

Beautiful Firetail Finch In Captivity

by Brian O'Gorman
Stawell, Victoria, Australia



Distribution of the Beautiful Firetail finch.

Brian O'Gorman's abiding interest became the study and the breeding of Australian grassfinches under conditions which, following trial and error, he could honestly say were "ideal" for a particular species. This simply means that he has evolved an aviary which has been designed specifically for the species it is to house — with that same design also being suited to the captive breeding of the species in question.

In Australia the beautiful firetail finch *Emblema bella* is one of two native species which normally cannot be legally kept in captivity, the other being the closely related red-eared firetail finch *Emblema oculata*. Consequently both species are not part of the avicultural world in Australia.

Brian believed that as an aviary species the beautiful firetail was not well known and, more importantly, was one of the Australian grassfinches about which almost nothing was

known of in the wild. These were the sorts of things which motivated him to study this fascinating (and extremely shy) species in the wild and made him decide, if it was at all possible, to keep and breed it in captivity.

The only way Brian could legally keep the beautiful firetail in captivity was if the state fauna authority ((Fisheries & Wildlife Service) would give permission. To support his application Brian enlisted the aid of myself as editor of Australian Aviculture, and John Schorer as the president of the Avicultural Society of Australia, to supply references as to his suitability as an experienced and competent aviculturist. The committee of the society (ASA) fully supported his intention and application.

The rest is now history! He was given permission to legally acquire two pairs of beautiful firetail finches and to keep them in the specially designed aviaries he had built for them at his home in Stawell, in the northwest of Victoria, Australia.

Graeme Hyde
Editor
Australian Aviculture

INTRODUCTION

When I commenced my field studies on the beautiful firetail finch *Emblema bella* the aspects to be studied were vast. Even so I set myself specific goals.

First, I wanted to witness and record the courting display and song which, at the time, were *unknown*. I wanted to discover the various calls and, if possible, to record them on cassette tape. However, approximately 12 months into the study I became convinced that due to the denseness of the habitat and the species' "low profile" within the

habitat, it was most unlikely that I could achieve success in either area unless it was possible for me to study the birds at extremely close range—such as within the confines of an aviary. I would *reassure* readers that my acquisition of the beautiful firetail was simply an extension of my field study work.

Breedings of the beautiful firetail on the Australian mainland are so few that they are rare.

My proposed program was made potentially more difficult as the small amount of information on aviary breeding in the literature mentioned that the Tasmanian species was much easier to breed. So it could be that most of the few breedings which have occurred on the mainland were actually with Tasmanian birds.

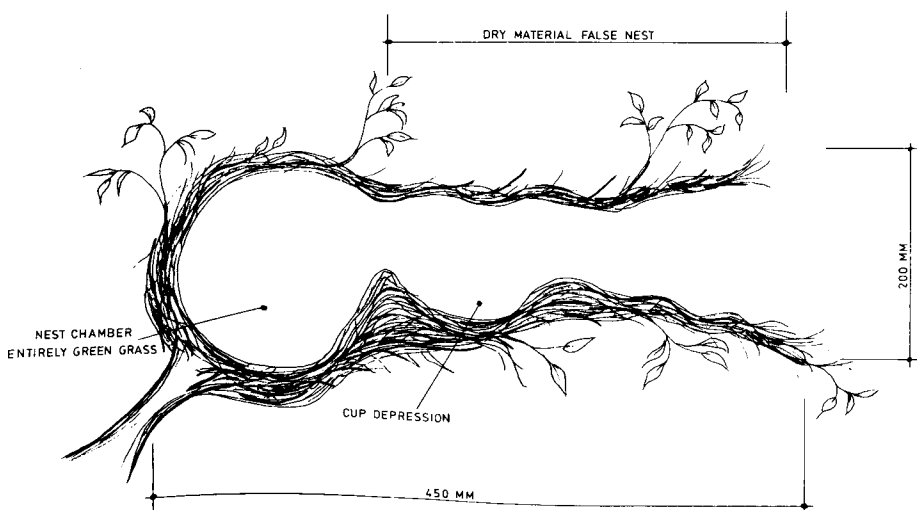
Housing was, and is, the key to success with this species, not necessarily to breed it, merely to keep it alive. At the time of writing I have now bred the beautiful firetail on four occasions, two of those breedings are second generation breedings or breedings from parents who were in their turn, aviary bred. Along the way I have managed to attain all my goals and two society members have witnessed both the courting display and nest building activities. None of this would have been possible without confining the birds to captivity. What follows is how I went about it.

THE AVIARY CONCEPT

As my colleagues are aware I have long held the view that as aviculturists we should first decide what bird we intend to keep—and then design the aviary to suit it—and not fall into the old trap of first building the aviary and then agonizing on what to stock it with.

I have five large aviaries and all are differently designed. The field work I have done on the species convinced me that I would need maximum ground cover, by that I mean cover that completely screened the lower 1.2 to 1.8 meters of the aviary. The cover had to perform three functions. First as a screening effect, second as a nesting source and third as a source of food; so plant selection was important. The birds were wild and predominantly green feeders, so several sources or varieties of grasses had to be chosen—providing a year long supply of food or a supply sufficient in quantity until the birds naturally weaned themselves on to some form of basic supplied diet.

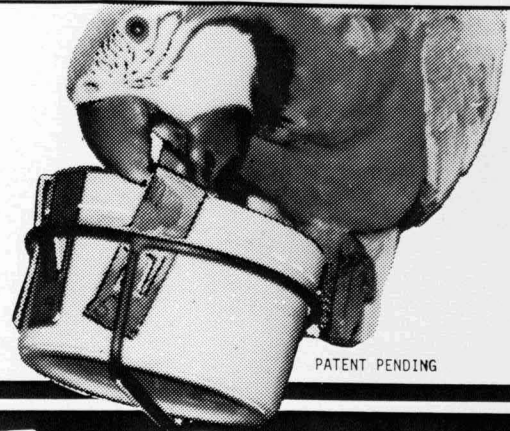
I believe that as much as it were possible I should avoid the employment of



Cutaway of breeding nest of the beautiful firetail finch.

Drawn by J.E. Buchan

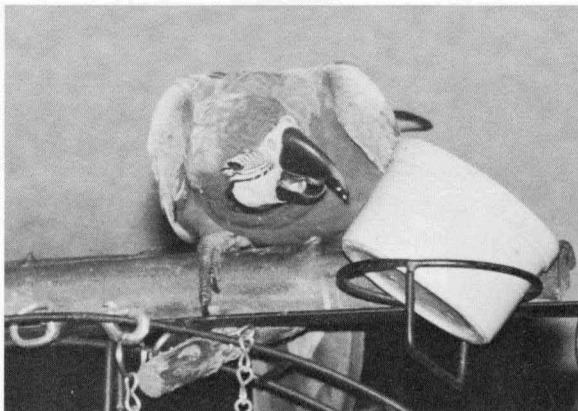
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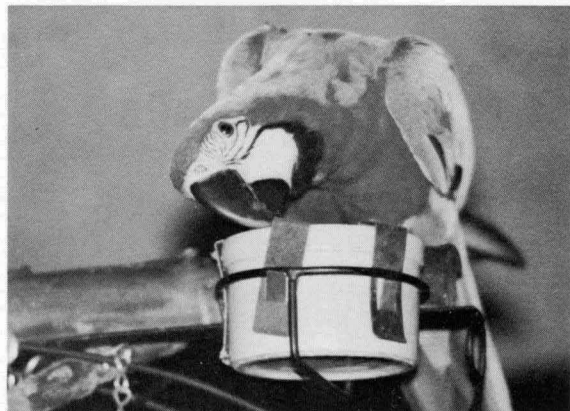
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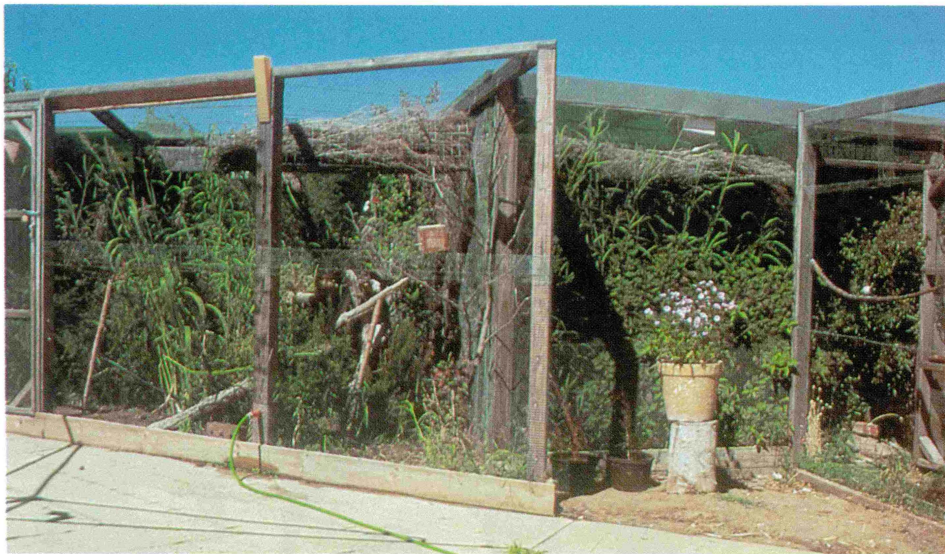
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Here you see three of the four sections in the firetail finch aviary complex. The widest section is heavily planted and without a shelter roof. The next section is also heavily planted but has a fiberglass roof. The last section has no roof and is planted in clover.



Barry Hutchins (right) congratulates Brian O'Gorman on his achievements in breeding the beautiful firetail finch *Emblema bella* in captivity.



This close-up photo shows how extensively the aviary is planted.



Female beautiful finch *Emblema bella* at the nest entrance.



Young beautiful firetail finch approximately six weeks after fledging.

artificial perches. Further work had revealed the beautiful firetail to be a fast and agile flyer, with a certain amount of aggression taking place during the breeding season. The initial stages of this aggression results in fast aerial chases. I was extremely conscious of the fact that my license was a "once only" and losses of birds would result not only in its cancellation, but could prevent other Victorian aviculturists from attempting similar projects with other rare species.

Therefore two aviaries I built took into account the various factors I considered to be essential for the housing, feeding, management and breeding—based on my field observations of this most interesting bird.

THE AVIARY

The aviary was of rectangular design 6.7 x 3 x 2.7 meters. The reader may feel the height excessive for in truth the beautiful, more often than not, confines its attention to the lower levels, but the height was needed for plant growth. The aspect was rectangular running from north to south. In the initial aviary a shelter 1.5 x 3 x 2.7 meters was built at the southern end and filled with tea-tree for its upper 1.5 meters—laid horizontally.

The east and west sides of the aviary were planted with fast-growing creepers, manetia on the east and the west Australian bluebell creeper on the west. Two large tree stumps were sunk into the floor at the time of building, one at either end, additional tree branches were placed throughout the aviary providing access to upper parts of the aviary. The plants used for ground covering included fuchsia, thriptomene, banksias, Johnson grass, dwarf pampas, dwarf perennials, sunflowers, ferns and half a dozen other small bushes dug up on site.

The entire aviary was roofed with sheets of fiberglass.

Water was provided in two locations, one raised and the other at ground level, both screened by plants so that birds could partake of either source without feeling overly exposed. The seed tray is positioned at the furthest end for similar reasons. Built 0.3 meters above floor level was a misting system, this incorporated misting nozzels providing 90, 180 and 360 degree fields of fine spray. Not only did this simplify the watering of the plants but the Tasmanian experience had revealed that any losses incurred with aviary birds invariably happened in hotter weather.

In the 1983 drought (in my area) I

found that periodic usage of the system in half-hour spells could reduce the inside aviary temperature by as much as 8 degrees. This system is able to be used without entering the aviary.

The aviary floor was built up to provide quick drainage. First a cover of loam, then a layer of river sand, with a 100 mm cover of leaf mould uppermost. This was done to perform several functions. As stated, the aviary is heavily planted and the loam was to provide the medium for fast and healthy growth, the sand was to provide drainage and the leaf mould to facilitate the existence and gathering of small insect life.

Additional interior aviary screening (or cover) was obtained by the construction of a mesh trellis 1.5 x 1.5 meters. This was planted and overgrown by muehlenbeckia—the position was roughly central and half way—in effect, dividing the aviary interior in two. A further cover effect was obtained by the positioning of a cylindrical mesh appliance with a diameter of one meter; also overgrown with muehlenbeckia.

A further extension was built onto the front portion of the aviary (northern end); this 1.8 x 1.8 x 2.7 meter section was not roofed with fiberglass, was topdressed and then planted with a mixture of white and strawberry clovers. Not only did it provide a year long source of green food, which the field work had revealed the birds to be extremely fond of, but it provided a source of catching the birds with little effort and the least stress possible for the birds.

Even though plant growth was prolific in the next few months, bunches of tea-tree were hung in various locations to act as attractive nesting or roosting sites. The beautiful firetail utilizes roosting nests throughout the year and as an additional safety measure several of these were gathered in my diamond firetail aviary and positioned in several locations before the actual residents were introduced. Of course, all of this activity took many months and though I was in possession of the permit I made no hurry to introduce the birds. Large pieces of cuttlefish and blocks of cattle salt lick were affixed to stumps at either end of the aviary and secured by wire. A large amount of mixed seed was distributed and allowed to grow wherever it took hold. The time had now come to introduce the occupants.

THE INDUCTION

Before releasing the beautiful firetails I employed one final measure which I

hoped would assist in domesticating them. This was the addition to the aviary some weeks prior of two pair of aviary bred red-browed firetails *E. temporalis*. I hoped they would help to both steady down the beautiful firetails and help to introduce them to a basic seed diet. Field studies had revealed that they co-habitate at certain times of the year.

Two pairs of beautiful firetails were introduced into their new home in June of 1982 because, as stated earlier, the plant growth at that time was prolific with a great deal of growing bird seed previously distributed on the aviary floor in seed head. Initially, this seemed to be the main source of food with great favor displayed towards rape in all stages of growth as was phalaris. Clover is also popular.

For several weeks after the birds were released I only entered the aviary once a week. The small number of inhabitants and ample seed supplied made this possible and the spray system enabled me to provide water without entering into the aviary.

INITIAL BEHAVIOR

The birds appeared to settle well. The only sign of agitation was much aerial flight in early morning and particularly at dusk. For the first few weeks green feed formed the major part of their diet but thereafter the seed intake increased. All seeds were partaken, with canary and white millet being most preferred. The red-brows had gone to nest in the first few weeks and soaked seed with Vetemul was offered as a supplementary rearing food. This was consumed readily and with great relish by the beautiful firetails.

Roosting for the first week was confined to the shelter area. From the second week both pairs occupied old diamond firetail nests but on different sides of the aviary. In July pair A built their own roosting nest although pair B remained with the nest supplied; however, it was continually modified. This was my first glimmer that their introduction had proved successful. Accordingly the red-brows were removed.

THE FIRST BROOD

My first breeding of the beautiful firetail, one of only a handful to occur in the last 55 years was, as a data-gathering medium, something of a non-event. The nest was built at the far end of the shelter and the growth of aviary plants made the entrance to the shelter hard to view from the front of the aviary. I had no idea of nest construction until the final stages, i.e., the

lining with feathers, etc.

From intensive monitoring of subsequent nests it would have taken somewhere between 6 to 7 weeks from when initial construction commenced until the day the young flew. Three young left this nest on 5 October 1982, two days later I found a fourth that had become entangled in a clump of flax and died. Two other eggs failed to hatch. The birds colored up into two cocks and a hen. The cock bird featured in the color plate, *Australian Aviculture*, January 1984 p. 14, (mauve leg ring) is one of that clutch and has since raised his own family.

NEST BUILDING

The nest in the shelter was the first and last to be constructed there, all subsequent nests were built outside and most in plain view. Construction (on average) takes about two weeks and in the initial stages both birds work in tandem, but once the chamber gains substance the hen remains inside to receive material from the cock bird. A piece of material is deposited within the nest on average about every 12 to 14 seconds. However, this may require some clarification because, as all finch breeders are aware, building by any species of finch is not conducted as a non-stop activity but progresses in "fits and starts," with peaks and troughs. The timing of these peaks and troughs vary from day to day and can be influenced by many factors. However, what is noticeable with this species is that at the height of the nest building the times of delivery of material to nest site is, on average, three times faster than of any other species. It was at one of these "peaks" that Graeme Hyde witnessed nest building and, both he and I, failed to observe the cock bird's exit after delivering one piece of material—until his appearance at the nest entrance—with another piece!

On average 100 pieces of material are delivered to the nest daily but during the last three days this is greatly reduced owing to the select nature of the material used.

On day four of the construction of one breeding nest I counted the delivery of 128 pieces of material—and I may have missed observing some of the trips!

Nest construction of the beautiful firetail is one of the "grey" areas in our knowledge of this species, so if readers find the detailed data boring I ask them to bear with me for it may well be that no one else will have the opportunity (or inclination) to gather the same material. It is important for ornithol-

ogy to make the information known even if it is only published in *Australian Aviculture*. Compilation was made easier because both nests being studied for data were built in plain view and to the front of the aviary.

I sat in front of the aviary for 6 to 7 hours per day over the six week period. This amounted to something like 295 hours of constant observation. Once again it would not have been possible in the field. This was repeated with the second nest, so I believe the findings are accurate.

The actual components of the nest vary with what part the cock bird happens to be working on. For the nest chamber itself, green material roughly 200 to 230 mm long is gathered; for the entrance tunnel and cup-shaped interior nest twining material is mostly sought but in my aviary this component was mainly the extremities of the muehlenbeckia creeper. Several pieces of bluebell creeper were also incorporated. The actual funnel entrance was a mixture of all three but a lot of dead tea-tree twigs of a length and texture a pigeon or dove would choose were always used as a final touch. The cock bird broke these off from some of the aviary wall linings, often with considerable effort.

Like most Australian finches my beautiful firetails use large quantities of feathers for nest lining. Although other Australian finches carry single feathers to the nest the beautiful prefers to carry feathers bunched and, as feathers of any type are rare in its natural habitat, it could be a case of "go while the going is good!"

On the dissection of one of my own aviary breeding nests I found the average length of material that made up the outer components of the nest measured between 200 to 230 mm long, these diminished in size on the inner portion to between 165 to 215 mm in length. The tunnel itself had by far the longest pieces of material, these wound round and round and right up to the chamber proper and soon dried to become part of the nesting chamber. The finished nest has a slight curve so although the cup-shape in the nest could be viewed through the tunnel entrance the actual chamber was somewhat harder to discern. The cup-shaped inner nest, although mainly formed by twining muehlenbeckia, also held a further quantity of grass, at the time I observed it it was dead although it may have been green at the time of construction. The ability of the beautiful firetail to utilize different

materials for separate portions of its nest I found amazing.

BROODING

Once again I believe that these observations will prove to be the most detailed so far gathered and the data was made possible by observations of two nests constructed in plain view. Brooding change-over or nest relief is direct. That is, the relieving bird actually enters the nest after first calling from nearby, both birds remain inside for up to half a minute before the relieved bird departs. The initial daily changeover occurs on average half an hour after first light, thereafter up to day 15 between 1¼ to 1½ hour intervals, from day 15 to day 21 the changeovers were effected at roughly 30 to 40 minute intervals and brooding as such then ceases but one of the parents visits the nest from 15 to 30 minute intervals. Although my observation point was quite close no audible feeding sounds could be detected until a week before the young left the nest. On changeover the relieved bird spends some time in establishing territory (such is my explanation to explain the aggression displayed by this bird to all other members of its own species). This results in much aerial chasing for several minutes then peace reigns—until the next changeover—then the whole sequence of events is repeated.

Once hatching has taken place, on many occasions the relieving bird often approached the nest from the rear and worked his or her way through the foliage, usually from above. On being relieved the vacating bird leaves the nest in a dive to ground level. I have no explanation for either action.

ATTITUDE TO OTHER OCCUPANTS

After my initial breeding success and in an attempt to further "raise the profile" I decided (with much trepidation) to subject the beautifuls to collective housing with other species. At one time they shared their aviary with 30 parson finches. Since then diamond firetails, *Emblema pictas* and white-eared masked finches have, in turn, shared the aviary—with no ill effects. The only aggression displayed by the beautiful firetail to other species is confined to when a bird comes into close proximity to its breeding nest. However, aggression is *always* displayed to its own species. This increases in the breeding season.

The sight of one cock bird displaying will send another breeding cock into a rage. A breeding cock bird is not adverse to displaying to a hen other than his own. This in turn will bring swift

reprisal from his true partner! The brooding bird will leave a breeding nest to harass any of its own species who ventures close to its nest and both hen and cock alike are equally savage in the breeding season.

SIZE OF TERRITORY

I found the territory size the most difficult of all my field work and hoped the aviary observations would furnish me with some answers. Because of the denseness of the habitat a bird venturing in close proximity to the nest in the field was soon lost to sight so I'd again hoped aviary observation would shed further light on it. It seems the breeding territory is confined fairly close to the actual nest itself. On being relieved the relieved bird (after attending to bodily needs) usually returned to take up the vigil close to the actual nest site—sometimes within the nest itself—as long as the harassed intruder flew it would be pursued but more often than not once it sought ground cover the chase was abandoned so its field behavior is, in all probability, similar.

Aggression at food sources is maintained throughout the year and collective feeding only takes place by established pairs—or as family units. There could be a slight relaxation of this during the annual moult.

THE SECOND AVIARY

In anticipation of obtaining a second generation breeding of beautiful firetails, a second aviary was designed and built in early 1983. It adjoined the first aviary but in design had some variations. Field work had revealed that young firetails could be expected to undergo severe harassment once they became independent. This harassment, or attempt to drive them from the entire territory, would come from all other established pairs within that territory or, in this case, the aviary. So it was for this reason the new aviary was built.

Once again the design was rectangular but the size increased to 7 x 5.4 x 2.7 meters. Planting was heavier with more actual trees, banksia, tea-tree—including some from the study area—and a lot more seeding grass such as phalaris.

The roof was only covered at the rear, while one wall was covered half-way up one side as a means of giving the seed tray cover from rain. The beautiful firetails are extremely susceptible to changes from one aviary to another (D. Coombe, per. comm.). Even though the new aviary was heavily planted I was quite reluctant to move the young birds into it. I com-

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promised by making a meter wide entrance at the rear of the wire netting dividing both aviaries and so occupants from the old aviary had free access to the new aviary. I thought that once harassment commenced the young birds would discover the new aviary and take up residence there. It didn't work out exactly as planned, for one young pair resisted all attempts to evict them and nested in the original aviary. The clutch was small; three eggs laid and only one chick eventually flew. The young from the second generation flew two days before its parents were a year old.

A second pair of aviary bred birds did nest in the new aviary only a meter or so from the other aviary bred pair but with the dividing wire between them. These young should fledge in early January 1984.

As stated the new aviary is larger and more heavily planted. Extensive use has been made of creeper grown or covered screens. Again the misting system has been incorporated and hooked up to the other aviary so that the two can be watered simultaneously from a single point. Artificial perches are non-existent and some of the tree stumps positioned in the aviary are up to two meters high. A list of growing plants include: fish ferns, fuschias, thryptomenes, native heaths or ericas, pineapple sage, Johnson grass, bluebell creeper, banksias, several melaleucas, dwarf pampas, phalaris, veldt, panicum and all the usual bird seeds including rape, linseed, maw, and a great deal of others, including thistles, etc.

I believe this aviary will reach its full potential in 1984.

CAPTIVE EFFECT ON BEHAVIOR

The effect of captivity influencing behavioral changes in Australian finches has long been regarded by ornithologists as an important area of study, so the opportunity to record such changes in such a "new species" (aviculturally speaking) as the beautiful firetail should be regarded by ornithologists as being important. Although in time much of the material I've gathered will be edited by an experienced ornithologist for me, and then rewritten in scientific terminology for publication in an accredited ornithological journal, I am very pleased (as an aviculturist) that this information will be first published in *Australian Aviculture*.

There can be no doubt that exposure to the human presence will raise the species profile. This is amply demonstrated in wild birds at Wilson's

Promontory in Victoria and Mount Gambier in South Australia. However, these changes have, or may have taken many years to evolve, so the opportunity to document my own birds' response in this regard I deemed worthy.

There can be no doubt that a dramatic rise in profile has taken place and many knowledgeable aviculturists have witnessed this fact. They include John Schorer—past president of the society, Ron Hastings—committeeman of many years standing, Graeme Hyde—our secretary and editor, Barry Hutchins of Adelaide South Australia and Dorothy Payne—former editor of the Avicultural Society of Western Australia. Each has remarked on this "raised profile," although they nearly all attributed it to aviary design, I would like to think that my management program has, to some degree, contributed to it.

For the first few months after release the birds were rarely sighted except for the previously described early morning and late evening aerial flights after which they gradually displayed themselves in the more open sections of the aviary and flight. Also, feeding in the relatively open spaces of the clover-sown enclosure was commonplace after 5 months.

I first witnessed the courting display around this time and the fact that it was also observed by Graeme Hyde, in 1983, in the same open enclosure, was confirmation of how far this "raised profile" had progressed. I can only assume that it will continue to do so.

As far as the care of the young is concerned it would appear as if captivity has effected little change. For the first week after fledging they are secreted to the rear or furthestmost portion of the aviary and appear to spend the entire day in dense cover at ground level. In fact, feeding calls are the only indication of their presence. Entry of a person to the aviary in this first week results in much agitation and chattering by parents, particularly the cock bird.

The second week will provide sightings of one or two young at feeding sources with parents and it is only in the third week that the actual number of young can be determined. From then on the offspring appear quite readily, and usually together.

It would appear as if captivity has brought about some changes. However, the difficulty of positive identification of sources in the field obscures the actual percentages of this change. All offered seeds are now taken and Vetemul enriched soaked seed is now

high on their list of priorities. Consumption of large amounts of flower petals, of pineapple sage (red) and thriptomene (white) disbar color as a contributing factor. Likewise consumption of flower heads of the clovers also rules out this theory. Unlike other finches, who show a percentage for young flower heads of the common milk thistle, the beautiful firetail confines its attention to young leaf growth and, as stated earlier, they show a liking for salt and cuttlefish.

In all other respects their diet could be regarded as normal. It should be noted that they eat much more green feed than any other Australian finch. I found it quite surprising that, at no time, have I observed them showing any interest in either mealworms or termites, even though when placed in the aviary, the other inmates will descend on such offerings like a swarm of bees! I've even offered termites (white ants) at flying stage with no sign of any change in the firetails' behavior. Likewise, fruit in three forms often accepted by other inmates has been totally ignored by them. However, I have positively observed them feeding on green aphids gathered off growing rape but a nocturnal light attracts a great amount of natural insect life into the aviary, so although an unknown factor, it's one that I don't discount.

A CLOSER LOOK AT SEXUAL DIFFERENCES

In his foreword to my field study, AA January 1984, Richard Zann mentioned the advantages I enjoy in being able to study captive birds. Never was this made more obvious than when closely studying the sexual differences. I had always believed that like all other members of the *Emblema* genus the difference was to be found in the head area of the species. This difference was to be found in all other members of the genus.

I first noticed it with field study birds and it was only by being able to study a large sample (number) of aviary birds in the hand that I was able to substantiate that it was not a case of individual differences or variation. If the color plates of the male and female in the January, 1984 magazine are studied closely (and not all that closely) it will be apparent that the black band across the bird's brow (that crosses the bird's beak), in the case of the female it joins the eye-ring to the forefront of the eye, whereas in the male it follows through, more in a straight line to the back of the eye. I believe that this is the first time that this difference has been noted. As

Richard Zann implied it highlights the need for a closer avicultural study of our rarer species.

COPULATION

During copulation, which is quite extended, the cock bird forces the hen down to an almost lateral position on the branch. This is achieved by the distribution of his weight through changes of position evenly along the total length of her body and, it is only when she is so prostrated, that he reverses his stance (or position) to the rear and then copulation occurs. This extended copulation period is for 14 to 15 seconds, with copulation occurring every 4 to 5 seconds. On completion the cock pursues the hen wildly around the aviary until she takes cover at ground level.

The copulation procedure of the beautiful firetail is entirely different to any other Australian finch but it could have some similarities to that of the blue-faced parrot finch *Erythrura trichroa*. As far as I am aware copulation of the beautiful firetail has not previously been observed and I was unsuccessful in observing it in the wild. However, I have since observed it often with aviary birds.

INDEPENDENCE

The independence aspect of aviary-bred birds differs little to free-flying young birds so I direct interested readers to my field study, AA, January 1984. Old roosting nests of other species were utilized up until about the third month and on two occasions the first constructed roosting nest was a communal effort by the whole clutch. Sexual awakening or courting display behavior was evident at about the same time (i.e. 3 months).

Construction of a true roosting nest by two, at the time, immaturely colored young at any time from the third month onwards invariably proved to be a true pair, so it's apparent that such bonds are forged very early.

CLOSE OBSERVANCE OF DEVELOPMENT

As I've stated elsewhere I had cause in December 1983 to remove one clutch of young beautiful firetails, fostering them under Bengalese mannikins. The aggression displayed by nest-building birds towards the parents of the young ones referred to only precipitated this action, for I had attempted it on another occasion with a clutch of eggs but it failed due to the eggs being infertile. I wanted to be able to monitor the growth rates, feeding attitudes, record mouth markings, etc., all of which would have been impos-

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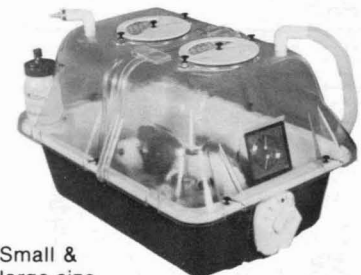
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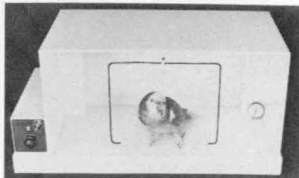


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sible within the normal breeding nest. As stated the aggression in the breeding aviary only "advanced the action" and was not the reason for it.

I believe that the young were between two and three days old when removed and later monitoring of brooding change-over times confirmed this assessment. In size they resemble young diamond firetails but the head is larger and the eye sockets more prominent. There were four young with one egg failing to hatch. The nestlings were placed in an 820 gram fruit or jam tin (with the lid half folded) in a holding aviary. The Bengalese were using this as a roosting nest and at the time the Bengalese *did not* have any eggs or young of their own. The nesting receptacle was approximately two meters from ground level and about 30 cm below the aviary roof.

For the next three weeks I inspected the youngsters every two days and recorded their development on film which is for interested ornithologists. The rearing food consisted of the usual seeds, egg food made from boiled egg, dried breadcrumbs, maw and rape seed, egg shells, and a few drops of Vetemul. Even after the young could feed themselves they still valued this supplementary food.

The weather at the time was extremely hot, in the high 30s (Celsius) and in the second week two of the young left the nest and fell to the floor. I believe the heat was the cause so I repositioned the nest but the same occurred (i.e. the young clambered out). I then transferred the foster parents, young and nest to a canary breeding cabinet (cage) but the heat still caused the young to climb out of the nest-tin. I have *never* observed such agility in any *young* Australian or foreign finch species, with the possible exception of the jacarini. From the sixteenth day the young could easily leave and re-enter their nest unaided and also climb the front of the cage. They were able to squeeze through the punch-bar front and as a result I had to cover this with flywire mesh! These young were third generation aviary-bred beautiful firetails. The feathers developed quickly from day nine and as near as I can judge they fledged on day twenty-three. Certainly no sooner.

They were able to feed themselves three days later and, naturally, this enabled me to gather a lot of data. Even though it isn't relevant I must mention that three Bengalese were used to effect the rearing. This was to ensure that the young were being capably fed. The

young were observed drinking two days after fledging and bathing on the third day. A large variety of greenfood was offered throughout the rearing period. After they fledged it was, and still is, eagerly looked for.

The feeding calls were extremely hard to hear up until the week of fledging, and are incessant. I cannot recall any other finch species drinking or bathing at an earlier stage of development than this species.

These young birds were observed by both Graeme Hyde, editor of *Australian Aviculture*, and Dr. Ken Myers, chief research scientist of the CSIRO, Canberra. In all probability it is the first time that pre-fledging young beautiful firetail finches have ever been observed in the nest by humans.

NESTS AND NESTING

Heights of both breeding and roosting nests have remained remarkably constant from 1.5 to 2 meters, a height consistent with that of field study birds. The breeding nest is built in full view and, on many occasions, at the front of the aviary—with the entrance tunnel facing open space—access usually can only be gained by either direct or hovering flight.

Roosting nests are mainly constructed well into growing cover and access only gained by slow negotiation of supporting branches, etc. Furthermore, roosting nests tend to be constructed deep into the aviary proper. In the field this tendency to build a roosting nest well into cover was, I thought, a means of protection from inclement weather, but as at least one of the aviaries my birds are housed in is fully roofed this explanation is not valid.

Earlier I mentioned that when gathering lining for its nest the beautiful firetail gathers it bunched. This has also been observed when collecting the fluffy dried seeds of the milk thistle; the cock bird will visit plant after plant before he deems the gathered material worthy of deposition within the nest. Another puzzling aspect in relation to the breeding nest is the transport of some pieces of material for considerable distances along the ground, the bird dragging it at times with considerable difficulty behind him for as much as two meters.

CHANGES IN NESTING SEASON

One of the most startling changes captivity has induced on the beautiful firetail is changes in nesting seasons and one about which I can offer no explanation. Throughout my extended

field studies the earliest that I observed nesting activity was early December. A two day visit to the study area in December 1983 revealed such activity being only minimal, yet in my own aviaries I had young in two nests. My first breeding was in October with others in May, September and late November. At face value one could explain year long provisional supply of food being a major factor but seeding grasses in the study area are in abundant supply from September. Once again another answer must be sought.

REASSESSING AGGRESSION

As the heading suggests, this aspect had to be updated. In December of 1983 I had four pairs of beautiful firetails nesting simultaneously which was by far the largest number of pairs I had had nesting at the same time. However, it was to have disastrous consequences. One pair was feeding young when the other three pairs commenced nest-building. It was quite obvious that the nest-building pairs were the most aggressive. So much so that the pair feeding young virtually had to "run a gauntlet" to accomplish their task. I was so concerned for this pair that I removed the young and fostered them under Bengalese mannikins and they completed rearing them.

I also had to connect up three adjoining aviaries to ease the aggression but this still failed to prevent the death of four unmated males. The deaths were not due to any actual physical contact but solely due to stress caused by harassment. It would appear, therefore, that only mated birds will survive in close contact with several breeding pairs, as previously only one pair bred at a time, harassment was shared by the non-breeding birds. It was a bitter blow and knowledge gained at a prohibitive cost.

CONCLUSIONS

The foregoing is my assessment, up until the present time, of the beautiful firetail and its behavior in captivity. The fact that I've no formal scientific training might suggest to the true ornithologist that a lot of my material is not quite ornithologically sound. However, I'm hopeful that with careful winnowing some grains will emerge! I also hope that it might, in time, act as a catalyst to inspire other aviculturists to attempt similar projects with species worthy of similar attention—for example, the ground parrot. Anything I have achieved with the beautiful firetail could also be achieved by other aviculturists if they possess the two essential

factors—time and inclination.

The long term future of my own birds is, at this time, uncertain. I believe that the raising of the species profile and the repeated breeding success I've accomplished suggests that a program by suitable agencies (scientific or zoological) could well achieve similar results and provide a stock of birds that could be re-introduced into areas where the species has been depleted. One prominent CSIRO scientist is already on record as describing the birds as being endangered in areas of New South Wales. By the time this article is published some of my aviary-bred beautifuls will already be in the hands of one such agency.

Working with firetails has given me a great deal of personal satisfaction. To be able to shed some light onto some of those aspects of its lifestyle which have been so elusive for so long will, I hope, help to place both aviculture and aviculturists in a more favorable light.

ACKNOWLEDGEMENTS

The work I have done with the beautiful firetail finch in captivity, and the compilation of all the information obtained was possible due to the support and interest of certain people. I thank them all and in particular I mention:

- The president and committee of the Avicultural Society of Australia for their vote of confidence in my ability and for officially expressing this confidence to the Fisheries and Wildlife Division of the Ministry of Conservation. Without the committee's support the permit to hold this species in captivity would probably not have been granted.

- The south Australian aviculturist who offered assistance in the early days of the project. Mention of his name would possibly embarrass him so I'll just say, "Thanks, mate, we did it!"

- Graeme Hyde, editor of *Australian Aviculture*, who was tireless in his support, especially in editing reams of notes and various cassettes both with the captive breeding and the field study of the species.

FOOTNOTE

All the beautiful firetails now eat white ants (termites). The aviary-bred young were the first to do so but the parent birds soon followed suit. Intake is not confined to the breeding season only. The commercial dry form of egg and biscuit food as supplied to young canaries is another form of "supplementary food" introduced to the parent birds by their "aviary-bred" young. ●

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