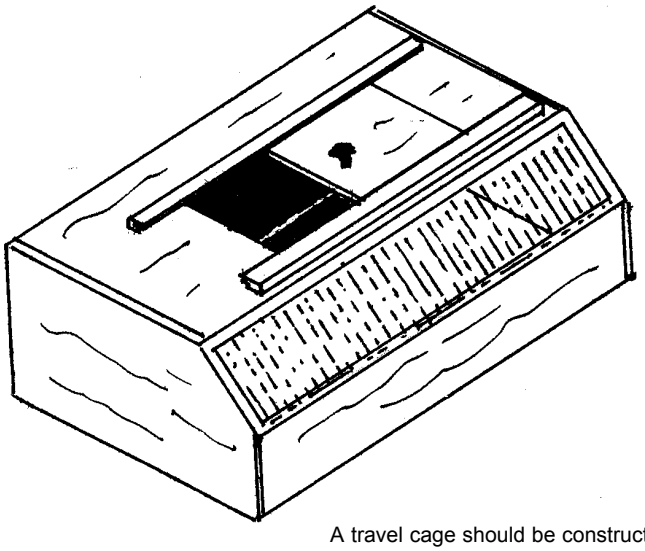
Rather, do your inspection at a reasonable distance, say 6–8 ft. (2–2½ m) from the cage. Don't be taken in by sales talk. Birds that have puffed up feathers or are easily caught by hand are at best dubious cases. Don't believe suggestions that these birds are just "tame" or "friendly."

Do take in your hand a bird that interests you. Blow aside some breast feathers and check that the breast is meaty and full. Look at the legs; they should be smooth, not scaly. The beak should look normal and the eyes should be clear and bright.

Once you decide to buy, put the bird promptly in a shipping cage. Wrap the cage in newspaper or packing-paper and head for home as quickly as possible. The shipping cage doesn't have to be fancy for a short trip. You can safely carry several finches together in a shoebox in which you have poked some ventilation holes. Put some millet spray and moist wheat bread in the bottom.

Shipping

If you need to ship birds a considerable distance by commercial carrier, find out what type of container is required by the carrier. Generally, they prefer flat, wooden shipping cages with a small strip of wire mesh in the front. Shipping cages are usually equipped with a round perch and two compartments for seed and wet wheat bread. You don't want to put water inside because it would spill in transit. Wrap the cage in thick paper and poke some holes in it for ventilation. That will let in some light but keep it dark enough to help quiet the birds. In bright cages they tend to fly around.



A travel cage should be constructed so that the birds are as safe from fright or injury as possible.

We suggest you pad the inside of the top of the cage with foam rubber to avoid injury if birds do fly up.

Mark the outside of the cage with labels indicating "Live Birds," "Handle with Care," "Don't Drop," "Don't Bump," and "This Side Up" (with an arrow). You probably can get them from the carrier for the asking; if not, make them yourself.

Be sure to check ahead of time on the shipping rules of the carrier you intend to use. Many airlines allow you to take a single pet into the cabin with you, provided you can fit the cage under your seat. You'll probably have to make reservations ahead of time and generally you'll have to pay an extra charge.

If you have several birds, or large birds, they'll have to travel in the cargo hold. Be sure to wrap the cage well in such cases because the temperature in the cargo hold can drop severely. We would line the entire inside of the shipping cage with indoor/outdoor carpeting.

Don't cage birds together if they are at all likely to harm each other. And don't overcrowd the shipping cage. Group birds of similar size together to avoid the danger of the larger birds pushing the little ones against the wall, which can have serious consequences.

If someone ships birds to you, be especially cautious when this is done in winter. Cold temperatures cause the temperature to drop inside the hollow bone structure of the bird. You have the natural tendency to put a chilled bird up close to a toasty heater, but actually, that is the most dangerous thing you could do. The air in the bones expands in response to the sudden increases in temperature, which causes the birds a lot of unnecessary pain. It could even kill them!

In making shipping arrangements, remember that exotic finches need to eat every single day, and they should always have access to seed and water.

New arrivals should not be put into the aviary right away. Keep them separate in a location where the temperature is pleasant and where they can recover from the journey in peace. Feed them generously, using food sent along by the seller. Then, gradually convert to your own menu if this happens to be different (and better!). Also, don't forget to offer drinking water, at room temperature. Keep the birds warm with an infrared lamp and keep a close eye on them.

If you buy birds close to home, transport them early in the day, so that they can use the rest of the day to become adjusted to their new environment.

When the time comes to integrate new birds into the rest of your collection, place the newcomers, cage and all, into the aviary. Keep them inside the cage half a day, from about 7:00 AM to 1:00 PM. This way the birds can get used to one another before you release the newcomers. Then watch the situation closely. It can happen that the established group will not accept the newcomers, seeing them as challengers to their territories.

Watch what happens for a few days; if the rejection continues, remove the new birds and then reintroduce them gradually after another few days have passed. Generally, new birds won't cause problems in the aviary, provided it isn't overcrowded. Be aware, of course, that you shouldn't introduce new birds during the breeding season. You are really asking for trouble if you do that!

If you have new birds in the aviary, place water and spread some seed here and there on the aviary floor because finches instinctively look for food on or near the ground. Keep this up until you are sure that the newcomers have found the food bowls. The old birds show the new ones by their actions where to find food and water, and they learn by example.

Escape

A final word of advice on escapes. We have mentioned that the aviary should have a safety porch. Still it can happen that a bird escapes. If it is one of a pair, then it shouldn't ordinarily be difficult to catch the escapee. Use a cage with a trap door and put the remaining partner in the closed part of the cage. Then put some snacks and seeds in the part with the trap door. The bird in the cage will send out contact calls and it won't be long until the escaped bird is attracted to the cage. First of all, it ordinarily won't have flown far from the aviary. When it observes its partner in the cage and if it discovers familiar food in the cage as well, it will

return to captivity quickly. Even if the escapee isn't paired, another bird of the same species can still serve as bait. If two paired birds both escape, the situation is a bit more difficult. Still, the process is the same. You put another bird of the same species in the trap cage to attract one of the escaped birds, which then in turn serves as bait for the other.

If you don't have any success with the trap cage, you have to wait until evening or night-time. Note precisely where the escaped finch goes to sleep. Then shine a flash light directly at the escaped bird. The sharp light seems to freeze the roosting bird in its resting place and you usually can lift it off the branch by hand. However, this technique does not work all the time!

Often when a finch escapes from a cage, it is enough to remove all other inhabitants temporarily from that cage and set it outside, with the door(s) open. Hunger and thirst will tend to drive the escapee back to the trusted cage after a few hours to take advantage of the feed and water it finds there.

Equipping Facilities for Exotic Finches

You should get two different types of perches, anchored ones and swinging ones. The swinging perches are for play, the anchored ones are for resting and roosting, and, during the breeding season, for mating.

Aviaries with good plantings naturally provide perches in the form of a variety of branches for sitting and sleeping. Many finch species will even build nests in the plants.

In the indoor aviary provide anchored, round perches; flattened on top for a better grip. Such perches should likewise be provided for the covered part of an outdoor or garden aviary. In other parts of the outdoor aviary, you can provide sleeping boxes in wind- and draft-free locations.

Perches should be made of hardwood dowels and, as already indicated, slightly flattened on top. Hardwood is recommended because it is less likely to harbor lice and mites. The perches should not be too thin. They must be thick enough to keep the toes of resting birds from closing around them completely, otherwise the birds can't relax well. We suggest you supply perches of varying diameters. This will help to keep toe nails trim and leg muscles limber (see also page 00).

Don't skimp on places to perch and sleep. You don't want your birds to get into fights over them. Don't install one perch over the top of another. You don't want birds perching above to foul the ones below. For the same reason, never install perches over food and water bowls and baths.

For natural perches, we recommend branches from fruit trees such as apple or pear (no cherry!), willow, hazel, elderberry and sycamore. Remember to replace them regularly, because after awhile, cut branches lose their elasticity. If you have birds that have quick growing nails, like, for example, Java rice birds *Padda oryzivora* and other munias or mannikins, we recommend reeds and similar plants that help keep their nails trim. Flagstones or other rough stones serve the same purpose, and should be included in any aviary or bird cage.

The garden aviary should be further furnished with plants (see page 00). First of all, this will give it a natural appearance. Second, it provides nesting places. Third, the plants attract all types of small creatures such as aphids, spiders, bugs, and others. This comes in handy especially at breeding time, when most birds absolutely require insects for the proper feeding of the young. Observations in the wild and examinations of bird crops have shown that the young even of seed- eating finches are fed almost exclusively on insects and spiders the first period of their lives.

Many plants you can consider for the garden aviary also have the advantage of providing berries. Suitable examples include elder, cotoneaster, and firethorn. Birds love the berries. The only disadvantage of planting live bushes in the garden aviary is that they take up a relatively large amount of space that otherwise could be used as flight space for the birds. Besides, several types of birds tend to be hard on bushes, making them look pretty rough even after a short time. Years of experimenting led us to a satisfactory solution for minimizing the drawbacks of live bushes in finch aviaries by using the well-known firethorn *Pyracantha coccinea* exclusively. Firethorn has the advantage that it can be trellised, meaning

that the branches can be led along walls and fences. It works particularly well along a closed rear wall. If the rear side is made of stone or solid wood it is easier to train the firethorn along its expanse. Plant the firethorn as close to the wall as possible, even against the wall of the night shelter. Then spread the branches against the wall and attach them. Resistant branches can be cut close to the stem. This way, you train a plant to grow tightly against the wall. If you keep attaching new growth consistently, it won't be long until the wall is completely covered. After awhile, this living wall can become a foot (30 cm) thick. You can place sleeping and breeding boxes between the branches. Training branches takes extra work and patience, but it is worth the trouble!

In May and June, the firethorn will reward you with countless white blossoms that resemble those of the perhaps better known hawthorn. These fragrant blossoms attract a lot of flies and other bugs that are hunted down by many birds. In the summer, the berries start to form, and by fall they will ripen and your back aviary wall will be festooned in glowing red, orange, or yellow, depending on the variety you planted. The ripe berries contain many small pits, which provide a welcome addition to the diet of the birds as soon as they become used to the taste.

Canaries and parakeets (budgerigars) need to be kept away from the firethorn because they gnaw too much. We don't recommend that you keep parakeets in the same aviary with estrildid finches, anyway! If you want to protect the firethorn, build a second rear wall about 2 in. (5 cm) in front of your "firethorn wall." Make this second wall of so-called parakeet mesh, which is one mesh size bigger than the half-inch mesh. The majority of the tropical finches are small enough to get through the mesh and enjoy the firethorn, while the somewhat larger canaries and such are limited to gnawing on whatever branches project from the living wall and grow through the wiremesh. But again, it is inadvisable to house parakeets and canaries in an aviary with finches.

In case you're concerned about the thorns of the firethorn, they pose no problem for small finches. (Thorn birds exist only in legends). We have never come across an instance where finches hurt themselves on the thorns, even though they often like to take a rapid dive into a firethorn branch. Humans, however, should take precautions. When you train the bushes, always wear gardening gloves because you could get scratched painfully by the thorns.

If you want to do something special, you could try decorating the open run of the garden aviary with tall-growing grasses or reeds. Reeds, for example, combine well with a small pond. Ponds are fine, provided you take precautions against drowning, particularly of fledglings. Make sure that the pond has extremely shallow spots that are at the most an inch (2 cm) deep. You can create these shallows with flagstones, other flat stones, or gravel. Also, build the sides with a long slope, so that a bird that falls in can get out again easily. Finally, be sure that you install a drain at the deepest point of the pond. You need it in order to remove and freshen the water and clean the pond. For this reason, construct the pond on the highest spot in the aviary, if possible, and attach a garden hose to the drain, so that you can lead the waste water away from the aviary.

Feeding and watering utensils come in many shapes, sizes, and colors. The best ones are made of white porcelain or hard plastic, are oval, and measure about 4 in. (10 cm) in diameter. You can consider automatic feeders, provided they really work well. Automatic waterers or drinking vessels are good too, and are really better than bowls because birds can't foul them. Large, glazed bowls or plastic containers are useful for sprouting seeds, universal food (rearing or egg food), and other supplements that are provided in small quantities to prevent spoilage. Separate vessels for grit and oyster shell must also be provided. Use flat bowls for bird baths. If you don't have them, you can adapt deeper bowls by putting flat stones or gravel in them. You want to prevent drowning, particularly of young birds!

In cages, insert all utensils in the sides and in door openings, or specially made openings. The well-known plastic food dispenser that hangs against the door is a good example.

In aviaries, put utensils close to a door, near, but not too near, the nest, to minimize the chance of escape and of attack by cats. Again, this is for

Some Aviary Plants Worthy of Serious Consideration

American arborvitae
Thuja occidentalis
Excellent hedge for community aviary with small birds. Plant only young ones.

Austrian pine *Pinus nigra*
Many finches like to build their nests in pines, especially if you help them get started with a base of woven rope, or the like, placed between the branches or in a fork. Regular trimming keeps the plant low.

Bamboo *Sinarundinaria* spp.
Quite decorative; mannikins and other small finches whose nails tend to grow fast like to frequent bamboo.

Beech *Fagus sylvatica*
When fully grown, the tree can provide needed shade in large aviaries. It is generally best not to grow a beech in an inclosed aviary because it grows too large. For an inclosed aviary, we would like to recommend a European hornbeam *Carpinus betulus*.

Boxwood *Buxus sempervirens*
Does especially well as a strip of hedge about 3 ft. (1 m) in length. Many finches, particularly the various Australian grassfinches, like to build nests in boxwood hedges.

Broom *Cytisus scoparius*
Cut the bushes, tie them together loosely, and attach them to the roof of the aviary. Hollow the sheaf out a little, and the birds will love to build nests in it. You can plant wild and cultivated broom in the aviary, and it will do quite well if it gets full sun. Broom requires a sandy, acid soil.

Buddleia *Buddleia davidii*
Use only young plants; birds like to nest in them or use them for an overnight shelter. To keep the shrub from growing too large, cut it back each year to a height of about 10 in. (25 cm). The shrub attracts countless insects, including many that the birds relish.

Climbing rose *Rosa multiflora*
An excellent aviary plant. It makes a good hedge. Actually, you can use all types of cultivated roses inside and around the aviary. They give extra color and life to your collection. In addition, many varieties are quite susceptible to aphids, which provide a special feast for all finch species.

Cotoneaster *Cotoneaster* spp.
We recommend the use of these richly branched shrubs. They demand little and don't take up much of the garden. There are a number of varieties, evergreens as well as deciduous. There are also dwarf and tall varieties. The plants produce pitted red fruits that are a treat to fruit-eating birds, particularly the thrushes; larger finch species, however, also like them..

Douglas fir *Pseudotsuga taxifolia*
Suitable for an open aviary. Select young plants.

English hawthorn
Crataegus monogyna
The bullet-shaped berries are popular with the birds. The shrub is easy to grow; a sunny location is preferable.

English holly *Ilex aquifolium*
This evergreen is a bush that can grow into a tree up to 25 ft. (7 m) tall. It is extremely well suited to all types of outside aviaries. You need both male and female bushes to produce the scarlet-red berries that are so loved by the birds. Some aviculturists, however, claim that the berries are poisonous.

European elderberry
Sambucus nigra
Berries are black and are readily eaten by all types of birds (and humans). Another important characteristic is that the plant attracts aphids. If birds have access to the shrubs, they will scour them for aphids and small spiders. Otherwise, you can provide your birds many hours of pure joy by cutting down several aphid-infested branches and putting them in the aviary or cage! This is particularly good to do at breeding time. Actually, we consider it is essential for tropical and subtropical finches!

European hornbeam
Carpinus betulus
This is truly an ideal plant for the aviary, especially because birds love to nest in it. In the fall, the leaves turn an attractive brownish-yellow. They tend to stay on the shrub for a relatively long time, giving birds some protection against wind and rain. When there is a heavy frost, the leaves drop off rapidly.

European larch *Larix decidua*
This tree is suited to aviaries, including those with poor soil, and so is widely used.

False spirea *Sorbaria sorbifolia*
Use only dwarf varieties for the aviaries, as they can grow up to 10 ft. (3 m). The related *Sorbaria aucuparia* is also frequently grown in aviaries; its' berries are a special attraction and avidly eaten by birds, particularly thrushes, larger finches and related species.

Firethorn *Pyracantha coccinea*
If you have a cement wall on your aviary, pyracantha is one of the plants that will grow against it quite well. The plant has magnificent flowers that are followed by red berries, the latter being a special taste treat for your birds. It can form a dense growth that makes an excellent nesting place for large finches, thrushes and related species, estrildid finches and many more. Various of our tropical doves like to nest in the plant! For more details, turn to page 00.

Golden laburnum *Laburnum* spp.
The main reason for mentioning the golden laburnum in this list is to warn you to avoid it at all cost, even though it is very popular in ordinary gardens and parks. Both the leaves and the pods are poisonous!

Hydrangea *Hydrangea* spp.
A hydrangea can add considerable color to your plantings with its canopy of pink, blue, or white flowers. The plant is quite prolific and can be grown in sandy soil, provided it is well-tilled with peat moss. It should not, however, be planted in direct sunlight.

Ivy *Hedera helix*
This climbing evergreen is attractive and quite useful. Ivy has round, blue-black berries, and many birds eat them avidly. Tropical finches will nest in ivy, especially if some rope is wound between the branches to provide a nesting base.

Japanese spirea *Spiraea japonica*
This shrub is considered an ideal plant for the aviary because it has a thickly branched type of growth. Many birds like to construct their nests in this shrub.

Jasmine *Philadelphus* spp.
This is a widely appreciated plant, not only for its white blossoms, which can be single or double, but also for its strong, yet very appealing fragrance. Birds like to flit in and out of the branches.

Juniper *Juniperus communis*
This evergreen shrub can grow up to 33 ft. (10 m) and more, displaying fanciful forms. Birds often build nests in it, or use it simply to spend the night.

Lilac *Syringa* spp.
The lilac can be made to grow as a bush or tree. It tends to grow tall quickly, so it may be better to place it outside the aviary rather than in it, for example, next to the night shelter. It attracts various insects which will be welcomed by many finches!

Oriental (or Chinese) cedar *Thuja orientalis*
Birds enjoy nesting in this bush, particularly if several (at least three) are planted close together, forming a large, interlocked hedge. Breeding birds feel safe and secluded there.

Oregon holly grape *Mahonia aquifolium*
Birds love the round, dark blue berries. The shrub can be grown in almost any location and soil type, but does require a large amount of water on a regular basis.

Privet *Ligustrum vulgare*
The common privet originated in southern Europe and Asia Minor, and is generally deciduous. Its leaves are sturdy, oblong, lancet-shaped, and about 3 in. (8 cm) long. Many large parakeet species, especially cockatiels, but also canaries and large finches, like to eat the leaves and/or buds, which are a good supplement to their regular diet. Tropical birds, and finches in particular, consider this plant an ideal location for breeding, and canaries and large finches like to spend time in privets on sunny days. The shrub blooms in April or May, showing small, whitish flowers that grow in rather tight clusters. The wood is hard.

The privet is one of the most popular aviary plants in Europe. In a well-limed soil, the plant does exceptionally well. The pied privet also performs admirably; it can be used as a hedge or as a solitary plant.

Snowberry *Symphoricarpus albus*
This native shrub has round, white berries that stay on the bush, even in winter. Blackbirds, pheasants and large quail like to eat the berries. Many tropical birds, finches included, like to nest in these shrubs.

Viburnum *Viburnum* spp.
Shrubs of this family, which are rather large, have been used in aviaries, although we don't recommend any of them for that purpose. We particularly counsel against using the well-known *V. opulus*, a deciduous shrub that can grow up to 10 ft. (3 m) tall. Besides being too tall, it is poisonous to birds. Many of them (even in the wild!) stay away from this bush instinctively, but we wouldn't chance it under any circumstances. The berries are a shiny, transparent red and hang down in bunches. The leaves and bark are poisonous as well.

You can consider Viburnum species for outside the aviary because they attract all kinds of insects which can be expected to pass into the aviary to be caught and eaten by its inhabitants. The shrub requires a somewhat moist soil and a shady location.

Weeping fig *Ficus benjamina*
A beautiful tree for a large aviary; birds like to make their nests in it or spend the night.

Willow *Salix* spp.
There are various species of willow, and any of them can serve as an aviary plant. They can be bushes or trees. If you keep lovebirds, cockatiels, conures, parrotlets, and other parrots and parakeets, you should not pass up the opportunity to place a willow in the aviary. Even a dead stump will do. Hookbills just love to hack and gnaw at the wood, and they like the bark. Many species, such as lovebirds *Agapornis* spp. use willow bark for constructing their nests. Willows thrive in moist, loose soil, and they need to be trimmed. Give the smaller twigs to your birds; they will love everything about them! Many finches like to nest in willow bushes. If you'd like to know more about this plant, please consult our book *The Parrotlet Handbook*, page 61 (Barron's, 1999.).

your convenience, to check on the food supply and to add to it without causing unnecessary disturbance. Do check on the utensils daily. Fill food bowls daily and put fresh, clean water in dishes and bird baths several times daily.

Some exotic finches don't like to stay on the ground if they don't have to, except to drink. Therefore, build a platform about 30 in. (75 cm) off the ground to put feeding dishes on. Bottle-shaped automatic waterers (the so-called water bottles) can be hung up; they will be well used. In larger aviaries, build several feeding platforms to minimize fighting at the food dishes. The platform should have a 4 in. (10 cm) rim to keep the dishes from sliding off. Drill some holes, about ½ in. (1 cm) in diameter, in the platform so that rainwater will present no problems, although it is obviously advisable to place at least one platform in the covered section of the garden aviary. The one in the open run should have some kind of roof as protection.

Place egg food or rearing food, grit, limestone, and other supplements in separate vessels. Cuttle bone is provided and hung against the outside wall of the sleeping shelter. During the breeding season, hang small baskets with nest-building material in the same place. Don't just put supplies on the ground; this gives the aviary an unattractive appearance. You can also buy special racks for providing green food. Branches (with aphids!) and bunches of weeds (for seeds) can be put in deep flower pots filled with wet sand.

Provide good lighting, particularly in the sleeping coop or night shelter. Finches are just plain lovers of light. In fall and winter, when it gets dark early, provide extra light so that birds can continue to eat and drink. Exotic finches should have at least 12–13 hours of light each day. Also, install a small, 4–7 watt night light in the night shelter, so that birds that fly up when they are startled can find their sleeping spot again. When you turn off the lights, dim them gradually.

A heater that can provide the required temperature safely is very important! In the detailed section on the various exotic finches (pages 00 to 00), we will indicate precise temperature requirements. Most species cannot tolerate temperatures below 50ºF (10ºC). Keep alert to the weather forecast, a suggestion we shared earlier.

Make It True To Nature

If you're planning to set up an aviary, make it as true to nature as possible by adding a few good bushes. Finches use plants to play in, as shelter from the rain, to shade themselves from strong sunlight, or just to perch in. In addition, natural perches play an important role at mating time, and bushes also provide good nesting places.

Obviously, you should select sturdy bushes that will tolerate a certain amount of gnawing by the birds. Actually, you can considerably reduce the tendency of birds to destroy vegetation by regularly (preferably every day!) furnishing fresh green food (see page 00).

We do not mean to imply that birds will leave bushes entirely untouched, even if you have extensive planting. That would be far from the truth. Many of the larger finch species, for example, have a lust for the buds of the common privet, and most birds like the berries, leaves, or buds of bird cherry and elder. Still, you can minimize the damage to growing plants by furnishing fresh greens daily.

Proper plantings take good planning. For example, don't plant rhododendrons in aviaries housing parrots and parakeets. These inveterate gnawers could be poisoned by the leaves of this plant. For other birds, hence all finches, rhododendrons are no problem. They are excellent plants for an aviary containing estrildid finches.

There should also be a patch of grass in every aviary. It's decorative, but it's also a necessity for species like quail, which weave a tunnel through long grass in which they nest. Among the finches, all Australian grassfinches love to search for insects in the grass, while many African finches just like to sit in it, taking a sun bath. Larger finches also value the grass patch. You will see them after a rain, rolling enthusiastically through the wet grass, all the while screeching exuberantly.

Consider planting rushes and corn plants in one of the corners of the aviary. Mannikins and other *Lonchura* species, among many others, really appreciate these plants, and they help control the nail growth of these birds. Also, plant some conifers and trees of the *Prunus* species, selecting varieties that are sturdy and don't grow too high. They are especially appropriate for a garden

aviary of small exotics!

It's a good idea to get advice from a gardener or local nursery before placing plants in the aviary. Not every type of soil is suitable for the plants (see box) we are recommending.

It's equally important to maintain the plantings, or you run the risk that the place will become overgrown. Trim plants regularly and consult gardening centers and books for proper pruning and maintenance techniques.

Group Housing

Certain bird species can be kept together, others cannot. In the detailed descriptions that follow these introductory chapters, we will indicate whether the finches under discussion are prone to fight, and if so, when in particular. Often you can safely house pairs of different species together, but you may have war when you house finches of the same species or very closely related species together, especially if you put only two pairs together. However, if you put three or more pairs together, many species, such as the zebra finch and the Java sparrow will live together in harmony. Guard carefully, on the other hand, against placing an extra male into the collection. And don't bring new birds into the community in midseason, because this will upset the territories the various pairs have established, with resulting ill effects. (Yes, aviary birds do establish territories!)

In this connection, watch your birds carefully. If you notice any fights of consequence or wild chases, you will know that there are bad actors in the group and you should remove the culprits immediately.

As a general rule, you can assume that birds originating from the same country are likely to get along. The biggest bully among exotic finches is, without doubt, the crimson finch *Neochmia phaeton* from northern Australia. The male is aggressive not only during the breeding season, but at other times as well. He even attacks his own mate frequently outside the breeding period. To others of his species, he is everything but friendly or gentle. In Australia, where the crimson finch takes up a large habitat, he doesn't hesitate to attack birds five or more times his size, and he knows how to scare the devil out of them if they invade his territory. Also watch out for the following trouble makers: all species of mannikins of the genus *Lonchura*, diamond fire-tailed finch, cut-throat finch *Amadina fasciata*, red-headed finch *A. erythrocephalus*, melba finch *Pytilia melba*, orange- winged pytilia *P. afra*, masked finch *Poephila personata*, black-breasted fire finch *Lagonosticta rufopicta*, Java sparrow, and zebra finch, among others.

Chores for the Aviculturist

Daily
Provide fresh and generous supplies of fresh food and drinking water, bath water, and, during the breeding season, a variety of nesting material and good lighting and, if necessary, heating. All utensils for eating, drinking and bathing must be cleaned and disinfected. Also, check if there are any sick birds or provokers of unrest.

Weekly
Clean cages and aviaries, except during the breeding season. During this period wait and observe the right time to clean up, with consideration for birds that are incubating and youngsters about to leave the nest. The task involves replacing sand, cleaning and sanding perches, using rough sand paper, and replacing loose or broken perches. Live plants must be sprayed, trimmed, or replaced when necessary.

Monthly
Do a close and careful check on the birds and carefully check their quarters for vermin. Check toe nails and clip them when necessary. Rake the sand and replace it as necessary when the flooring is made of concrete or tile. Grass areas must be resodded as needed.

Semiannually
Disinfect the entire facility, timed before and after the breeding season. Clean and disinfect all sleeping- and nesting-boxes. When possible, replace components that are broken and burn them. Disinfect the aviary and check for breaches in the mesh and wooden partitions and posts. Consider replacing perches and plantings.

In general
It is best to set definite days on the calendar for all tasks to be done; that way, you won't forget something important. Feed birds at the same time each day so they can get used to a routine. The best feeding time is about 7:00 or 8:00 AM. Keep up the schedule even when you're not there by telling the substitute caretaker when to do what. Be particular about the feeding schedule, because birds shouldn't have to wait for their food just because you're not there. It can happen when birds are feeding their young that they stop doing so if the caretaker is several hours late with rearing or egg food, or other special feed you're furnishing for feeding the youngsters. Also, during the breeding season, things have to be managed as quietly as possible. Bring in food and water quickly but gently; the same goes for other chores on your list.