

Feeding Insectivorous Birds

by Arthur Douglas

Dallas, Texas

A paper read by Arthur Douglas at the 5th Annual Convention of the A.F.A. held in Hollywood, Florida, August 23-26, 1979.

Insectivorous birds have always been considered to be relatively difficult birds to feed well in captivity. Since many of them are excellent singers, most of them become very tame and attached to their owners, and most of them show decided personality, many bird fanciers have made an attempt at keeping them.

I first kept warblers and other small insectivorous birds in the late 1930s. I found that about half a dozen was as many as I could care for properly by the methods considered ideal at that time.

A few acquaintances in the neighborhood kept softbilled birds and we used to exchange views and experiences. We all fed our birds in much the same way. The local bird shop supplied an insectile mixture considered to be of superior quality. It was certainly expensive. We raised mealworms. We could buy blowfly maggots in convenient quantities at a fishing tackle shop in town, and we used to devote an unconscionable amount of our leisure time to collecting ants' eggs, wasp grubs and other live food in the surrounding countryside. Those of us who kept thrushes, starlings and similar large softbills knew how to economize by mixing the insectile food with a fine grade of puppy meal. Most of our birds thrived very well on this treatment. Others did well for a time but did not last very long.

In those days I had no idea that insectivorous birds had been kept with comparable success but by entirely different methods at least from the time of the

Roman Empire, as we know from the Roman writers Varro and Pliny. Varro himself had a splendid aviary which housed nightingales among other songbirds. Pliny describes a white nightingale bought at a fabulous price and presented to Agrippina, mother of the Emperor Nero. He also mentions nightingales taught to utter phrases in Greek and Latin and presented as rare gifts to the Emperor's children. Unfortunately, neither Varro nor Pliny tells us how the nightingales were fed.

The earliest work I have seen gives specific instructions for feeding insectivorous birds is Cesare Mancini's *Ammaestramenti*... The first edition (which I have not seen) is dated 1575. My copy is dated 1645.

Mancini seems to have kept nightingales, wrens, rock thrushes, songthrushes, European blackbirds, blackcaps and larks — all species noted for their excellence as song birds. Apparently, he fed them on raw beefheart, hard-boiled eggs, and a dry crumb that was destined to degenerate over the centuries into a food called German paste and to be revived and improved out of recognition in our century as gamebird starter, turkey starter or mynah bird food. Mancini gives no evidence of knowing how to raise mealworms, but recommends the worms found in pigeon lofts, which may have been mealworms.

Crude to the point of brutality as these diets were, they nevertheless retained their popularity for three hundred years and had articulate advocates recommending

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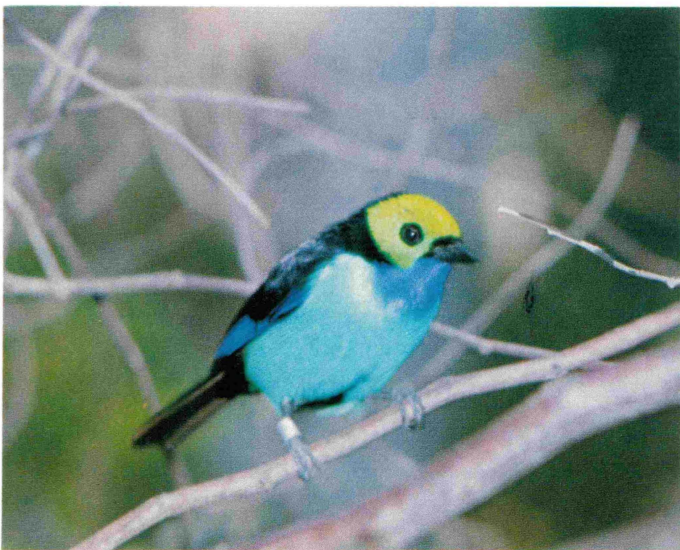
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Photo by Dale Thompson



Paradise tanager

Shown here are a few insectivorous birds of great beauty, variety of shape and size.



Photo by John Krell

Pekin robin

Photo by Dale Thompson



Blue crowned mot mot

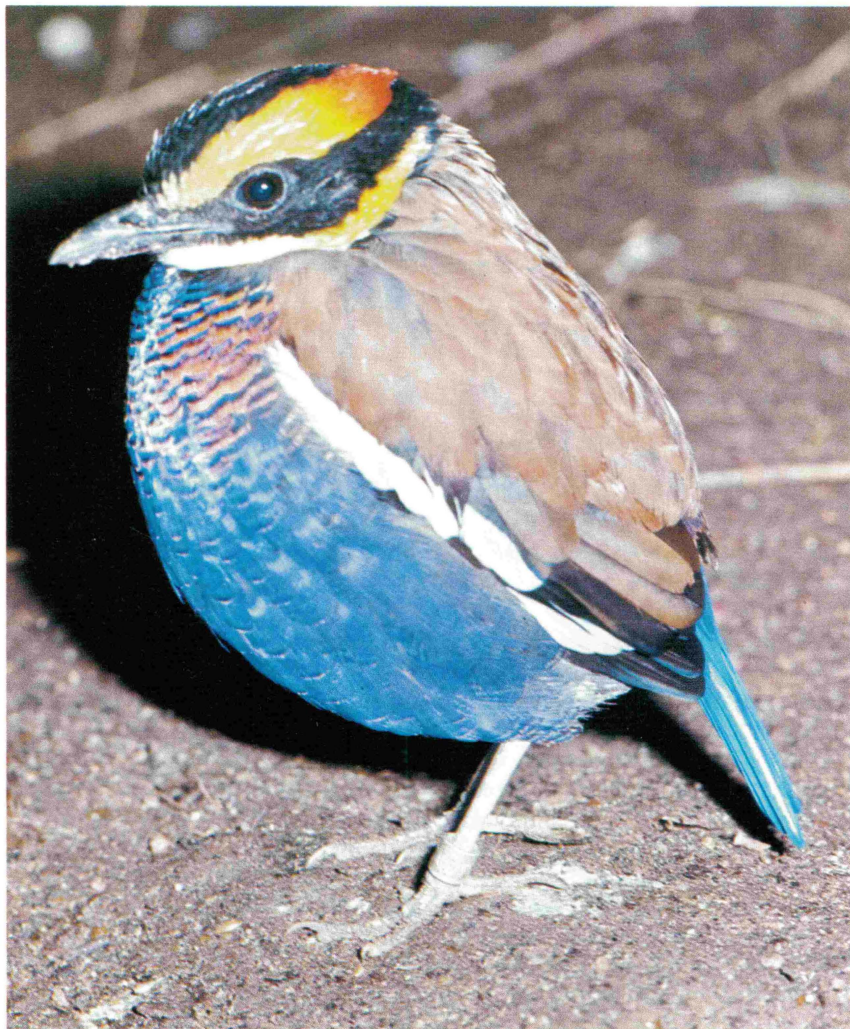


Photo by Dale Thompson

Giant pitta

their use. For example, we have the Rev. William Floyd Cornish saying in a letter dated 1826 that he had been successful in keeping whitethroats and other softbilled birds on "beef, mutton, veal or lamb, not overdressed, cut very small and mixed with hard eggs, yellow as well as white, and a little chopped hemp seed, on which they have thriven very well." Also, rather later, in 1832, a Mr. Cox exhibited a nightingale to members of the London Zoological Society; he had kept it for four years; it was in full song. In the *Arcana of Science*, Mr. Cox expressed his opinion that failure with nightingales and "other Sylviadae" was often due to over-elaborate feeding. He used finely ground meat and hard-boiled egg and considered insects by no means necessary.

I have mentioned crushed hemp seed as an item of diet for insectivorous birds. It seems an odd choice, but nevertheless has long been a popular one. An anonymous writer condemned its use for nightingales and starlings in 1697. It must have been a usual item in his day.

Robert Sweet's charming book on British warblers, which was issued in parts from 1823 to 1832, warmly advocated the use of hemp seed; it recommends a staple diet of scalded and crushed hemp seed and bread beaten to a moist paste. Robert Sweet considers insects, fresh or dried, to be essential. Like most other old writers, he advocates the meat and egg, but the egg only as an occasional change. He emphasizes the point that grit also is needed by these birds, and that warblers will not long remain in health without it. It is obvious from his remarks that it was the lime content of the grit that his birds needed most.

If I had known anything about these old writers back in the 1930s, I should certainly have written off their recipes for bird food as barbaric archaisms. I was all for Natural Feeding.

Of course, the limitations to natural feeding were already familiar to me at that time. I had learned as a small boy that a single nestling can consume insects far faster than an average person can collect them by hand.

We have all come a long way since the 1930s. We think of food in terms of calories, proteins, vitamins, minerals, and so on to a degree that would have astounded earlier generations. The shortcomings of the earlier diets are plain to see. We no longer imagine that live insects contain some mysterious vital factor that is essential to keep insectivorous birds in health. If a food is nutritionally balanced the birds should thrive on it, no matter what it is made from. That is the theory. What

about the practice?

Well, in the first place, there is no guarantee that because a food put before birds contains every known nutrient in ideal proportions that the birds will touch it, much less eat it. The food must be attractive and palatable, and some birds are very choosy. It is not enough to have the nutrients right. They must be contained in acceptable ingredients.

Not only that. The ingredients must be wholesome and free from injurious substances. For most of us, they must be easily available at a reasonable cost, must be fairly easy to prepare, must keep fresh in the aviaries for the length of time we require them to be there and must contain little or no waste. It seems like a tall order.

Strange as it may seem, many insect-eating birds are as easy to feed well as seed eaters. The commercial foods designed for gamebird chicks, young turkeys, even puppy chow and trout food, suits them very well. They accept this kind of food readily and it is rich in nutrients. I saw a bluejay that had been raised and kept on gamebird starter, moistened with plain water when it was being handfed and given dry afterwards. A little hamburger was added to its nestling food "to make the food stick together better." The bird was in impeccable condition. I myself have kept Pekin robins and blue-winged sivas for long periods of time on an exclusive diet of dry gamebird starter. I don't think this treatment was kind, but it prove a point. The birds never seemed to tire of the food and they kept in excellent feather — far better in fact than many I see being kept on more conventional diets. No doubt many kinds of birds can be kept on these convenient and economical foods, especially if the basic diet is supplemented with fresh fruit and insects.

Equally undoubted is the fact that many species of insectivorous birds would die of starvation rather than eat such foods. These are the birds that formerly had to be provided with expensive insectile foods. Even these were not always well eaten. The birds used to pick out all the ant's eggs and throw out the rest.

Bird keepers have long known that certain foods besides natural insects are particularly attractive and acceptable to insectivorous birds. Among these foods are cheese, yolk of hard-boiled eggs, and sponge cake or pound cake.

No matter what the ingredients may be, a food is not likely to be acceptable to fastidious birds if it is dry and powdery nor if it is very wet and sticky. Pasty food is objectionable in any case because it sours quickly in hot weather, and because it is likely to form sores by adhering to the cor-

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ners of the birds' mouths. The best texture has long been believed to be "crumbly-moist", a belief which experience has led me to share. The old insectile mixtures which usually contained ants' eggs, so-called dried flies, ground silkworms pupae, desiccated egg yolk, meat meal and biscuit meal were usually moistened with hot water or milk, or with grated carrot, chopped green food or with mashed potato. Some fanciers believed (wrongly, I think) that this made the food easier to digest. It undoubtedly made the food more acceptable. Honey was often used in insectile mixtures. This also may have increased palatability.

Old-time fanciers were very much concerned about whether certain foods were digestible or not. Their concern was groundless. All foods contain an indigestible portion. The chitinous covering of insects, for example, is completely indigestible. Insectivorous birds pass out the finer roughage as feces, and regurgitate the coarser portion as pellets.

The principal nutrient in all cereal meals is a carbohydrate starch. This is true also for bread, biscuit, boiled rice, and mashed potato. It is a wholesome source of energy for creatures that can utilize it — and most can. Does this include insectivorous birds? Apparently it does.

Most fanciers in the past have believed that thorough cooking improved the nourishing quality of farinaceous foods. It seems they were wrong. They were right in believing that cooking improves beans, peas, and potatoes.

Bread and cereal meals contain a significant amount of protein, which is an alternative source of energy. The presence of a pasty white substance in the droppings is an indication that protein is being used as a source of energy. The white part of the droppings is the bird's urine. The whiteness is due to uric acid.

Cereals contain relatively little protein as compared with dried milk, meat meal, fish meal, dried egg, hard cheese and similar animal products. It is claimed that too high a proportion of these concentrated protein foods in a bird's diet can cause gout by an excessive production of uric acid. I have no personal experience of that. I do know from my own observations that insectivorous birds thrive best on a diet generous in protein of good quality.

As everyone knows these days, protein is needed for growth and body maintenance. The best proteins for this purpose are those in the animal product part of the ration, but excellent growth proteins are supplied by a combination of cereal proteins and soya meal proteins. Many kinds of peas, beans and oil seed meals have

comparable merits to soya meal.

So far as I have been able to make out, insectivorous birds do not have a high fat requirement in their diet, though their natural food is often very fatty. There seems to be no particular point in adding oil to their diet, except perhaps as a vehicle for fat-soluble vitamins where these are not provided by other ingredients.

There seem to be two attitudes to vitamins among bird fanciers. One group believes that all birds should have a regular supply of vitamins from a bottle; the other is satisfied to believe that a well-balanced diet containing ingredients known to be rich in vitamins needs no synthetic additives. I am one of the latter group.

Cooked liver, brewers yeast and dried milk are not only rich in essential vitamins, but also supply good protein. I used to include alfalfa meal for its vitamin A. I doubt that it added anything of value.

Some fanciers of long experience and good insight add kelp meal to their softbill food. This is for its trace mineral content. I have never used it personally. Rather, I have relied upon the liver and other ingredients of the food to supply trace minerals. I supply drinking water from a galvanized can, which supplies any possible need for zinc. I wash out the earthenware water dishes with potassium permanganate solution occasionally, and leave a trace of the solution in the water afterwards. Both of these practices are probably unnecessary fancy work. Powdered eggshell and iodized salt are the only substance added specifically for their mineral content. If I doubted their adequacy, I should add Vionate or a similar mineral vitamin preparation in recommended amounts.

The food I am now using for all my birds is made from cooked beef heart or other lean meat and cooked liver ground pretty small, grated carrot, mashed potato, and diced pound cake. To this is added a dry mix containing yellow corn meal, ground Quaker oats, soya flour, dried milk, dry brewer's yeast, powdered eggshell or cuttlebone and iodized salt. It is a far cry from the insectile mixtures I used years ago. It is far better. Details are available for anyone who would like them. I recommend it with confidence.

I have kept a good many small insectivorous birds for a year or more at a time on the food just described. Some had a token amount of live food — not enough to add significantly to their diet. Among the species kept were swallows, kinglets, European flycatchers, European redstarts, wagtails, pipits and vireos.

A food of this kind is highly concentrated — excessively so for those species of insectivorous birds that normally augment

their diet with berries and other vegetable matter. For this reason, I always provide along side the soft food a simple salad made from chopped lettuce or other tender green food and an equal volume of finely chopped apple. A sprinkling of currants or chopped raisins is added. This simple mixture seems to be just as acceptable and quite as adequate as the much more expensive and complicated fruit mixtures I used in former times.

Some insectivorous birds normally feed also on nectar when they are wild. A solution of plain white cane sugar and Geval or Superhydramin has been just as good in my experience as the nectar pastes I used to buy from England or the complicated concoctions I used before that.

It would be nice to think that a well-designed artificial food for insectivorous birds would free their owner completely from dependence upon expensive and troublesome live insects. Unfortunately, it can never do that. All it can do is ease the burden.

Newly acquired insectivorous birds have often been used to living almost entirely on live food. They may not even recognize an artificial food as food at all. To use an old fancier's phrase, they have to be "meated off", that is, fed on live food until they have learned to eat something else.

Breeding insectivorous birds may live very well on an artificial diet, but typically will refuse to feed their young on anything except live insects, in the early stages at any rate.

Shy and suspicious birds are not very attractive in a collection. The confidence of insectivorous birds is usually gained quickly enough if the birds are regularly offered something to their liking whenever their owner approaches. A mealworm or similar tidbit is a suitable offering. This is the token amount of live food mentioned earlier.

To return for a moment to the breeding birds, there are three strategies that can be employed to raise young. All three strategies and combinations of them have been used successfully by various individuals.

One strategy is to allow the adult birds to fly free through a small but clearly marked exit from the aviary as soon as the young hatch. This method was used for many years by Hance Roy Ivor, the Canadian aviculturist. He bred many species of native softbilled birds to several generations by this method. The method presupposes a surrounding area of country in which the parent birds can find suitable insect prey. George Wolff, a Dallas bird fancier, was partially successful in raising

rufous-necked weavers by this method. These weavers are, of course, insectivorous during the breeding season. George lived in an ordinary suburban area, but the hen weaver found an abundance of caterpillars and the young thrived until she was killed by accident.

Another strategy is to hand-raise the young — not an easy undertaking. Curiously enough, the young will often accept and thrive on the artificial food their parents refused to feed to them.

The last strategy is to provide a regular and suitable supply of fresh insects. Many aviculturists have done it without regard to trouble or expense. Modern technology may have provided a way out.

Perhaps the ideal is a combination of two or all of these methods.

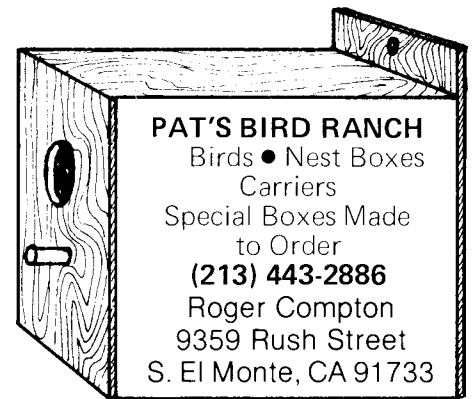
If our birds are to be provided with a good supply of live food the honorable ways of obtaining it are buying, capturing or culturing. Let us consider these in turn.

If we keep a large collection, buying may be the only practical solution. We must be prepared to face a considerable expense. Mealworms, crickets, and in some places, blowfly maggots are usually available commercially in any reasonable quantity. Their cost is so high in proportion to their food value that it would seem to be a gross extravagance to use them in needlessly. However, when insect-eating birds are raising their young, live food must be provided generously.


Capturing insects is the next alternative.

Unfortunately, the majority of insects that are most visible and easiest to capture by hand are quite useless for our purpose. Virtually all conspicuously marked, white, and brightly colored insects that are commonly seen on flowers and leaves are ill-tasting or worse. This is especially true of slow-moving insects that sit around in strikingly patterned groups. They can almost be guaranteed to sting, stink or bite. Many are outright poisonous. Of course, in nature, we have exceptions to every rule. Some species of birds will utilize insects that would be fatal to most others — cuckoos and bee-eaters are obvious examples.

Adult insectivorous birds can be fairly well relied upon to avoid unsuitable insects. Not so hand-fed nestlings, some of which will swallow anything at all that is put into their mouths. Even relatively harmless insects such as mealworms and maggots can speedily kill small nestlings if they are put alive and wiggling into the birds' mouths. All live food handed to nestlings should be killed and somewhat broken immediately before being fed to the birds. Young birds feeding themselves often make mistakes, but usually survive




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them and rarely make the same mistake twice.

Among useful insects that can be gathered in quantity are ant pupae — commonly called “ants’ eggs”, wasp grubs and night-flying insects that are attracted to a light. I am indebted to the late Harry Halff of San Antonio for showing me the potential of ultra violet light traps for avicultural purposes. He had raised red-legged honey creepers successfully on plain sugar solution and fresh insects from his light trap.

Two techniques for collecting an assortment of small insects are “sweeping” and “beating”. It is usually a good idea to chill the freshly caught insects before giving them to the birds. This slows down the insects and gives the birds a better chance to make a selection from a very mixed bag.

Birds being kept largely on very active insects, flies, grasshoppers or crickets, for example, are best kept in enclosures covered with screen or mosquito netting. This is obviously to keep insects in rather than to keep them out.

The supply of wild-caught insects is likely to fluctuate widely from abundance at the best season to nothing at the worst. Any surplus from the season of plenty can be kept frozen for at least a year and still be usable. Drying is an older and rather less satisfactory method of having insects in the time of scarcity. Insects, especially ant-pupae and wasp grubs were baked lightly to kill the insects and at least somewhat dry and sterilize them so that they cured and kept better during further drying and storage.

Many kinds of insects have been cultured for use as bird food. Well known among these are mealworms, crickets, fruit flies and honeybee larvae. Bird keepers who also have hives of bees are likely to cultivate wax moth larvae, which are very bad for the bees but very good for the birds. Caterpillars of many kinds are rather easily cultured in quantity, and are, of course, excellent bird food. Hairy and brightly colored species are to be avoided. Smooth greenish kinds that feed on non-poisonous leaves are best. Some kinds of caterpillars are cannibalistic and are of little use for our purpose. Young silkworms are good and are growing at a time of the year when they are particularly useful, but are only available for a short period. Blowfly, housefly and other species of maggots have often been cultured in quantity. I have never found a pleasant way of doing it.

Insectivorous birds are usually highly territorial and often resent the presence of similar birds to themselves in the same enclosure. A dominant bird will sometimes kill a subordinate one outright.

More typically, a subordinate bird is harassed until it dies of stress. Even in large planted aviaries, this is an all too common cause of loss. The very least that can be done is to provide a good number of food dishes in various locations so that no single bird can mount guard over one dish and starve other birds by driving them off.

Ants can be a serious problem where fruit and sweet softfood is being fed. If a food dish swarms with ants, many insectivorous and other birds will starve to death rather than alight on it. One solution is to place the dishes on a board with a nail in each corner making a sort of doll’s house table. The underside of the wood surrounding each nail is coated with a sticky substance, flypaper style. I buy a tube of “Tree Tanglefoot” in the garden shop and find this works very well. The nails must not protrude more than about three-fourths of an inch. If birds can creep underneath, sooner or later they will, and with deplorable results. In summer a careful watch is necessary to ensure that all dishes are ant free. Many birds are molting, and a single feather across the sticky patch will be a broad highway for all the ants in the area.

Cockroaches also can be a bad pest. A few biggish toads will do good work in planted aviaries. They are nocturnal, so that they are ready for action as the roaches come out of hiding. In bird rooms, a sprinkling of boric acid powder in dark corners away from the birds will control the cockroaches without being dangerous to the birds.

I should not care to fall into the traditional error of claiming that my methods are incapable of improvement. However, I do believe they are an improvement, not only on methods I used in the past, but on some practices I see in use today. We are here to help others in bettering avicultural techniques. I hope I have made a useful contribution.

A Soft Food for Insectivorous Birds

Arthur Douglas’ Recipe

Cooked lean meat, ground fairly small — 3 cups.

Mashed potato or boiled rice — 1 cup.

Grated carrot, cooked or raw — ½ cup.

Mix well, then add:

Pound cake, about 1 pound, diced to about ¼ inch cubes.

Mix again, rubbing the ingredients lightly between the hands to break down the pound cake into rather smaller fragments. Then add:

Dry mix — 2 cups

Spread the dry mix evenly on top of the

rest and mix. Blend all the ingredients well, but leave the food sufficiently coarse in texture to allow the birds some freedom of choice between the meaty and the farinaceous parts.

Keep frozen. Place the day's ration in the food dishes in the evening and place these overnight in the refrigerator where the food can thaw out ready for placing before the birds next day. Any stale leftovers from the previous day can be given to coarse-feeding birds or to the mealworms.

The Dry Mix

Yellow corn meal — 8 oz.
 Oatmeal (Quaker Oats via the blender) — 8 oz.
 Soya flour — 8 oz.
 Dried milk, non-fat (mixes better if reduced to a powder) — 8 oz.
 Brewer's yeast, dry powdered — 4 oz.
 Eggshell, cuttlebone or oystershell, powdered — 2 oz.
 Iodized salt — 1 oz.

For large and coarse-feeding birds the food can be stretched with turkey starter, puppy chow or other similar cheap, convenient and well-balanced foods.

Calf heart or beef heart, baked, is a good basic meat. When it is half-cooked, add about an eighth or tenth quantity of

liver (pork or any other) and bake together until both are cooked. Do not dry out. Add the meat juices to the ground meat. Keep frozen. Household leftovers of lean meat (not salty or over-seasoned), cheese, cooked fish, etc. can be used as meat in reasonable amounts.

Basic Fruit Mix

Lettuce or other bland green food, chopped small — 1 cup.

Apple, chopped — 1 cup.

Currants or chopped raisins — 1 spoonful.

Mix. Allow to stand in refrigerator overnight to plump out the dry fruit. Any other fruit or berry known to be well liked by wild birds can be added when available.

Nectar

Sugar, white, granulated cane — 5 lbs.

Geval, vanilla; or **Superhydramin** — 1 cup.

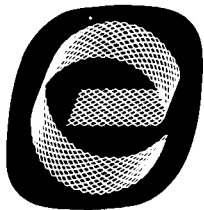
Milk, non-fat dried, powdered — ¼ cup.

Mix. Keep cool and dry.

To use, put one fifth by volume into a suitable shaker and add four-fifths by volume of cold water. Shake. Prepare one day's ration at a time and keep in the refrigerator. Give half in the morning and the rest in the afternoon. Under cool conditions, once a day may be quite enough. Serve in vessels that protect the birds' plumage.



In the Dec/Jan 81 Watchbird two errors were made on page 42. In the upper left hand photo caption, Bob Berry's name was misspelled. Our apologies Robert. In the lower right hand photo caption there is a confusion of southern cities. The 1st breeding award went to the Jacksonville Zoological Park, not the Jackson Zoo. Again, our humble apologies to y'all.



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