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PHYLLIS BARCLAY-SMITH, M.B.E.

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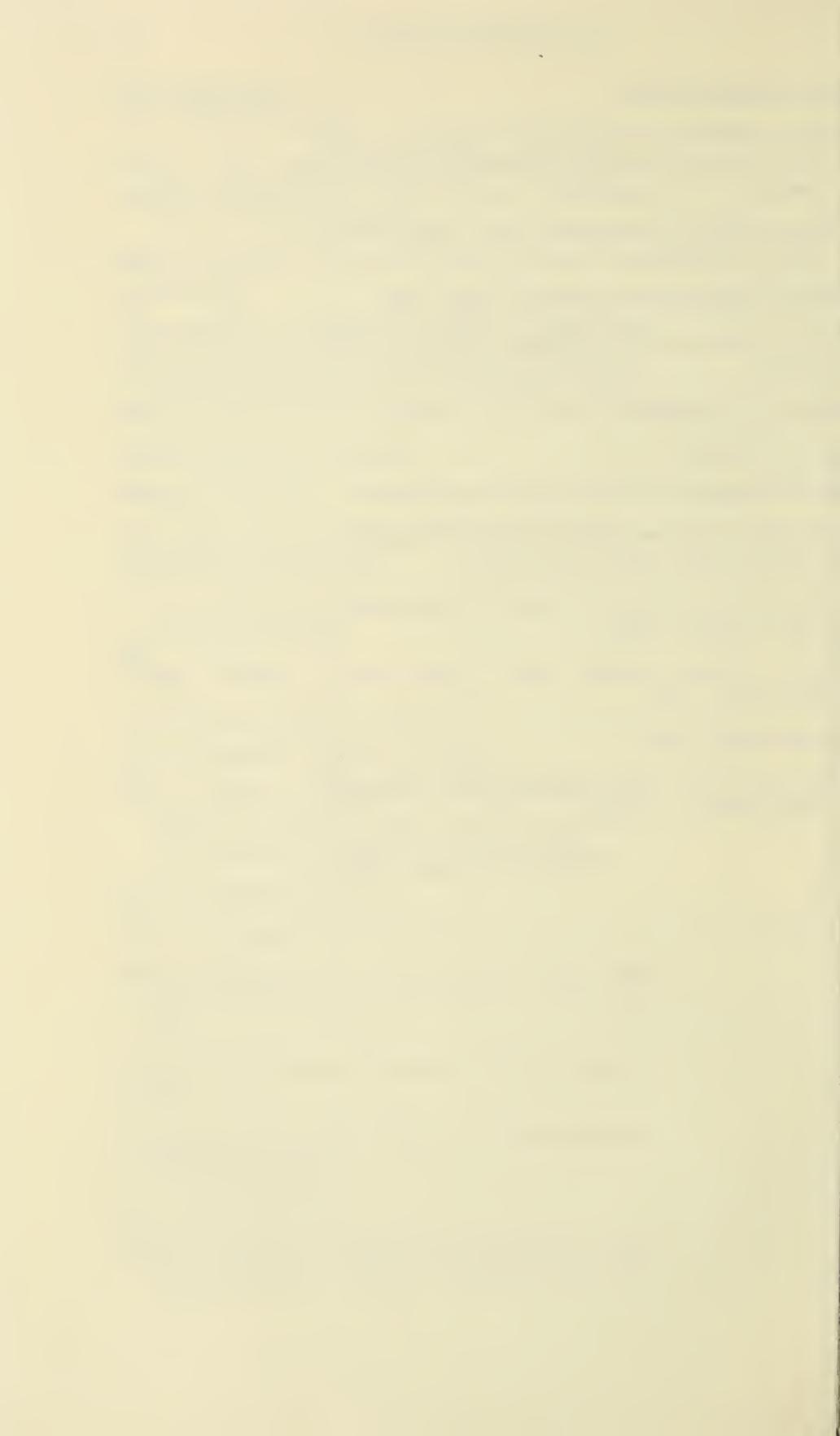
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CRIMSON FINCH

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JANUARY-FEBRUARY, 1967

THE SOUTH AMERICAN CRIMSON FINCH

Rhodospingus cruentus

By KERRY A. MULLER, Manager, Bird Division, National Zoological Park, Smithsonian Institution, U.S.A.

There are few, if any, groups of birds that have been more thoroughly described and discussed by aviculturists than the finches, *Fringillidae* and *Ploceidae*. As a child, my early interest in birds began with a pair of zebra finches, and I was soon obtaining and propagating many other species and avidly reading every scrap of information I could find regarding them, such as A. B. Butler's *Foreign Finches in Captivity* and the innumerable articles in AVICULTURAL MAGAZINE, *Foreign Birds*, and *Birds Illustrated*, as well as many books dealing with birds of foreign countries.

In October, 1965, the National Zoological Park received a generous donation of several rare species of birds from the collection of Mr. Edward Marshall Boehm of Trenton, New Jersey, and I was surprised to find included in the lot one beautiful male finch of a species with which I was totally unfamiliar. Then early this year in Ecuador, I obtained 20 more birds of this species, and after rather laborious checking (with other members of the ornithological staff of the Smithsonian Institution), they were finally identified.

The species is commonly known as the Crimson Finch, *Rhodospingus cruentus*, and ranges in the arid tropical zone from western Ecuador to north-western Peru (Charles Hellmayr, *A Catalogue of the Birds of the Americas*). The males are extremely attractive in their coloration and in my opinion are, with the exception of some of the American Buntings, the most beautiful of the South American finches. My first impression was that the bright crimson and black plumage closely resembles that of the male Vermillion Flycatcher, *Pyrocephalus rubinus*.

In size, the species is approximately $4\frac{1}{2}$ inches in length and is very similar in body proportions to the common Zebra Finch. The male has a bright crimson crown, chin, throat, and breast which fades to a paler orange shade on the belly, sides, flanks, and under tail-coverts. The forehead, nape, back, rump, upper tail-coverts, tail, auriculars, lores, side neck, scapulars, and wing-coverts are a dull black. The lower (proximal) half of the main vane of the nine primaries and first six secondaries is white, while the distal half, the shaft, and the outer vane are black, as are the remaining secondaries. When the wings are

folded the white areas are not seen. However, they form a flash pattern in flight. The eyes are jet-black and the legs and feet slate-grey. The beak is a combination of slate-grey and horn.

The female of the species has all areas that are red in the male replaced with a golden buff colour, with the exception of the crown. The areas that are black in the male are olive-brown in the female. In appearance, she is much like a female Pileated Finch, *Coryphospingus pileatus*, or perhaps a female Varied Bunting, *Passerina versicolor*.

Judging from general appearance it is my supposition that this species might be closely related to the Red-Crested Finch, *Coryphospingus cristatus* and Pileated Finch, with the bill structure suggesting an evolutionary linkage to the American Buntings. However, Frank Chapman considered it a distinct separate genus, probably based on the distinct shape of the bill which is longer, narrower, and more pointed than the typical fringillid beak. It tends to be constricted vertically and is perceptibly wider vertically than horizontally. This is especially noticeable at the base (Frank M. Chapman, "A Contribution to the Study of the Origin of Andean Bird-Life" *Bulletin of the American Museum of Natural History*, 1926).

This species has been housed in a variety of exhibits here at the Zoo, and it has been found to be an admirable aviary bird in all respects. Four pairs were placed on an almost exclusive seed diet and they remained in good health, although the red colour gradually faded to a more yellow shade. Others were housed with sugarbirds and small tanagers where a diet of fruit and very little seed was available, and these also remained in good condition. Some were kept in a humid environment, some in a desert habitat, and all did well.

I have found that by adding Super Caradec to a slightly sweetened mixture of bread and evaporated milk, the males will keep their brilliant plumage. I recommend that in addition to the basic finch seed, the bread-and-milk mixture, some fruit and greens, and also some insectivorous mixture be offered regularly, supplemented occasionally with mealworms.

Unlike the Pileated and Red-Crested Finches, our Crimson Finches have never been observed to be aggressive, either to any other species of birds or to other males. Like *Coryphospingus*, they will dive from cover in a dense brush when frightened, but the male normally prefers to sit on an exposed perch where his bright colours are seen to good advantage.

In the wild state this species lives in arid, hot environments, and in captivity the birds should be provided with a warm dry area. This is especially true when they are newly imported.

I hope that in the future more of these lovely little birds will grace the aviaries of bird fanciers, as they are certainly a desirable addition to any collection.

BREEDING EDWARDS'S LORIKEET

(*Trichoglossus haematod capistratus*)

By W. H. BROWN (Tonbridge, Kent, England)

During the summer of 1964 I received two pairs of Edwards's Lorikeets from a dealer in Singapore. These had been ordered as Forsten's and I believe that a number of people over here were misled in the same way.

However, they are very attractive birds and, unlike other members of *Trichoglossus haematod*, they are easy to sex. The cocks have a decidedly orange-yellow breast, whereas the hens have a lemon-yellow breast with little or no orange showing at all.

The adult cock had had his wings pinioned and, of course, has never been able to fly, but he at once paired off with one of the hens. They are certainly very loyal birds towards each other and, at night when it was time for them to be shut in, the hen and the other pair would fly into the house at once, but the hen would come out again every time and call to the cock while he clambered along the wire netting. As soon as he was inside in she would go, but not before.

I separated the two pairs in the spring of 1965 and put in a nest-box but, though several eggs were laid, they were clear and the nest-box was taken out in October.

They wintered very well without heat and in the spring of 1966 I put the nest-box in again. Several pairs of eggs were laid but they were again clear. However, two more eggs were seen on 25th June, and the hen seemed to be sitting reasonably tight.

I inspected the nest-box on Saturday, 16th July, and was delighted to find a newly-hatched chick. The next day I found that the other egg had hatched.

The young chicks grew very well but were very slow at feathering up and leaving the nest. I was beginning to give up any hope of their ever coming out when on 29th September, they both appeared, still not fully feathered but very healthy. This was ten weeks after hatching. They became independent after a couple of weeks and are now very well-feathered and standing up to the cold weather with no trouble at all. I think they are two cocks because of the orange-yellow breasts, but this might be immature plumage. The only other difference from the adults is the black beak instead of the orange one.

When the parents first arrived they were put into a birdhouse at 70° F., but the temperature was brought down quite quickly and they were put into outside flights within two weeks. These flights are 12 feet by 6 ft. 3 in., with a small unheated house at one end into which they are shut every night from November until early March.

They all drink nectar made up as follows : One teaspoon Horlicks,

one teaspoon Full Cream Nestles' Milk, and one teaspoon honey. This is mixed with six ounces of water.

This particular pair and the youngsters also eat a good deal of sunflower, peanuts, and apple.

As described, W. H. Brown has bred Edwards's Lorikeet (*Trichoglossus haematod capistratus*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

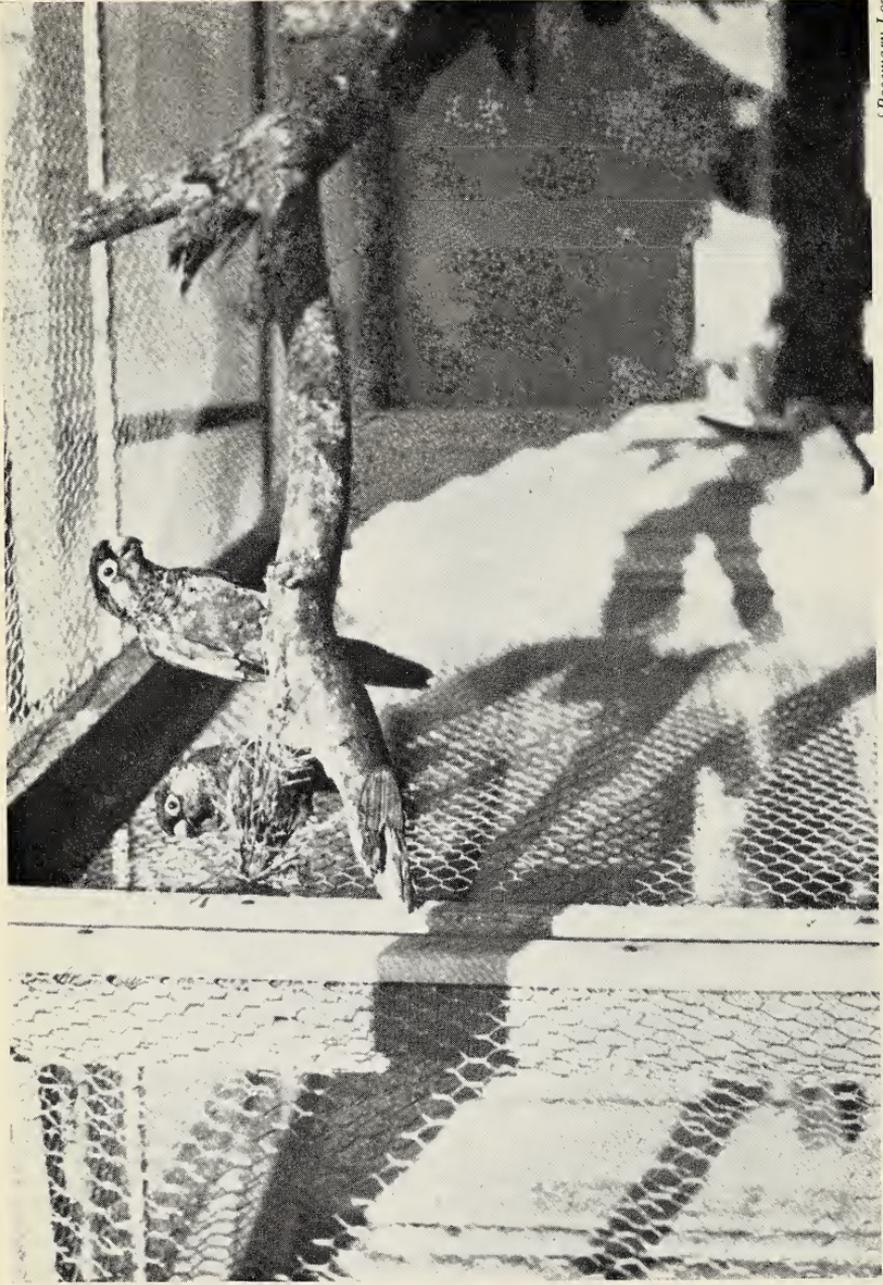
THE PEARLY CONURE

By ROSEMARY LOW (Sidcup, Kent, England)

The Pearly Conure belongs to the genus *Pyrrhura*. There are over twenty species of *Pyrrhura* and these are most often represented in confinement in this country by the Red-bellied (*P. frontalis frontalis*) and by the White-eared (*P. leucotis leucotis*). Most of the members of this genus have never been imported into Britain and the Pearly is very seldom imported indeed.

For those who are unfamiliar with this genus of conure, I should add that they resemble the *Aratinga* conures—those most frequently imported—in no way whatsoever. The *Aratingas* have given conures a bad name with some aviculturists for these birds are generally noisy and destructive and they are seldom willing to breed in confinement. The *Pyrrhuras*—although noisy when alarmed—have not the penetrating depth of voice of the *Aratingas* and I have never known them to attack woodwork. They are not easy to breed but when a pair do settle down to breeding they usually prove to be quite prolific. Moreover, the *Pyrrhuras* have great character and charm and are very active and inquisitive birds.

My first pair of Pearly Conures was purchased in March, 1965. I had never seen one before but vividly recalled the excellent plate in Seth-Smith's *Parrakeets* which depicted this species. The illustration does, however, fail to show the most attractive feature of the bird—the scarlet area on the bend of the wing. Green is the predominant colour—the wings, back, rump, and the lower part of the chest are dark green. The bend of the wing and the under wing coverts are bright red, the tail is dull maroon and the flights are deep blue. The crown of the head is dark grey, the cheeks are light grey and the throat feathers are grey, edged with a lighter grey and the chest



[Rosemary Low

PAIR OF PEARLY CONURES

Copyright]

[To face p. 5

feathers are edged with blue, thus creating the scaled chest markings which are typical of the *Pyrrhuras*. The nape of the neck, the tail coverts, and the feathers surrounding the vent are blue. The legs, beak, and eyes are black and there is a small area of bare skin surrounding the eye. Total length: $9\frac{1}{2}$ inches.

The conures were placed in a small outdoor aviary with no shelter but they slept in the nest-box at night. *Pyrrhuras* must always be provided with a box for roosting. So great is the curiosity of this species that a new nest-box will be explored and entered within seconds of it being placed in the aviary ; more wary species may take several weeks to enter a new box. If a bucket is left in the aviary during cleaning, it is immediately explored inside and out and anything edible is quickly removed !

This trait of curiosity led to their escape on one occasion. I returned from two weeks holiday to find the aviary empty. A rat had burrowed up from under the floor, and the Pearlies, no doubt unable to resist the temptation to explore, had made their exit via this hole. It was not long, however, before I heard them calling in the distance and they soon alighted in a large apple tree in the garden. I opened the bird-room door and they returned almost at once. They are extremely intelligent birds and I have no doubt that under the right conditions they would do well at liberty.

The following November I was surprised to come across another pair of these birds. They were undoubtedly a true pair ; one was far bolder about the head and its upper mandible was wider. In size it was appreciably larger. These characteristics (and the size of the feet in the larger parrots) are the surest guide to sexing any parrot-like species as the age of the bird and whether or not it is in breeding condition are immaterial, unlike the pelvic bone test.

I very much wanted to breed Pearlies and as I had come to the conclusion that my first " pair " were two of a kind, I was delighted when the owner of the true pair agreed to sell them. I acquired the birds in December and placed them in a small outside flight, 12 feet in length, with an open-fronted shelter. The aviary was one of three ; pairs of Pearlies occupied the outside flights and the centre flight contained, at that time, a pair of Red-bellied Conures. The new Pearlies were not nearly as steady as my first pair, one of which is very tame and will take food from the hand.

The staple diet of these birds consists of white sunflower seed, canary seed, and apple. A millet spray is given once a week and seeding grasses when they are in season. Hemp is supplied occasionally. I have no doubt that they would accept any fruit that was offered. Neither pair show any interest in loose millet although they are very fond of spray millet. They bite off a section and fly on to a perch where they eat it held in one foot, or, as often happens, one bird will hold the

millet and both will feed from it. Seeding grasses are eaten in the same manner.

In January, 1966, I was lucky enough to obtain a hen in exchange for one of my original cocks. This new pair, however, showed no interest in breeding ; they appeared far too concerned with everything going on around them. Large cockatiel type nest-boxes were immediately explored—then ignored. Pair number two chewed out the inside of a hollow branch which I then had to remove as it would not have made a suitable nest. In July they excavated a hole between the ground and some boards which concealed a cavity between their aviary and the next one, and disappeared inside. I blocked the hole up, for if they nested there I should have been unable to inspect the nest, should anything have gone wrong.

The conures were observed mating during the weekend of 23rd–24th July. A week later the hen spent long periods inside the box, the cock keeping guard on the nest-box perch. The nest-box, which was situated on the feeding shelf at the back of the shelter, measured 12 inches high by $9\frac{1}{2}$ inches wide and $9\frac{1}{2}$ inches deep. On 5th August I took a look into the box when the hen was off the nest and found three white eggs which seemed quite large for the size of the bird and measured exactly one inch (25 cm). The cock took no share in incubation.

On 27th August I heard the sounds of a youngster being fed, but I did not look into the box until three weeks later. The hen's continuous absence from the box caused me to fear that something was amiss, although the amount of food taken was increasing all the time. Inspection revealed three plump and very healthy looking youngsters, almost completely naked, and one very soiled egg which had probably been clear or punctured.

While rearing, the adults were fed on sunflower, canary seed, and a whole apple every day and at least two kinds of extras, either a millet spray, seeding grasses, chickweed or grapes.

I inspected the youngsters at weekly intervals for the next three weeks as the parents showed no concern whatsoever when I removed the box from the shelf. The hen apparently only entered it to feed the young or to roost at night with the cock. There appeared to be more than two days difference in the ages of the two elder youngsters and a slightly larger gap between the second and the third. At the last inspection on the 8th October, the eldest youngster, which was almost fully feathered, adopted the same threatening attitude employed by the adults when disturbed in their box ; ruffling up the head feathers, stretching the neck, and swaying from side to side. It was seen later that day looking out of the nest-hole.

I did not inspect the nest the following weekend as the eldest youngster, which was probably exactly seven weeks old, appeared to

be on the point of leaving and I did not want to cause it to do so prematurely. On the 18th October, in the early morning, I watched one youngster emerge from the box and fly on to the perch at the opposite end of the aviary. A few minutes later the second youngster emerged, flying equally well. They had obviously left the nest on the previous day.

Both birds were very like the parents in colouring but the back of the head is dark grey and only faintly scaled and the legs and beak are lighter. They were about three-quarters of the size of the adults. The bill of the eldest youngster was a dark grey while that of the second was a light silvery grey, but it changed to dark grey within a few days.

I feared that the youngsters might get chilled if they roosted outside in the torrential rain. They roosted in the box, however, following the adults straight inside at roosting time. They fed themselves on apple and hard seed almost immediately.

Five days after they left the box, which was the first occasion on which I was able to watch them for any length of time, I witnessed an interesting incident. The eldest youngster begged for food from the cock, dropping its wings, then flapping them vigorously whilst being fed. It then immediately disappeared into the nest-box and judging from the sounds coming from within, it was feeding its nestmate! This youngster left the box six days after the other two and was noticeably smaller.

I have given a rather detailed account of this breeding because so little has been written on the *Pyrrhura* conures, especially regarding breeding. I should be very grateful if any members who have bred any species of this genus or who have kept any other than the White-eared or the Red-bellied, would let me have details of their experiences with them.

* * *

BREEDING THE BLUE-HEADED LORIKEET

(*Trichoglossus caeruleiceps*)

By JACK RAWLINGS (Kelling, Norfolk, England)

In December, 1965, my friend Dr. K. Searle from Hong Kong cabled me saying that there was a pair of Lorikeets on the way to me, but the species was new to him. However, they turned out to be Blue-headed Lorikeets from New Guinea (*Trichoglossus caeruleiceps*). These must not be confused with the Dark-throated Lorikeet (*Trichoglossus haematod nigrogularis*) from the islands of Aru.

On arrival the birds were treated in the normal way and were gradually hardened off and put out in open flights the first week in May. On 1st July, 1966, two chicks were hatched ; unfortunately only one survived, as one died on the seventh day.

The hen laid again and on 15th November there were two further chicks ; these at the time of writing have now feathered up and should make their first appearance about 7th January, 1967.

It is, however, our intention to remove them from the nest on about 1st January as the weather is becoming extremely cold and I think it would be safer to hand-feed them for the next week.

The parent birds are being fed on a basic mixture of honey, condensed milk, Farex, and glucose. Live food is given to them immediately the chicks are hatched ; apple is given daily.

It might be of interest to breeders to know that all our Lorikeets are wintered out ; in fact it is a common occurrence to see them bathing in icy water.

As described by J. Rawlings, the Blue-headed Lorikeet *Trichoglossus caeruleiceps* has been bred in the Kelling Park Aviaries. It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

BREEDING IJIMA'S COPPER PHEASANT

(*Syrmaticus soemmerringi Ijimae*)

By JACK RAWLINGS (Kelling, Norfolk, England)

Our first pair of Ijima's Copper Pheasant were ordered in 1963, and the birds arrived in January, 1964, but the male died four days after arrival, in quarantine, of pneumonia.

In 1965 a further two unrelated pairs were shipped and these were dispatched by the new trans-polar flight route from Japan. The four birds survived the trip and the subsequent quarantine period. Unfortunately they did not come into a breeding condition that year. However,

in 1965, the original female was penned with one of the younger males and produced twelve eggs, seven of which were fertile and all chicks were reared.

It was decided to split the clutch into two. Heat was given to the chicks for the first seven days at a temperature of 75 degrees and was reduced over a period of fourteen days to 50 degrees. Turkey crumbs were available at all times to the chicks ; chopped yolk of hard-boiled egg, mixed with shredded watercress, was given twice a day being only available to the birds for periods of half an hour, maggots were also given.

At the time of writing we still have three unrelated pairs and if there are any members who are interested in obtaining any of these rare species, I should be glad to help them providing we have a successful 1967 season.

* * *

A COLLECTION OF WATERFOWL

By ROSEMARY UPTON (Ingatestone, Essex, England)

I can look back over 10 years of enjoyment from my Waterfowl Collection, in fact they have been real fun. There are 40 species now, and about 150 in number. They are all together on one piece of water, which has ample surrounds of grass, trees, and bushes. I have chosen the species with care, and have resisted keeping any which are known to be foul-tempered and dangerous to others. I got one species that I soon had to banish—two pairs of Canada Geese. When they started to nest, and had young, they put the fear of God into all and sundry. They, all eight of them, were taken by me to a reservoir, six miles away, and were permanently pinioned or feather clipped. I felt much relieved as I emptied out each Canada from a sack. It was goodbye, or so I thought. Two years later two of the young birds which I had dumped on the reservoir returned to nest. They fed at my feet, as always, and as all my collection do. This pair of Canadas nested about two yards from where they had been reared themselves. As they were far from a good tempered couple, I took their eggs away and thank goodness they made off, never to return.

All my ducks and geese are hand-tame, which makes it so easy to pick up an ailing bird, and do something for it if possible. I really do know all the birds as individuals and what fun that can be. I can recall several amusing happenings amongst them.

For three years there has been an amusing matrimonial triangle. A pair of devoted Mandarins are followed everywhere by a love-sick male Cinnamon Teal. The latter can scarcely find time to eat. The female Mandarin is entirely unimpressed. Most of the day the

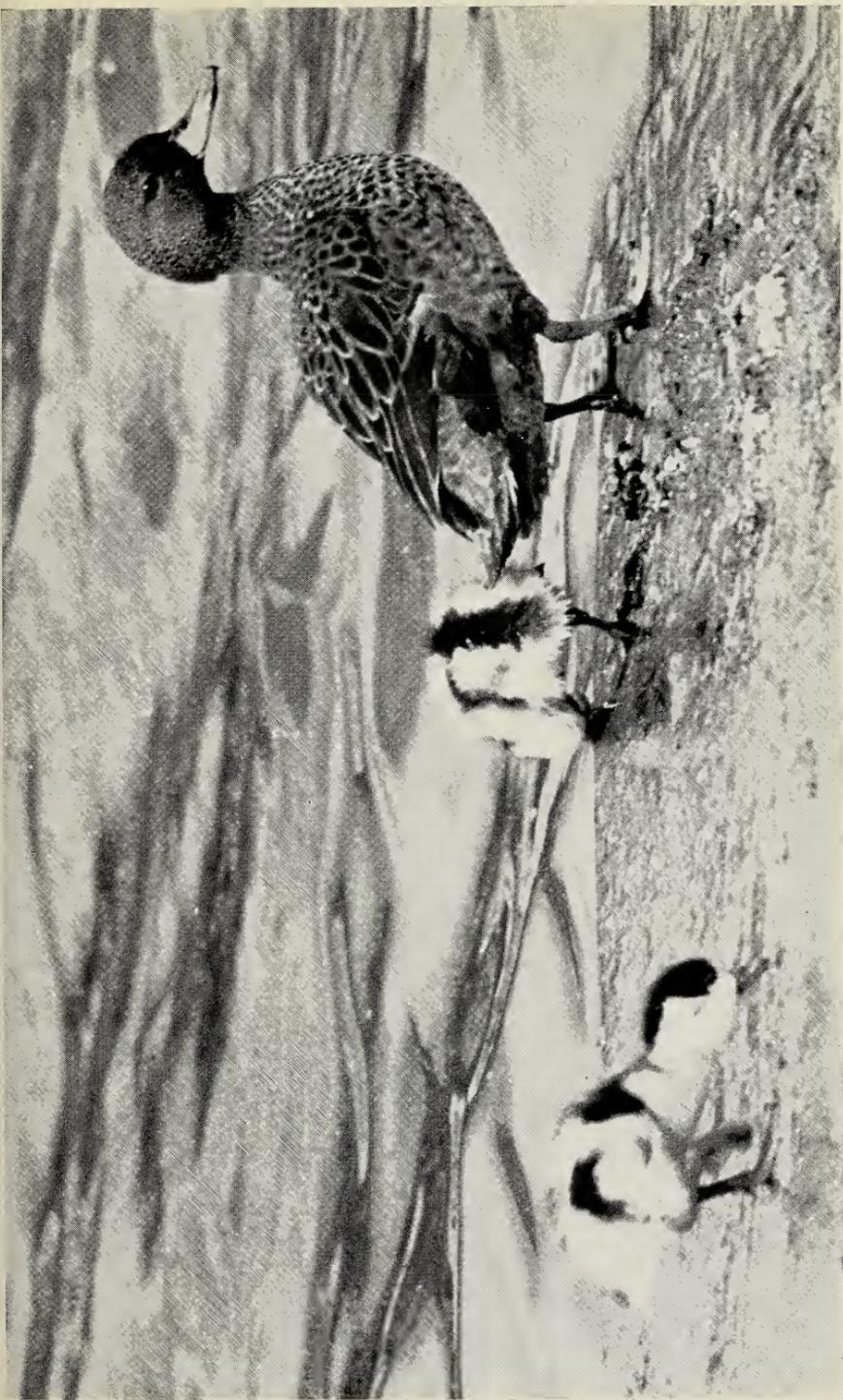
Mandarins swim side by side or stand together and the Teal continually displays and makes noises at the female Mandarin. The latter's husband is so obviously saying "Dear, don't look round, he is there again"!

A female Chilean Teal was driven off her nest by a Mandarin, but was quite determined to sit on some eggs somewhere. She found at the end of a drainpipe nest, two deserted Shelduck eggs. She literally had climbed up on these large eggs, and as the top of the nesting chamber was movable, I often looked to see if the Teal was still sitting. The eggs were far from well covered, I thought. Later on, when I was walking by this drainpipe, I stopped, as I heard noises coming from the tunnel. Almost at once out ran Mrs. Teal followed by two baby Shelduck. She was obviously overwhelmed at her large offspring, and most certainly her spouse was, he must have wondered who his wife had got off with!

In 1964 I kept amongst my collection a female American Wigeon, full-winged. This duck flew away in October, 1964, where to I do not know, probably to a reservoir six miles away. During the first two weeks of April, 1965, I saw fly on to the pond, a male European Wigeon with a female. The latter almost at once flew to my feet and fed, it was an American Wigeon, and by her behaviour I recognized her as the one who flew away in 1964. The pair settled down and a clutch of eggs was laid just outside the enclosure, under a hedge. I took these and hatched them under a bantam. The young birds were pinioned, and disposed of to someone who is interested in hybrids. About June the European Wigeon male flew away, but the female stayed here. During the first two weeks in April, 1966, the female American Wigeon was missing from the pond, but returned later with a European Wigeon male. I cannot say for certain that it was the same male, but I had every reason to think so. There was a nest again, but inside the wire enclosure, so I left the duck to sit, and she hatched seven young. Again in June the male was missing, and still is in November. The female guarded her ducklings until August when they could fly. The latter are tame and feed from my hand, like their mother always has done. I wonder what will become of these hybrids? No doubt they will give headaches to bird-watchers, especially if it is the male birds that they see. The females are so like European Wigeon, they no doubt will be identified as such.

During the severe winter of 1962-63 I lost none of my Waterfowl, but my bathroom had to be given over to five near-casualties. The two first arrivals were a pair of White-faced Tree Duck. After a night of 32 degrees of frost, they were both covered in ice, and the only remedy I could think of was a hot bath.

All my ducks and geese, being so tame, their unusual surroundings did not worry them in the very least. The Tree Duck had a good



[Rosemary Upton

CHILEAN TEAL AND YOUNG SHELDUCK

Copyright]



[Rosemary Upton

BATHROOM SCENE
WHITE-FACED TREE DUCK, CINNAMON TEAL, AND CHILOE WIGEON

Copyright]

[To face p. 11

bathe and then tried to perch on the edge of the bath, but of course slipped off. A folded bath towel was the answer and the ducks whistled their approval.

The next very weak duck that had to be brought in was an old female Chiloe Wigeon. The Tree Duck greeted their friend with many whistles, and she was soon in and out of the bath, and then on to the floor to eat out of a bowl.

Next, I found a female Cinnamon Teal in the shape of a lump of ice, she too joined the bathroom party. Her recovery was miraculous. The husband I felt sorry for, as they were a very devoted pair, so I went and caught him. The reunion of the pair was so delightful to watch, that it was well worth the extra messes that would now have to be cleared up! The female Teal showed her spouse the way to get into the grand swimming pool, from the floor. First a jump up on to one log, another little jump on a still higher log, one more hop up on to the edge of the bath, then plop into the water. I was not tempted to bring in the Chiloe Wigeon's husband, as he seemed very happy playing fast and loose with other people's wives.

The ducks had clean bath water every other day. This had to be a well-organized ritual. I made the duck get on to the floor, and they soon learnt what was required of them. I then pushed into the bath the towel and rinsed it out, cleaned the bath, and ran in fresh water. When full, the duck were allowed to get in—and what a splashing went on. They all five were obviously delighted with the clean water.

When the arctic weather had gone, the ducks were returned to the pond, and I must say we missed the duck far more than we had missed our bath!

* * *

BREEDING THE ALEUTIAN CANADA GOOSE

Branta canadensis leucopareia

By CARL E. STRUTZ (Jamestown, N. Dak. U.S.A.)

The birds were taken from their winter quarters about 1st April and placed in a breeding pen of their own which contained a good growth of grass and fresh running water. They immediately became acclimatized to this new pen and their actions became much like other Canada-type geese when mated and preparing a nest.

The female began to bag down about 10th May and this made me feel very good for I was almost sure she would produce eggs. I did not notice them mate but they became real aggressive toward other geese in bordering pens . . . even though they were almost completely alone because of growing shrubbery along the partition fences. When I went into the pen to feed them the gander would viciously attack me, much like other Canada geese. This surprised me because in normal times they are very amiable birds and rather shy and tame.

The female laid her first egg on 19th May and refused a nest-box I had made for her. Instead she made a depression in a clump of Reed's Canary grass in the corner of the pen just above the small pond in their pen.

The egg is about the exact size of a Cackler Canada goose egg . . . possibly just a bit larger if closely compared. The colour of the egg is about the same as all Canada goose eggs . . . Richardson and Cackler.

After the first egg was laid they both became very aggressive and guarded the nest viciously . . . the female, however, was not nearly as demonstrative as the gander. She would stand near by, honking continuously . . . but the little gander would fly at me.

An egg was laid every other day until five were laid and on 27th May she began incubating. She was a very faithful bird and left the nest very few times as far as I observed. The little gander stood close by and really protected the female and nest. He was a little terror when she was incubating. After 26 days, on the morning of the 22nd June, I noticed the first little gosling stick its head out from under her wing. That afternoon I saw two others, a total of three. I did not disturb her, but the next day she was off the nest with four little goslings. I examined the fifth egg and it had a little gosling in it, but she had trampled it and the gosling in the egg was "mashed" and quite emaciated.

Their rate of growth is much like the cackler and the old ones raised and guarded the young faithfully. The little gander would remain with the female and the young birds when I fed them . . . and discontinued his violent attacks on me.



[Carl E. Strutz

• ALEUTIAN CANADA GOOSE AND YOUNG (ABOUT THREE DAYS OLD)

Copyright]

IMPROVING MAGGOTS FOR FEEDING TO BIRDS

By H. E. HITCHIN (Skenfrith, Monmouthshire, England)

Some years ago I lived in a house near an old mill which had closed down, and had no difficulty in finding supplies of mealworms in the offal that still lay in odd places in the mill. These were always in good condition. When I came to purchase supplies in this past season I had difficulty in recognizing them as the same species, so thin and undernourished were they on arrival.

Consequently, when I had to turn to maggots when mealworms recently became unobtainable I decided to carry out a series of experiments on feeding them from the time of their arrival until they were all consumed by the birds—in my case a period of a fortnight or so. I approached the problem from this premise—that if the maggots were not fed at all during the intervening period then they must live on their own fat until turning into a chrysalis. I therefore tried them with foods, and found that maggots up to a certain age do actually continue to feed if food is made available. Evidence of this could be seen when coloured food, such as grated carrot, was incorporated in the mixture, the colour being visible in the gut of the larva. As a result of this feeding the maggots remained well nourished right until the last one was consumed, their bodies appearing fat and white, turning into a yellowish butter-milk colour just before they turned into a chrysalis.

I found the following feeding method to be most convenient in my case. On arrival the maggots were turned into a cylindrical drum made of three-ply wood, and given a good handful of crushed oats. They were then left for 24 hours to clean themselves. The following day they were fed a basic mixture of :

- one part prepared breakfast porridge, cold.
- one part Farex mixed with milk.
- one freshly grated carrot.

The porridge was left over from breakfast ; and the Farex, a blended cereal product sold as baby food, was that which remained in the receptacles of softbills to which it had been given the previous day. The ingredients were mixed together with a little milk into a thin paste. About a teaspoonful of the mixture was fed daily on a small square of cellophane placed in the bottom of the drum clear of the crushed oats. Later in the day, when the maggots had found the food, the cellophane was turned over and the maggots soon congregated underneath. After a few days it was found that it was mostly the younger ones that were taking the food, the older ones keeping to the crushed oats which needed replenishing at the end of the first week. At the end of the fortnight the drum was thoroughly scoured and dried in the sun before restocking.

The following additives have all been successfully tried—honey ; malt extract ; and a liver-rich dog food. These were worked into the porridge before mixing. Other possibilities may suggest themselves. The procedure is strongly recommended to those feeding live food to all softbills.

* * *

ADDITIONAL NOTES ON MAGGOT FEEDING

By C. J. O. HARRISON (Perivale, Middlesex, England)

I heard of Mr. Hitchin's experiments through a mutual friend at a time when I was pondering the problem of the lack of chlorophyll in the diet of birds which normally eat green caterpillars, but to which I could only offer maggots. Although many insectivorous birds will also eat greenfood this does not always seem to be the case. It occurred to me that feeding might offer a solution. What I needed was a fairly liquid solution of green vegetable that could be easily obtained. I suddenly remembered the strained, creamed spinach sold in tins as a food for small babies. I purchased a tin and mixed equal quantities of spinach mush and Farex. My maggots I purchase in small quantities and keep in small boxes, and I put a quantity of the mixture in. For several days I had a rather nasty oozing mess of mixture and maggots, but when I had removed them and allowed them to clean themselves again I found that they were now a yellowish green colour internally and had obviously ingested some of the mixture. The technique requires refining but it has obvious possibilities for anybody who is faced with this problem.

* * *

A CRITIC AT THE SHOW

By DEREK GOODWIN (London, England)

I have an uneasy suspicion that even those who agree with the sort of things I write about the "National Show of Cage Birds" may have no great wish to read them yet again in our Magazine. My excuse is that our fair editor asked me. How could I refuse? It may seem unchivalrous to put the blame on a lady but there is precedent for such behaviour as those who read the Bible as well as the AVICULTURAL MAGAZINE will know.

My first impression, which may be wrong, was that the show had shrunk. At any rate it was all on the ground floor, which made things more convenient to the visitor. Most of the birds shown were, as usual, in very good condition. I went, however, on the first evening and I doubt if all of them looked as well by the third day. I was particularly struck with the quiet beauty of a magnificent Silverbird (*Empidonis*

semipartatus), a species I have never before seen alive and a most beautiful one. This aberrant African flycatcher is bluish silver-grey above and a light, but rich, orange-rufous on the underparts ; slender in build with a longish tail. A Rock Thrush of a species new to me in life (*Monticola rufiventris*) was also both beautiful and instructive, being much less like other Rock Thrushes than I should have thought from comparison of skins or descriptions. Among the British birds I was charmed by a pair of Tree Pipits whose tameness allowed a full appreciation of their subtle colours, grace of movement, and perfect condition.

At least a majority of the foreign birds and British "softbills" were as usual shown in cages that would not strike the lay visitor as atrociously small and their frequent decoration, even if sometimes incongruous to anyone knowing the native habitat of the species (I saw a Diamond Dove's cage decked out with lush green moss suggestive of a tropical forest), does give a good impression to the visitor. Things were, again as usual, otherwise with the British "hardbills". Nothing could give a much worse impression to the average layman than the tiny, dark-green painted cages in which the finches and buntings are incarcerated. Only temporarily I know but many visitors *don't* ! What makes this have as bad an effect as it possibly can is that it is just such species as Chaffinches, Goldfinches, Bullfinches, and Yellow Buntings that the average visitor is pretty sure to recognize, or at any rate regard, as "wild birds".

The dealers' stands were, with one possible exception, much better than a few years ago. At any rate I saw very few obviously ill or injured birds. All the same I felt, as before, when contemplating the dealers' stands, serious qualms about the ethics of bird keeping. Looking at the crowds of parrots of various species, obviously recently caught in the wild, it was hard to believe, much as one would have liked to, that all of them would be bought by competent and kind-hearted aviculturists. All too many I fear, at their present prices, will end their days miserably mewed up in "parrot-cages". Looking at the cages full of various waxbills (Yes, I know that, under the conditions the dealer must of necessity keep them, it is wisest and kindest to crowd many of these species to ensure adequate warmth and lessen the likelihood of serious fighting) I doubted whether even an average bird keeper, like myself, would have been able to keep alive 50 per cent of any dozen bought at random. Indeed though my own bird room is chronically over-full, the Tempter kept whispering in my ear "Well these are worse off, aren't they?" Only the fact that with so many dozens in each cage it would be almost impossible for anyone catching some up *not* to catch the weakest first, and the virtual impossibility of finding good homes for surplus waxbills made me restrain myself from adding yet more Blueheads and some other new species, to my collection.

I stopped to look at a Budgerigar that had won a first prize. It was of a rather nebulous grey colour, at least as to its underparts, its upperparts had the natural colour pattern, but in dark grey and off-white. It was not, however, its relatively unattractive colouring that repelled me, but its large size, disproportionately large head, and even more disproportionately large facial spots. I thought of the graceful, active wild Budgies that I had seen in Australia, whose *normally-sized* cheek spots so beautifully set off their yellow faces. The real horror of "the Fancy" is not that it should deliberately prefer and strive to breed such monsters but that it should succeed in "brain-washing" the "man in the street" into accepting its perverse values. We have heard much in recent years about the service bird-keepers might be able to do, and in a very few instances have done, in the way of preserving rare species by breeding them in captivity. As things are, however, it is likely that as soon as any species, rare or common, becomes sufficiently domesticated for numerous people to be able to own it "the Fancy" decides its natural size and shape can and should be improved (= distorted) with the result that the birds subsequently bred are, to those who appreciate natural beauty, mere travesties of the original.

Bird shows in general and the National Show in particular are the most potent factor in perpetuating and spreading the belief that only birds that conform to the fancier's ideal are of value and worth breeding and that a naturally sized and shaped bird is worthless and should not be bred from. For this reason above all others I was pleased by my impression that the show had shrunk this year, hope that it was *not* a wrong impression and look forward to the time when it will no longer be.

* * *

NEWS FROM CHESTER ZOO

By M. F. COUPE

1966 has been most successful with regard to bird breeding and at least 20 species have been reared. Scarlet Tanagers were hatched and reared in the Tropical House and it is obvious that several other species must have raised young. However, these have not been recorded as, due to the rapid growth of vegetation in this building, it has become increasingly difficult to find nests and too keep a check on individual species.

The most notable hatchings were of two Sclater's Crested Curassows, which have been fully described in Vol. 72, No. 6, of the AVICULTURAL MAGAZINE. In Vol. 72, No. 5, page 127, of the AVICULTURAL MAGAZINE the hatching of two Pagoda × Grey-headed Mynas was described. Unfortunately, one of these has since died, but the parents went to nest

again and reared two more youngsters. Kiskadee Flycatchers were hatched in the Temperate Bird House, as were the above species.

Many of the Avicultural Society Members who visit the Zoo are amazed at the number of Parrakeets which we breed each year. Zoos are not the best places to breed parrakeets as the close proximity of visitors will normally deter all but the most insensitive birds from breeding. However, in our Bird House aviaries, which are now used exclusively for parrakeets and similar species, these birds seem to settle down very quickly. Each pair has a large outside flight and an inside aviary which is heated during the winter. This year we bred : 1 Derbyan, 8 Red-rumped, 2 Pennant's, 3 Barraband, 4 Golden-mantled Rosella Parrakeets, 1 Scaly-breasted Lorikeet, 9 Cockatiels, and 1 Peach-faced Lovebird.

Several species of ducks and geese have been hatched in the incubator, including :—Barnacle, Emperor, Chinese, Lesser Snow Geese, and Muscovy Ducks. Three Californian Quail were also hatched in this incubator but, unfortunately, the only Ashy-headed Goose hatched was killed by a fox.

The Great and Spotted Eagle-Owls have bred again and this year three Great and two Spotted Eagle-Owl youngsters were reared.

Recent arrivals include :—a pair of Rheas, Delamere's Giant and Broad-winged Whydahs, Superb, Silver Blue, and Scarlet Tanagers, a Cock-of-the-Rock, a Golden-fronted Fruitsucker, and a hen Great Indian Hornbill.

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LONDON ZOO NOTES

By J. J. YEALLAND

Among the birds received into the collection at Regent's Park during October and November are representatives of one genus, three species, and two subspecies not previously exhibited here. The new genus is *Chrysococcyx k. klaas*, Klaas's Cuckoo, of which a pair has been received. They are of particular avicultural interest, for they were brought from Kenya three years ago by the late David Roberts and they have been kept since then in the aviaries of the late Capt. Quincey. This small cuckoo, like others of the genus, has always been considered very difficult to keep and it is evident that these have been cared for with great skill and kept under excellent conditions ever since their capture more than three years ago.

Klaas's Cuckoo is brood parasitic on a wide variety of small birds such as sunbirds, flycatchers, warblers, weavers, and others. Adults have been observed feeding young of their own kind after they have left the nest.

In addition to the cuckoos, the executors of Capt. Quincey's estate have presented a Pied Jacobin and a Wood Nymph Humming Bird, an *Acrocephalus* warbler and a Bristle-bill (*Bleda syndactyla woosnami*) which is a species new to the collection.

From Dr. K. C. Searle a young heron believed to have been *Oroanassa magnifica*, the Hainan Night Heron, was received, but it lived for only two days. He also sent an Eastern Purple Heron (*Ardea purpurea manilensis*), a new subspecies.

Four Spotted Bustard Quail (*Turnix ocellata*) and four Grey-breasted Fruit Pigeons (*Ducula c. carola*) are new species from the Philippine Islands and two Philippine Green Pigeons (*Treron pompadora axillaris*), a new subspecies.

Other noteworthy arrivals are a pair of Pigmy Falcons (*Polihierax semitorquatus*) and a pair of Houbara Bustards (*Chlamydotis undulatus*) deposited, three Barred-shouldered Doves, a Nicobar Pigeon, a Bronze-winged Pigeon, and a Perfect Lorikeet presented by Mr. Tom Spence ; a Changeable Hawk-Eagle, two Avocets, two Oystercatchers, a Curlew, and four Ruffs received in exchange from the Copenhagen Zoo. Six Painted Quail have been bred in the Gardens.

A Wattled Starling received in 1951 and whose age was not known at the time of arrival now shows signs of senility. Its plumage has become white, but the flight feathers remain the normal black with greenish metallic sheen, though the tail which should be of the same colour has become white. It develops smaller than normal wattles.

* * *

BRITISH AVICULTURISTS' CLUB

The ninety-third meeting of the Club was held at the Windsor Hotel, Lancaster Gate, London, W. 2, on Monday, 21st November, 1966, following a dinner at 7 p.m.

Chairman : Mr. K. A. Norris.

Members of the Club present : Miss P. Barclay-Smith, A. W. Bolton, R. A. Chester, J. O. D'eath, Mrs. W. Duggans, A. C. Edmonds, Miss R. Ezra, J. Hancock, H. J. Harman, L. W. Hill, Dr. E. Hindle, H. Horswell, F. T. Jones, Dr. S. B. Kendall, J. Kuttner, G. B. Lane, C. Marler, R. F. Marshall, P. H. Maxwell, W. R. Partridge, A. A. Prestwich, J. H. Reay, D. M. Reid-Henry, R. C. J. Sawyer, Mrs. K. M. Scamell, Mrs. C. H. Seth-Smith, H. A. Snazle, Mrs. P. V. Upton, Mrs. G. Wheatley, J. J. Yealland.

Members of the Club, thirty-one : guests nineteen.

The Chairman welcomed Franz Lazi, the very eminent nature photographer, and Tom Spence, leaving for Western Australia in the New Year.

David Reid-Henry is, of course, an animal and bird portraitist with a world-wide reputation. It must have come as a very pleasant surprise to some of those present to find that he is also very skilled in the handling of a camera. His "South African Potpourri" consisted of about a hundred excellent slides, scenic and faunal. Reid-Henry was accompanied by his now well-known Crowned Eagle "Tiara".

The date of the next meeting is *Monday, 13th March, 1967.*

ARTHUR A. PRESTWICH.

Hon. Secretary.

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NEWS AND VIEWS

Dr. Alan Lendon has been elected President, Royal Australasian Ornithologists' Union.

* * *

Tom Spence has been appointed Superintendent, Zoological Gardens, Perth, Western Australia.

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W. S. Payne is a very successful breeder of British hardbills, especially Siskins of which he reared over thirty last year!

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In 1965 Jeffrey Trollope had three Harlequin Quail chicks reared (1966, 5). Last year six young ones were reared from ten eggs.

* * *

Mrs. Ferne Hubbell, San Diego, reports: "Raised *Pionus menstruus*, African Greys, Black-headed Caiques, Orange-headed Caiques, Slaty-headed Parrakeets, Alexandrines, and Golden-headed Conures this year." (1966.)

* * *

Dr. Herbert Schifter, Vienna, writes: "You may be interested to hear that a few weeks ago the hundredth Mousebird was hatched and has been reared in my aviaries. The number comprises three different species in this group: Speckled, Blue-naped and Red-faced Mousebird."

* * *

G. C. Wood, Salisbury, Rhodesia, writes: "I have bred a Cordon-bleu with a Blue-capped Waxbill. The interesting point is that both cock birds show the male characteristics—I have a blue headed bird with red cheek patches. The blue is vivid like the Blue-capped."

During 1966 T. S. Thomson reared 150 British birds, mostly Greenfinches, including 33 rare-coloured. The pheasants also did well: 12 Blue Eared were reared from one pair and 22 Elliot's from three pairs. Numerous Amherst's and Swinhoe's were also reared. A young pair of Monal had two clutches of infertile eggs.

* * *

Professor Carl Naether writes: "A fellow fancier has on three occasions hatched a Crowned Pigeon egg in his incubator, then fed the squab by hand. In each case it seemed to thrive for a week or eight days, but then died suddenly. He used different feed formulae in the hope of succeeding." Professor Naether would be very pleased to receive any helpful advice.

* * *

Council of the British Trust for Ornithology has awarded a Tucker Medal, 1966, to James Fisher. The award is made "in recognition of outstanding field work by an organizer or participant in the Trust's own or aided investigations".

James Fisher has always been closely associated with the B.T.O. He is a Founder-Member, and was successively Assistant Secretary, Honorary Secretary, and Honorary Secretary-Treasurer.

* * *

The Simon Harvey Memorial Medal, awarded annually by the Avicultural Society of South Australia for the most outstanding breeding achievement of the year, has been awarded to John L. Mitchell, for breeding the Varied Lorikeet *Psittuteles versicolor*, 1965-66.

The Bronze Medal of the Avicultural Society of South Australia has been awarded to R. W. McKechnie, for the first breeding of the White-headed Pigeon *Columba norfolciensis*.

* * *

Since the formation of the Avicultural Society of America nearly 40 years ago, it has been served by many efficient and selfless officers. One such is Mrs. Velma McDaniels whose term of office as Secretary has unfortunately been all too short—persistent ill-health having forced her to resign.

Mrs. McDaniels successor is Don Hultman, already well acquainted with the affairs of the Society as he has served as Membership Secretary for three years.

* * *

During the time Mrs. E. L. Moon was Curator at the Parrot Jungle, Florida, she reared 35 young macaws, many of them Scarlet × Blue and Yellow. Mrs. Moon did not, however, succeed in breeding Blue and Yellow × Green-winged until last year, when one young one was

reared by her own birds. Very unfortunately it was short-lived ; it apparently caught a wing in the bars of its cage and died the following day as the result of a broken wing.

* * *

Charles Lucas has been elected President, Avicultural Society of Australia, for the nineteenth successive year.

In a recent letter Lucas writes : " Our parrot breeding season is just about completed. I bred two Crimson-wings, eight Princess of Wales's, four Barraband's, eight Scarlets, six Elegants, and plenty of Bourkes, as well as a few other odds and ends. Bourkes have been breeding here in Melbourne so well over the past two or three years that it is becoming difficult to dispose of one's surplus, even at give-away prices of about £2 10s. per pair. I have about 30 in my aviaries at the present time."

* * *

Mrs. Dorothy Speed, Fresno, California, has successfully bred the Slender-billed Cockatoo *Kakatoe tenuirostris* : one young one left the nest-box on 27th May. It was taken from its parents on 6th August and shortly after was reported to be " doing fine, eating good and getting fat and healthy ".

This is probably only the second occasion this cockatoo has been bred in the United States. The first was at the San Diego Zoological Gardens, where one young one was hatched on 23rd February, 1959. There is a breeding account by Kenton Lint and a photograph of the young one aged 104 days in the MAGAZINE, 1959, 107.

* * *

The 88th Annual Report of the Royal Zoological Society of South Australia lists 205 birds, of 58 species and varieties, bred in the Adelaide Zoological Gardens, 1965-66.

For the second year in succession a Scarlet \times Blue and Yellow Macaw hybrid was reared ; five species of *Neophema* reared 30 young ; and an Apostle Bird *Struthidea cinerea* was reared, a " first " for South Australia. Amongst other birds listed as bred are : Common Rhea, three ; Emu, four ; Straw-necked Ibis, one ; White Ibis, two ; Razor-billed Curassow, one ; Nepal Kalij Pheasant, eight ; Southern Stone Curlew, three ; Brown Pigeon (*Macropygia phasianella*) one ; White-browed Wood Swallow, two ; Cloncurry Parrot, two ; Hooded Parrot, three ; and Northern Rosella, three.

* * *

In the September-October number of the MAGAZINE (page 140) I mentioned that Slender-billed \times Roseate Cockatoo hybrids had been bred by Ben Heddle. C. C. Campbell, Cowandilla, South Australia, kindly informs me that Victor McMenemy, Hilton, S.A., bred

Roseate × Slender-billed regularly for many years, in fact no less than 36 young ones were reared. Campbell writes : "The Galah was mercilessly plucked by the Corella. At all times his only feathers were those covering his head, wings and tail. His body was completely nude and he was indeed a very queer looking spectacle. He died about a month ago.

With strangers the Corella is most vicious but, as is often the case, her owner can do anything to her without protest. His method of removing her from the aviary is to grab her by the neck and lift her on to his shoulder ; treatment which she really seems to enjoy, and shows great affection towards him. When out of her cage it is not safe for strangers to be within 6 feet of her as she will attack without warning. Her age is about 50 years."

* * *

In the very first number of the *MAGAZINE*, dated November, 1894, the fourth paragraph of the preamble reads : "We rely for the success of the Society upon the energy of the members in inducing others to join, and in contributing to the Magazine".

This is just as true today as it was 72 years ago.

A. A. P.

* * *

REVIEW

THE SHELL BIRD BOOK. By JAMES FISHER. EBURY PRESS and MICHAEL JOSEPH. Designed and produced by George Rainbird, Ltd., London, and printed and bound by Jarrold and Sons, Ltd., Norwich, 1966. Price 25s.

"The readers, and the printers . . . and writer of this book, belong to a species of sophisticated ape, distinguished . . . by a certain power to store and communicate experience, . . . and both altruistic and viciously aggressive behaviour." Thus, much abridged, the first pungent paragraph of this stimulating, interesting, and informative book by an author who, wisely, has not shrunk from letting his personality and opinions, perhaps even his prejudices, enliven his pages.

A mere list of chapter headings could give little hint of the richness and variety here provided. The history of British birds, so far as known or reasonably surmised, is given together with that of the land they live or lived in and the people who caught, ate, named, or studied them. A chapter is devoted to birds in literature, music, and art. One to bird gardening : that is the encouraging of birds, especially but (I was glad to see) not exclusively small passerine birds. Here, although the author subscribes to the conventional idea that a bird table or

elevated feeding tray is desirable he does recommend that food be put on the ground for such species as Redwings, Fieldfares, and Dunnocks. This advice should result in positive benefit to some of the more needy birds if we get another hard winter. All too many writers on the subject of bird feeding recommend putting all the food on a bird table. To do this is to ensure that in really hard weather the garden's resident Blackbird can, and will, easily prevent any starving Redwings, Fieldfares, or Mistle Thrushes that turn up from getting *any* of the food.

Bird protection in all its aspects ; with the customary smile at the legitimate shooters of ducks and geese and the obligatory scowl at the wicked egg collector. A detailed guide of the bird geography of Britain and Ireland with an indication of all major accessible Bird Reserves, Wildfowl Refuges, Bird Observatories, Zoos, and Museums. A list of notable bird-watchers down the ages. A list of all living *and* fossil birds known to have occurred (assuming all fossils to be correctly identified) in Britain are also included. The book is profusely and diversely illustrated with both black and white and coloured illustrations by numerous artists ancient and modern, among the latter, Robert Gillmor, Peter Scott, and E. A. R. Ennion. The last is represented by a whole series of delightful and slightly impressionistic paintings which successfully and beautifully capture the spirit of their subjects.

Those whose interest in birds is less wide-ranging than the author's may feel at first disappointed that so much space has been devoted to "other" aspects but it is to be hoped that the easy, lucid style may win them over to widen their interests. Equally some may disagree with the author here or there on this point or that ; if so they will at least be stimulated to check or investigate the correctness or otherwise of their own opinions. I do not think any bird-addicts are likely to get a more interesting twenty-five bobs' worth than this book. If I were so unfortunate as to lose my free review copy I should certainly go straight out and *buy* another.

D. G.

* * *

CORRESPONDENCE

BREEDING ABILITY OF JAVA SPARROWS

In reply to the request for information on Java Sparrows, I am pleased to offer the following.

In 1965 Mr. Childs, a member of Chester C.B.S., bred four Grey Javas from an imported pair of Greys. I obtained the four young late in 1965. During the early months of 1966, the four Javas "paired" up, both pairs going their own ways. They were housed in an aviary 30 by 20 feet. During February and March one pair frequently conducted a courtship act, which usually ended in mating. No nest-boxes or provision for nests had been provided. The second pair kept together, sitting side by

side, but no display or mating took place. It was considered they were both cocks, this being somewhat confirmed by subsequent observations, no attempt at nesting being made.

The four Javas were transferred to a 70 by 70 feet aviary in April, having wintered in unheated quarters. One pair made a nest in a horizontal type Budgie nest-box, four eggs being laid. While all hatched, two young disappeared soon after hatching, the surviving birds leaving the nest as healthy youngsters. The young were reared on an all seed diet of canary and millet. The sexes of the two young are at present unknown.

The same pair of Javas nested again, but Zebra Finches or some other of the aviary inmates upset the procedure, the eggs being destroyed. Field mice may have been the culprits as later in the season some nest-boxes were stuffed full of dried up raspberries and loganberries, which are cultivated in the enclosure.

Next season a few wild-caught imported Javas will be added, in the hope that more breeding takes place and possibly prevent further inbreeding, the present pair being brother and sister. Furthermore, it is my intention to liberate the occupants of the aviary, mostly Zebras, and make observations on their "domestication", having conducted a similar experiment about ten years ago. The Javas will be included in the liberty trials which will commence about a month after the majority of the aviary inmates have commenced nesting.

A few years ago I visited an importer's premises and was able to make a personal selection which included a "pair" of Bengalese. Both turned out to be hens. On a subsequent visit to the dealer, I asked for two cock Bengalese, and he was most surprised that the two previously purchased birds were both hens. He informed me that the exporters sexed the Bengalese, only cock birds being exported.

In my initial selection I had selected two birds that did not "sing", in the hope of obtaining at least one hen. While this selection and exporting of only cocks may apply to a domesticated species such as the Bengalese, it is difficult to visualize any similar procedure being applied to a wild-caught species such as the Java Sparrow.

T. S. THOMSON.

16 LONG LANE,
HOOLE,
CHESTER.

ZONOTRICHIA CAPENSIS

Herbert Murray's success with this species (1966, 1931) is certainly not a first success.

The Pileated Song Sparrow or Chingolo was bred by W. Teschemaker, in Devon, in 1907; two young were reared for which the Society's Medal was awarded (1907, 26). Writing in 1921, Dr. A. G. Butler says that one of the young birds, a cock, was still in his possession in perfect health and condition.

Two young were reared at the London Zoo in 1917 and, I believe, again later: and two by W. Shore Baily in 1921 (*Bird Notes*, 1920, 177; 1921, 177).

A more recent success is that of B. Bennett, Hazel Grove, Nr. Stockport, two young reared in 1958 (*Cage Birds*, 6th Nov., 1958).

ARTHUR DOUGLAS.

10,600 Preston Road,
Dallas,
Texas 75230,
U.S.A.

The Editor does not accept responsibility for opinions expressed in articles, notes, reviews, or correspondence.

THE PARROT BAN

Mortality in parrots imported in overcrowded and insanitary conditions used to be very high. They suffered from a contagious disease, characterized by diarrhoea and wasting, and the sufferer almost invariably died. Bacteriologists eventually diagnosed it as psittacosis, parrot fever, and so, in 1897, a new word was added to the language.

In 1929–30 there was an epidemic in human beings with these symptoms, coupled with bronchial pneumonia. The daily press sensationalized the outbreak when it was discovered that many of the sufferers had been in contact with parrots. It was immediately assumed, and as it transpired correctly, that the parrots were to a very great extent responsible : psittacosis was indeed communicable to man.

The Ministry of Health, in its wisdom, on 20th May, 1930, put into force the Parrots (Prohibition of Import) Regulations, 1930. This Order imposed a general ban on the import of parrots of all species from all countries. The “Culprits” were confined to birds coming only from South America, but no species was exempt, not even the Budgerigar.

The Order remained in force for twenty-one years. The Parrots (Prohibition of Import) (Revocation) Regulations, 1951, published on 28th December, 1951, rescinded the previous Order. As from 8th January, 1952, parrots were again allowed into the country without licence. The Regulations were revoked because :—

- (a) There was no significant recurrence of psittacosis which led to the ban ;
- (b) Research had shown that psittacosis is not confined to parrots, but occurs also in birds of widely different groups, such as sea-gulls, pigeons, ducks, and turkeys, and consequently this virus disease is more properly ornithosis ;
- (c) The development of antibiotics had, to a very great extent, robbed the disease of its dangers.

But hardly had we become used to the idea of there no longer being a ban when the Ministry of Agriculture and Fisheries (Animal Health Division) decided to reimpose it. The Order, Parrots and Miscellaneous Birds (Prohibition of Importation) Order, 1953, came into force on 16th February, 1953. The Regulations were aimed at safeguarding the country's poultry flocks against the introduction of Fowl-pest (Fowl-plague and Newcastle disease) from abroad. And that ban remained in force for over thirteen years, only being lifted as from 1st November, 1966. The reason given by the Ministry of Agriculture, Fisheries, and Food being “long experience has shown

that, in practice Psittacines are not a significant factor in the introduction or spread of disease in this country". The virus has been diagnosed in a very large number of different species of wild birds, many of which appear to harbour the virus without showing any ill-effects.

Before 1930 parrots were imported in very large numbers. It will suffice to give just two examples. Some of the older members of the Avicultural Society may remember the advertisements of one very prominent dealer—the business closed down at the beginning of the war—" Parrot and cage, £1 ", and the rows of cages with their dejected inmates, mainly Roseate Cockatoos and Indian Ringnecks, with an occasional Blue-fronted Amazon for good measure, that hung outside the premises. And the thousands of lovebirds—pairs each of Fischer's, Masked, and Nyasa offered for £2 the lot. It is inconceivable that imports will ever again be of such magnitude, or that birds will be offered at comparable prices. But importations on quite an extensive scale are to be expected. It is up to exporter and importer alike to do everything possible to ensure that birds are packed and transported under the best possible conditions. For remember, should this ban ever be reimposed it is very unlikely that it would be on public health grounds, but almost certainly on humanitarian. And if ever it is reimposed it would almost certainly be permanent.

A. A. PRESTWICH,
Hon. Secretary.

* * *

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FOR THE STUDY OF
BRITISH & FOREIGN BIRDS
IN FREEDOM & CAPTIVITY

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MISS PHYLLIS BARCLAY-SMITH, M.B.E., 14th March, 1960.

ARTHUR ALFRED PRESTWICH, 14th March, 1960.

THE KNOBEL AWARD

STEN BERGMAN, D.Sc., 14th March, 1960.

CURT AF ENEHJELM, 14th March, 1960.

A List of the Members of the AVICULTURAL SOCIETY

1st JANUARY, 1967

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The date attached to each name is that of the year of election or restoration to the Membership.

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** Hon. Life Members.

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- 1916 DELACOUR, JEAN, F.Z.S., M.B.O.U., Lic. Sci. ; c/o American Museum of Natural History, Central Park West at 79th Street, New York 24, N.Y., U.S.A.
- 1929 MOTTERSHEAD, G. S., F.Z.S. ; Zoological Gardens, Chester.
- 1926 McCULLAGH, Sir J. CRAWFORD, Bt. ; Lismara, Shore Road, Newtownabbey, Co. Antrim, N. Ireland.
- 1928 PRESTWICH, ARTHUR A. ; Galley's Wood, Edenbridge, Kent.
- 1904 SILVER, ALLEN ; Birdsacre, 240 Llantarnam Road, Llantarnam, Cwmbran, Mon.

NP4 33L

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- 1937 BARCLAY-SMITH, Miss PHYLLIS, M.B.E., F.R.G.S., F.Z.S., M.B.O.U. ; 51 Warwick Avenue, London, W. 9.
- 1958 BERLIOZ, Professor JACQUES ; Muséum National d'Histoire Naturelle, 55 rue de Buffon, Paris (Ve), France.
- 1938 CRANDALL, LEE S., C.M.Z.S. ; New York Zoological Society, 185th Street and Southern Boulevard, New York 60, N.Y., U.S.A.
- 1946 DERSCHIED, JEAN-PIERRE, F.Z.S. ; Eikelendael Sterrebeek, Belgium.
- 1911 GHIGI, Professor ALESSANDRO, C.M.Z.S., M.B.O.U. ; Laboratorio di Zoologia Applicata Alla Caccia, Università di Bologna, S. Giacomo 9, Bologna, Italy.
- 1943 HALLSTROM, Sir EDWARD, F.R.Z.S., C.M.Z.S. ; 1 Coolawin Road, Northbridge, Sydney, New South Wales, Australia.
- 1933 JONES, F. TERRY, F.Z.S. ; Leckford Abbas, Stockbridge, Hants.
- 1937 LENDON, ALAN, M.B., B.S., F.R.C.S., F.R.A.C.S. ; "Redwalls," Birch Road, Mount Lofty, South Australia.
- 1934 YEALLAND, JOHN J. ; The Zoological Society of London, Regent's Park, London, N.W. 1.

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- 1949 ADAMSON, R. M., M.B.O.U. ; c/o Wood View, 8 Laburnham Road, Sandy, Bedfordshire.
- 1957 AIRD, I. ALISDAIR ; c/o Caledonian Club, 9 Halkin Street, London, S.W. 1.
- 1965 AIREY, I. M. ; 2 Estate Offices, Church Street, Ambleside, Westmorland.
- 1959 AIUTO, RUSSELL ; Department of Biology, Albion College, Albion, Michigan 49224, U.S.A.
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- 1944 ALDER, EDWARD ; 49 Swinburne Road, Abingdon, Berks.
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- 1961 ALSTON, THOMAS H. ; Rosella Roseate, 111 Queensfield, Queensfield Estate, Swindon, Wilts.
- 1960 DE ALWIS, W. L. E., B.Sc., F.Z.S. ; The Zoological Gardens of Ceylon, Allan Avenue, Dehiwala, Colombo, Ceylon.
- ~~1956~~ ANDERSON, G. ; Henlade House, Taunton, Somerset.
- 1962 ANDERSON, Mrs. S. M. ; Henlade House, Taunton, Somerset.
- 1951 ANDERSEN, Dr. C. NORDEN ; Jens Bangs Stenus, Østeraa 9, Aalborg, Denmark.
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- 1956 ANDERSON, RAE V. ; 288 E. Churchill Road, Sierra Madre, California 91024, U.S.A.
- 1956 ANDREWS, R. M., Jr. ; 5 Shiba Park, Tokyo, Japan.
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- 1965 ARCQ, A. G. ; 33 J. De Tröchstraat, Schepdaal, Belgium.
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- 1966 ASHTON, D. ; 316 Robin Hood Lane, Hall Green, Birmingham, 28.
- 1955 ASTLES, F. C. ; The Aviaries, Magpie Hall Road, Kingsnorth, Ashford, Kent.
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- 1958 BAINES, TOM R. ; Curator of the Calgary Zoological Society, Calgary, Alberta, Canada.
- 1949 *BAIRD, W. G. ; 35 Franklin Avenue, Palmerston North, New Zealand.
- 1960 BANCROFT, HUDSON ; 41B Clarendon Road, St. Annes-on-Sea, Lancs.
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THE AVICULTURAL SOCIETY

Founded 1894

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Hon. Secretary and Treasurer: A. A. Prestwich, Galley's Wood, Nr. Edenbridge, Kent.

Assistant Secretary: Miss Kay Bonner.

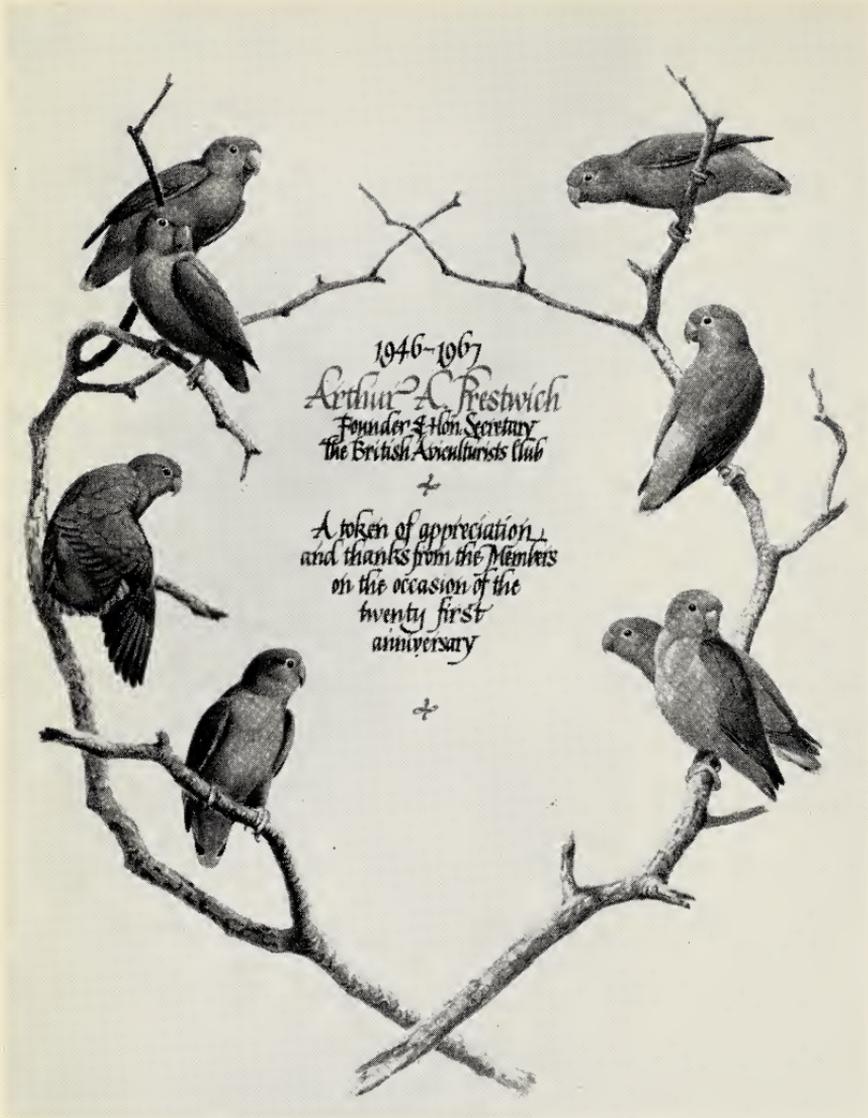
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THE AVICULTURAL MAGAZINE

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REPRODUCTION OF DESIGN IN COLOUR OF RED-FACED LOVEBIRDS BY D. M. REID-HENRY PRESENTED TO ARTHUR A. PRESTWICH ON THE OCCASION OF THE 21ST ANNIVERSARY OF THE BRITISH AVICULTURISTS' CLUB.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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MARCH-APRIL, 1967

TWENTY-FIRST ANNIVERSARY CELEBRATION OF THE BRITISH AVICULTURISTS' CLUB

On 13th February, 1967, Mr. and Mrs. A. A. Prestwich gave a cocktail party at the Windsor Hotel, Lancaster Gate, to the Founder Members of the British Aviculturists' Club, and members of the Council of the Avicultural Society to celebrate the 21st Anniversary of the Club.

As a mark of appreciation and thanks to Mr. Prestwich for his untiring work and generosity over the last twenty-one years it was decided to make him a presentation. This took the form of a design of Red-faced Lovebirds, beautifully carried out by David Reid-Henry, and a silver and gilt model of a peacock trailing its train. As a gesture to the great part played by Mrs. Prestwich in ensuring the success of the Club she was presented with a floral arrangement of orchids.

The presentations were made by the President, Miss E. M. Knobel, who spoke as follows :—

“ Dear Aviculturists,

I don't know how many of you know that this is a very special day, because twenty-one years ago this Club was founded. I wonder how many people here to-day were at that first meeting. We did not start off in a very flourishing manner and I remember at the end of the meeting Dr. Amsler coming up to me and saying, ‘ Well that won't last long. I give it three months.’

But it has lasted, and why has it lasted ? How could it last ? It lasted because of our good, kind, hard-working and generous secretary, A. A. Prestwich. He ran the Club. He did everything. He found the hotels who would take us. He arranged the dinners. He got the people who would come and speak to us and show us their lovely films. That was no easy task, and above all, *he paid*. Our money was not always sufficient to meet all that was needed, so he paid. He never told anybody, he never asked any of us to contribute and a little more, he said nothing about it, he just paid and we came. We loved coming. We met our friends. We laughed and chatted and we enjoyed ourselves, and we owe him a very great debt. So we have met here to-day to try and thank him and to show our appreciation for all he has done. I, as your President, and on your behalf am asking him to accept a tribute. It is a picture of

the Red-faced Lovebirds, painted by David Reid-Henry, which were bred by A. A. for the first time in this country ten years ago. We also think that A. A. must be feeling very proud so we are giving him another object that is always proud—a silver Peacock.

A. A., it gives me very great pleasure to ask you to accept these things with our love and deep appreciation for all the pleasures you have given us.

In addition to the President and the Hon. Secretary the following founder members of the Club were present—Miss P. Barclay-Smith, Dr. E. Hindle, and Mr. Derrick England. The Vice-Presidents of the Society were represented by Monsieur Jean Delacour who came over specially from France to attend, the other Vice-Presidents, Sir Crawford McCullagh, Mr. G. S. Mottershead, and Mr. Allen Silver were unfortunately unable to attend but sent telegrams and messages of good wishes.

* * *

SOME NOTES ON BABBLER BEHAVIOUR

By C. J. O. HARRISON (Perivale, Middlesex, England)

In 1963 K. E. L. Simmons published in this journal a description of some characters of behaviour which could be used to define and separate the babblers, Timaliidae, from similar families with which they had been grouped. Most of the information that he gave was based on observations of birds in aviaries, and he emphasized the need for further observations. The present notes, also based mainly on the study of birds in aviaries, have been brought together as an addition to the existing information.

DISPLAY

There is very little information on courtship display in the babblers. Simmons (1963) described a display of the Pekin Robin, *Leiothrix lutea*, and Painter (1965) gave notes on that of the Black-chinned Yuhina, *Yuhina nigrimentum*. Apart from this the only well-documented display is that of the Bearded Tit, *Panurus biarmicus*, now thought to be one of the Parrotbills, Paradoxornithinae, a subfamily of the babblers. The Bearded Tit fluffs out and raises its head feathers, and raises and spreads the tail to show the under-tail coverts. In the male both are conspicuously coloured, the head grey with black beards, and the under-tail coverts black on an otherwise brown body. The female also postures, however, and the young are said to pair while still in the juvenile plumage, the male posturing before he has acquired his conspicuous colours (Witherby *et al.*, 1938 ; Koenig, 1951).

In March, 1962, a pair of Masked Jay-Thrushes, *Garrulax perspicillatus*,

were observed collecting nest-material in an aviary at the London Zoo. These birds subsequently nested successfully in 1964 (Yealland, 1965). Both birds were on the ground and tended to stand side by side or move around with short abrupt hops holding a stem in the bill and maintaining a special display posture, most marked in the suspected male. The bird held the head well raised and all the head-feathers were erected to give it a fluffy, big-headed appearance. At the same time the body was held well above the ground, tilted forwards a little so that the closed wings and tail were in a horizontal plane. The feathers of the flanks, belly, and under-tail coverts were fluffed to show a broad expanse of flank feathering, the legs appearing relatively short owing to the fluffed feathering. The main colouring is dull brown and the chestnut colouring of the under-tail coverts and posterior edge of the flanks became suddenly conspicuous in this posture (Fig. 1).

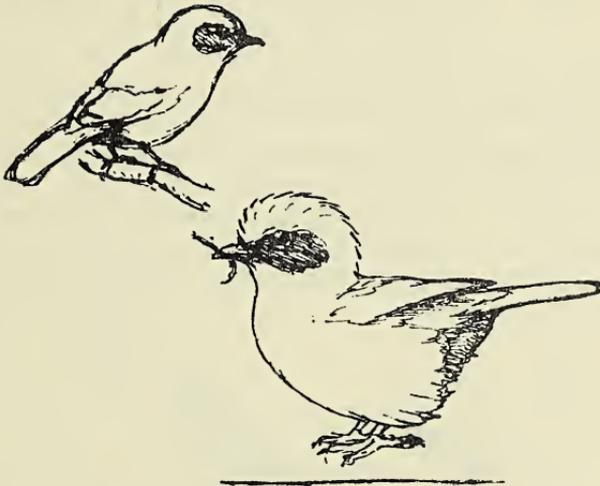


FIG. 1.—Normal and Display Posture.

The closed wings were raised slightly above the back and shivered, and there may have been some subdued vocalization, although nothing was audible at a distance of 4-5 yards. On a later occasion, after an outburst of alarm calls from these birds, the supposed cock was joined by the other bird and suddenly took up a very erect posture with all head feathers fluffed, closely resembling the one described above. In the summer of 1966, in the Snowdon Aviary, a bird of this species was seen to join two others perched in a small tree, and immediately to draw itself up very tall, with all head feathers fluffed, the bill depressed a little towards the breast, the belly and flank feathers fluffed, and tail lowered and half spread. This display resembled the previous one in many details but the body was held in a vertical, rather than a horizontal, plane.

At Chester Zoo in 1963, a White-breasted Jay-Thrush, *Garrulax albogularis*, in a mixed aviary without other babblers, was seen to carry a twig and approach a Mynah in a posture similar to the first one described above, with the difference that the head feathers were sleeked down. The latter was almost certainly due to the fact that the partner was a rather unnatural one. Birds of this species at the London Zoo in 1962, were seen courtship feeding. The cock fed the hen when she approached in a slightly crouching posture with feathers fluffed, her wings being shivered slightly at the moment of feeding. Once the cock gave her a tiny twig instead of food, and she carried it for a moment or two before dropping it. Both birds toyed with nest-material.

Two of the pale-breasted form of the White-crested Jay-Thrush, *Garrulax leucolophus*, were watched at the London Zoo in 1964. They were perched together, one leaning forwards as the other preened its nape. The preener then turned round and began to peck softly at the under-tail coverts of the other bird, moving the bill towards the region of the cloaca. It repeated this twice, but each time the other moved slightly. Shortly after both moved to the ground. One took up a posture like that described above for the Masked Jay-Thrush. It had the flank feathers spread and fluffed in the same way to show the bright orange-buff of the posterior flanks, conspicuous against the mainly white underside of this form. The body was tilted forwards slightly so that the tail was raised a little, and the under-tail coverts were more conspicuous (Fig. 2). Both birds had the head feathers erected. The



FIG. 2.

active bird, the suspected cock, hopped around the other bird in a slightly crouching posture, pecking or preening at the under-tail coverts and possibly cloaca-pecking. The two birds were interrupted by a Rice Grackle, *Psomocolax oryzivora*, which thrust itself between them, bowed its head in the allopreening-soliciting posture, and simply stood there. Both Jay-Thrushes froze into immobility, and after a momentary tableau, which to the anthropomorphic eye, suggested nothing but acute embarrassment at interruption at an inappropriate moment, the birds parted and display behaviour ceased.

The tendency to direct all preening activity towards the under-tail coverts was also observed in the Grey-headed Crow-Tits, *Paradoxornis gularis*, in the London Zoo in August, 1966. When these clumped together in pairs they frequently sat head-to-tail and one would lean over and preen the under-tail coverts of the other. If the other objected it would turn and seize the nearest leg of the preener just above the tarsal joint in its heavy parrot-type bill, apparently by way of a warning.

The incidence of cloaca-pecking in these and Simmons's (1963) observations suggests that this might be related to the stimulation of the female to adopt a posture facilitating terrestrial copulation, such as seems to occur in the Dunnock, *Prunella modularis* (Harrison, *in press*).

BATHING

A Grey-headed Crow-Tit was watched bathing in a shallow pool in an aviary at the London Zoo. It used the in-and-out method described by Simmons (1963) as typical of the babblers.

COMMUNAL REARING OF YOUNG

Many babbler species habitually remain in small flocks and are sociable in most aspects of their behaviour. There does not, however, appear to be much useful information concerning behaviour when nesting occurs. Everitt (1961*a*) described breeding by a pair of Silver-eared Mesias, *Leiothrix argentatus*, in a large aviary. Two other females of the same species and a female Pekin Robin, a very similar species, were also present. These were apparently tolerated by the pair, but played no part in the nesting until the young emerged from the nest, when all five fed and tended the young birds. When the Masked Jay-Thrushes nested at the London Zoo (Yealland, 1965) they were in the large wader aviary, where a pair of White-throated Jay-Thrushes were also present. These showed interest after the young Masked Jay-Thrush hatched, perching on or near the nest when the parents were away, and later were seen feeding the single young one after it had left the nest.

In contrast to these, several aviculturists who kept more than a pair of Black-chinned Yuhinas found that when attempted nesting occurred the breeding pair would fiercely attack others of the same species, and it was necessary to remove them, while Everitt (1962*b*) found that a breeding pair killed another two of the same species and continually attacked Yellow-naped Ixulus, *Ixulus flavicollis*.

In a paper by the Marquis Yamashina (*Compte rendu, IXme Congrès Ornith. Int.*, Rouen, 1938, 453-6) on the breeding habits of *Yuhina brunneiceps* in Formosa, he states that various nests were observed and each was attended by more than a pair. Up to six birds were seen building a nest, from the eggs it was deduced that four females had laid in a single nest, six adults were seen incubating one nest at different times, and up to eight adults of both sexes were found feeding young at

various nests. It would therefore appear that social nesting is a character of the Yuhinas as well as other babblers, but that there may be specific or local variation in this habit.

ANTIPHONAL SINGING

Antiphonal singing occurs in a number of avian species in widely differing families. In this type of singing a pair of birds alternately utter notes or phrases with such perfect timing that the whole sounds like the song of a single individual. The honking song of a pair of Toucan Barbets, *Semnornis ramphastinus*, is the one with which aviculturists are likely to be most familiar. Among the babblers antiphonal song has been recorded (Van Tyne and Berger, 1959) for the Red-headed Jay-Thrush, *Garrulax erythrocephalus*, the Red-cheeked Scimitar Babbler, *Pomatorhinus erythrogenys*, the Fluffy-backed Tit Babbler, *Macronus ptilosus*, and the Yellow-breasted Tit Babbler, *Macronus gularis*. In 1966 in Western Australia I observed a pair of Grey-crowned Babblers, *Pomatostomus temporalis*, for a period prior to evening roosting and heard them during the following morning in the vegetation along a creek where they may have been nesting. They frequently indulged in antiphonal calling, using short harsh phrases of differing pitch that overlapped slightly. From a distance the slightly harsh rhythmic call with its constantly fluctuating pitch suggested that of some game bird rather than a pair of passerines. It was later found that back in 1901 A. J. Campbell had commented "Sometimes a bird (male probably) makes a loud cat-like mew, repeated nine or ten times moderately fast, while its mate perched on an adjacent limb or tree answers each call with a whistle-like note. So precisely are the two kinds of notes repeated alternately, that at a distance they seem really to be produced by one bird". Both species of Whipbird, *Psophodes* spp., of Australia, now considered to be babblers, use antiphonal song between members of a pair (Condon, 1966).

In the autumn of 1965 a group of White-crested Jay-Thrushes were heard indulging in a bout of calling in an aviary. It was observed that two were using different phrases which overlapped slightly in utterance but alternated in a constant rhythm that suggested antiphonal singing. The sexes of the birds was not known. This last record raises a point of interest regarding antiphonal singing in the babblers. Most records of antiphonal singing in other families appear to be correlated with the fact that the birds live in pairs and may need to maintain contact with the right individual in thick cover. Many babbler species, including the White-crested and Grey-crowned Babblers, normally remain together in small parties. It would be of interest to know how such song is related to the needs of birds within small social groups such as these, and which individuals use it. It is possible that such groups contain a dominant pair and that it is these which use this type of call.

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* * *

MOULT AND PLUMAGE IN CAPTIVE SEED-EATING FOREIGN DOVES

By PROFESSOR CARL NAETHER (Encino, California)

It seems rather strange that even though I have kept seed-eating foreign doves and pigeons for many years in Southern California, I have not been aware of their moulting at any particular time during the year. It seems that when I kept domesticated pigeons, there were at least some feathers lying and flying about in their pens almost the year round, testifying to repeated and often copious moulting. However, I find no such evidence in the pens of my wild foreign doves. And yet, as with all birds (and with some other animals which shed hair, skin, or horns) their plumage becomes worn as a result of flying and fighting, or simply with age.

It may of course be that the moult of captive wild doves is slowed down, if not appreciably decreased, by the fact that they have an abundance of suitable food before them every single day of the year, enabling them to maintain maximum physical stamina. For even though their feathers as such are lifeless, they require a healthy body to be sound and to stay sound, and in many species colourful and lustrous. Another important factor, in addition to ample food, particularly potent in the Southern California climate, which undoubtedly affects the time, extent, and quality of the moult of wild captive doves is the almost daily sunshine which greatly attracts and benefits them.

To be sure, there are many kinds of moult, the life-span of both single feathers as well as feather-groups varying decidedly. The down on young squabs may last but one or more weeks before it is supplanted by feathers, which in turn may serve a half year or a full year, or even two

years, as in the case of cranes. Thus we may speak of a juvenal moult, a transitional moult, a complete moult. According to the time of year, we may distinguish between a spring, summer, autumn, and winter moult. This would suggest that the widely differing conditions of the moult are admirably suited to the modes of living of the various species affected. Under normal conditions, the moult proceeds during periods of rest, following the breeding season, when demands on the bird's energy supply, as made by mating, raising young, migrating, etc., are very light.

All birds moult at least once a year, many species twice, and a few even three times. The main function of the moult is the renewal and replacement of faded and frayed feathers. In most species of wild doves and pigeons this "change of clothing" requires but a relatively short time during the year. Some birds take years to complete the development of their adult plumage: thus the Twelve-wired Bird of Paradise may take seven years and the Baldheaded Eagle up to ten years!

The juvenal plumage of many species of seed-eating doves, both ground and arboreal, is usually of a neutral colour, often in harmony with the colour of its immediate surroundings, and to that extent protective, not easily discovered by predators. Of the numerous kinds of young doves which it has been my pleasure to raise during twenty-odd years, none has exhibited a colourful plumage while in the nest. Even after leaving it, distinct and rich colour patterns, such as the red blotch on the breasts of Bleeding-heart Pigeons, are at first very faint, almost invisible, requiring months for their full development. This transitional plumage—between the down stage and the ensuing plumage—is considered a separate and distinct plumage by some scientists, despite the fact that it is never completely developed. Its function is to furnish the dove with a plumage during a rather short period while the bird is still growing, often serving as camouflage during a more or less critical time when the young doves cannot as yet fly or fly well. While many birds exhibit two separate adult plumages, the breeding and the non-breeding, each worn for a given part of the year, captive doves as I know them from experience have only a single adult plumage. In this group we find species in which males and females have identically coloured plumages, and others in which the males' plumages are different, that is, in most instances, more colourful, hence more readily identified. In cases of birds having two mature or adult plumages, breeding and non-breeding, the sexes usually differ, the colourful plumage belonging to the male of the species, but changing during the non-breeding season to look rather drab like that of the female. I do not know of any species of wild doves, the females of which show a more colourful plumage than the males. The females of the phalaropes are more colourful than the males, a fact being closely related to a reversal of sexual display and parental behaviour, and demonstrating the plasticity of plumage.

To come back to the matter of moult, this phenomenon is as sensitive to selection as are plumage pattern and colour. Thus in wild pigeons given to migrations, as some of them are, the moult may be postponed until after the winter quarters, where food is usually plentiful, have been reached. Since moulting consumes prodigious energy, it rarely occurs during periods of migration or reproduction, but almost always during periods when food is plentiful. However, among tropical species of doves inhabiting regions where the different seasons of the year are not sharply separated from one another, as is true of Southern California, for example, a good deal of moulting may occur during the nesting and breeding period. This is true of wild doves kept in local aviaries, *some* of which will breed the whole year through, with no noticeable let-up during the so-called rainy season or winter months. In point of fact, a pair of Bartlett's Bleeding-hearts is at this very writing (beginning of February) brooding a youngster, having laid the solitary egg and hatched it during rather cold weather. In other words, their moult does not appear to be correlated with the calendar year at all. Most ornithologists assume that as a general rule the demands made by the moult on the energy of the birds keep plumage changes to a minimum. Access to food rich in fats, so certain experiments have shown, seems to be conducive to a rapid, complete moult; in some species of birds, it has eliminated the summer moult into the non-breeding plumage entirely.

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ORGANIZED USE OF FOSTERS

By T. S. THOMSON (Hoole, Chester, England)

The use of fosters to raise various species of birds usually implies that an easy-to-breed species is employed to rear a difficult type. Fosters are used when the breeding cycle is broken either by accident, or by some failure on the part of the breeding stock. Bengalese are frequently used to foster species of the finch family. Domestic pigeons have incubated Californian Quail eggs. The bantam must be the most often used foster. With some species of doves the use of fosters is a necessity to perpetuate the strain of man-made freaks.

During the past few seasons, foster Greenfinches have been used, mainly to propagate rare-coloured specimens of the species. With such a free-breeder the reader might ask why this waste of aviary space, and why go to all the trouble with keeping the records of transfers, which are quite considerable, considering that most clutches are split and all young must be close-ringed.

With forty pairs of fosters and as many breeding hens, during the height of the season, up to eighty nests may require attention at any

one time. The "pedigree" breeding stock comprises carrier cocks with up to five hens per cock, and single normal cocks paired to single lutino and cinnamon hens.

When polygamous breeding is practised with a species such as the Greenfinch which is normally monogamous, the use of fosters is a necessity, otherwise the unmarried mothers will neglect their brood when turning their attention to starting another round. With up to five hens per cock carrier, very few infertile eggs were laid. The average ratio was three hens per cock, the proportion being partly governed by the size of the aviary and the cocks past performance. Where the normal cock/lutino hen mating was practised, there was no advantage in polygamous breeding, the hen being the dominant part of the pairing, producing cock carriers.

The breeding stock is housed in aviaries ranging from 20 by 6 feet to 30 by 20 feet. A battery of 12 by 3 feet compartments is employed to test young cocks which may be carriers. While all cocks bred from cinnamon and lutino hens are carriers, only a proportion of the cocks bred from carriers are themselves carriers. The fosters are housed in larger planted aviaries ranging up to 90 by 80 feet.

The availability of "unlimited" aviary accommodation is an important factor when fosters are used on a large scale. There are, however, possibilities where space is at a premium. For example, if a Budgerigar fancier divided his study, using the poorer specimens as fosters only and only breeding from the best birds, while less birds would be produced, the all over standard would be higher.

When an organized use is made of fosters, the aviculturist can select the most opportune period to transfer the eggs or young. Transfer can be made at various stages, the first being when a clutch has just been completed. Fosters which have just completed their clutch are selected and the transfer made. The pedigree eggs are marked in case the foster hen should have laid another egg. A felt tipped ink-marker pen is ideal for the purpose. Due to the number of nests involved and the fact that some nests are not discovered until incubation is under way, eggs are frequently transferred when partly incubated. It is possible to match partly developed pedigree eggs with those of fosters at the same stage by holding the eggs up to the light. It may be considered that the timing of the transfer of eggs would be governed by the availability of fosters with eggs of the same age. However, it was found that young can be successfully reared from eggs which hatched fully a week before the fosters eggs were due and likewise young were reared from eggs which hatched a week after the fosters eggs were due, the fosters eggs having been treated to prevent hatching. A few casualties resulted from this "mis-timed" transfer of eggs, the foster hens sitting too tight on the "prematurely" hatched young.

Newly born cinnamon and lutino Greenfinches are easily identified

and are transferred to fosters at various ages, up to a week old. When there is any doubt that the fosters may accept and feed the newly transferred young, a normal chick may first be tried. Normal coloured young outnumber the rare coloured when a normal cock is paired to a coloured hen. While some of the young cocks from such a pairing may be carriers, in many cases only the coloured young are transferred, the normals being destroyed. Such drastic action is necessary to fully employ the fosters on producing the maximum number of mutation stock. Any young that may hatch from eggs laid by fosters are also destroyed, usually when the pedigree young are transferred. The total number of eggs and young disposed of, approaches 800 per season. Such a statement may shock the reader, but the object of the exercise is the production of mutations which number just over thirty per year. Nevertheless over a hundred normal coloured Greenfinches are reared per season. A few are carriers, some possible carriers, and the majority normal cocks and hens. A number of the latter is liberated annually.

Losses from the going light trouble do occur, but in view of the small percentage affected no antibiotics are used or other action is taken to combat this trouble. Many rare coloured young die in the nest, some possibly from exposure during wet weather, especially when only one or two occupy a nest.

Experiments in allowing surplus Greenfinches liberty when nesting in aviaries, have resulted in failure. A few individual successes have been recorded when Blackbirds, Song Thrushes, Starlings, Great-Tits, Bullfinches, Hedge Sparrows, and Redpolls were liberated when nesting, the young being successfully reared.

Even with such drastic culling, and even though no young are produced from foster stock, an average of $1\frac{1}{2}$ young per pair has been produced during the past few seasons. This may well be below the results from wildlings, but with the protection given to the adult stock and the young, the rate of increase in the aviary stock must exceed that of the wildlings.

Research on the breeding British birds under control conditions has shown that restricting the number of nestlings, especially with hole nesters such as Starlings and Tits, is most desirable. If fosters cannot be used, only the desired number of eggs should be allowed to hatch, but unless the breeder has no qualms over culling young, it is best to reduce the number of young a few days after hatching. Abnormal coloured young have a general weakness in sight, as well as stamina, and such culling is necessary for success. Two young Greenfinches per nest is normal practice, and frequently single young are reared. When only one lutino or cinnamon occupies a nest, a normal nestling a few days younger, is added, to be removed after the ringing stage, depending on the climatic conditions and the situation of the nest. In the early and late periods of the breeding season fosters with nests under cover

are favoured, otherwise nests in a natural setting situated in live vegetation are most frequently in use. On occasion some foster nests and eggs have to be destroyed without making any use of their services, but normally there is a shortage.

It might be rightly considered that all this handling of eggs and young would have a detrimental effect on the breeding results. Very few failures were attributed to this procedure. With a fairly large breeding stock it is generally impossible to identify individuals and cater for their various characteristics. No doubt the birds became familiar with the frequent intrusions and the school-boy bird-nesting activities of their keeper.

Experiments in rearing other species by fostering either eggs or young under Greenfinches, have been carried out over the past years. Siskins, Redpolls, Goldfinches, Linnets, and Bullfinches have all been successfully reared. Usually Greenfinch fosters fail to feed the newly hatched young. A greater degree of success was obtained when young nearly a week old were inter-changed with young Greenfinches which were removed from the nest, bar one.

Experiments on fostering various species other than Greenfinches, have also been carried out. The rearing of Song Thrushes by Blackbirds and vice versa has provided interesting results. Frequently one species would reject the eggs of the other, even when the eggs were camouflaged as when Thrushes eggs were coloured to resemble Blackbirds. Young of both species have been reared by the other. On more than one occasion young Blackbirds have fed second-round young which had left the nest, but were unable to fend for themselves.

Last season three Pennant's Parrakeet eggs were placed under a Blackbird. After a week the eggs proved fertile and contact was made with a local fancier who had a suitable foster to complete the incubation. One Blackbird egg had been left and, on it hatching and the fancier not coming forward, one of the Pennant's eggs was transferred to a Fischer's Lovebird. Just prior to this transfer the Lovebird, which had two eggs of its own, had been given an infertile parrakeet egg as a test. This egg, much larger than the Fischer's, was embedded in the nesting material. It was necessary, therefore, before transferring the Pennant's egg, to consolidate the Fischer's nest, this being done by the use of one's fist. Ultimately the Pennant's egg hatched under the Lovebird which fed it for over a week. The Parrakeet was too large for the Fischer's to cover, and lay beside its foster mother with its head resting on her back. Just prior to the young Pennant's being hand-reared, it wandered from the nest, the hole being level with the nest, and fell on a concrete floor, receiving injuries which proved fatal.

A few seasons ago, two Dippers were hand-reared, after being incubated by Starlings. One Dipper was liberated on the upper reaches of the River Dec. It was close-ringed T5 B.B.B.A. The

Dipper's eggs were obtained when the nesting site was over-run by dam builders. The use of Hedge-sparrows as fosters to rear the more difficult small softbills provides scope for further research. If aviary-bred stocks of a species were established, normal breeding could be practised.

In some fields the aviculturist reaps a world wide harvest, doing little if anything to replace the diminishing stocks of wild life. There is an urgent need for a policy which would encourage the establishing of strains of various species. While fosters may be employed, the ideal must be to create conditions where a species reproduces itself.

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A VISIT TO ITALY

By J. J. YEALLAND (London, England)

When Monsieur Delacour told us (in the AVICULTURAL MAGAZINE, 1965, pp. 187-9) of his visit to some of the collections of birds to be seen in northern Italy, he concluded by saying that his account might encourage others to see them. One had, of course, previously known of Professor Ghigi's splendid collection and of his many achievements in the field of breeding gallinaceous birds; also something of the large and varied collection of the brothers Callegari at Ravenna, but naturally to read of such treasures is but a poor substitute for actually seeing them and so it was with particular pleasure and anticipation that I accepted an invitation from our member Dr. H. W. Clarke who lives on the outskirts of Rome to visit him and to accompany him on this grand avicultural tour. Accordingly, in late April, I went to Rome and on the first afternoon we went to see Dr. Spinelli who lives near Rome and who is well-known for his success in the breeding of a Cheetah. He also keeps other large cats in addition to some other mammals in his beautiful garden, but at present he has only one small aviary of birds. The next day we set out early and our first visit was to the estate of Marchese Fioravanti situated on the hills overlooking Florence. This estate has long been a much-needed sanctuary for the wild birds and it was not long before we saw a Hoopoe and a Pied Flycatcher and we also heard Serins; Scops Owls are there in the garden as well as many other birds. The Marchese has a large number of birds, both wild and domesticated, in his pens and aviaries and during 1965 he bred among others the Blood-breasted or Bleeding-heart Pigeon. Late that afternoon we reached Bologna and called on Conte Masetti Zannini whose large garden is some twenty feet or more above the street that runs along one side. Here, as already recounted by Monsieur Delacour, we saw the breeding Gang-gang Cockatoos, Queen of Bavaria's Conures, breeding Demoiselle Cranes

and very many others. I was particularly interested to see *Ara ambiguous*, the Great Green Macaw. In one aviary lived a flock of Quaker Parrakeets with the characteristic large nest of twigs. Conte Masetti opened a small door high up on the side of the aviary and the parrakeets streamed out, shrieking as only Quaker Parrakeets can. It was altogether more spectacular than any homing Budgerigar flock, but I could not help wondering what kind of minor revolution would be caused by such happenings in the centre of some English city. The birds busied themselves in the trees collecting more twigs for the nest and, no doubt, they all came back in due course. There were once Quaker Parrakeets at liberty in Whipsnade Park and this was a great success up to a point, but the birds, I understand, raided orchards all around and so the experiment ended.

The next morning we called on Professor Ghigi whose large estate outside the city must form another refuge for the wild birds. As already recounted by Monsieur Delacour, Professor Ghigi's collection of gallinaceous birds is one of the finest. I was particularly interested to see hybrids between Ocellated and the common Turkey. Another interesting hybrid was Hume's \times Mikado Pheasant. The other rarities already reported were still thriving and Dr. Clarke obtained excellent coloured photographs of some of them, including the display of Grey Peacock Pheasant. We also visited Dr. Busacchi in Bologna and among the large stock of birds were some Ruffs of which I bought three pairs for the Zoo's Waders' Aviary. Ravenna was our next stopping place and here at the brothers Pietro and Eugenio Callegari's estate on the outskirts of the city we saw such a collection that it would have taken many hours to make any sort of census. The wonders seen and recorded by Monsieur Delacour were still there and many more besides, including the Acorn Woodpeckers (*Melanerpes formicivorus*) and their young about which Dr. Eugenio Callegari has already written in the Magazine. The large *Dryocopus javensis*, the White-bellied Black Woodpecker, was another noteworthy species. The Great Crested Grebes were still thriving, also the many waders including a Pacific Golden Plover (*Charadrius dominicus fulvus*) which was, if I remember rightly, caught in Italy; it is, of course, known to be occasionally in Europe. The Nightjars, Dwarf Wood Hoopoes (*Rhinopomastus minor*), the Central American *Trogon elegans*, Wryneck, Goldcrest, and Firecrest and a wealth of others, large and small, were there, but it was the Bee-eaters, particularly the Carmine (*Merops nubicus*) that were perhaps the most memorable. They were then still in the winter quarters and were in excellent health and plumage. The success in keeping these was due to the diet which consisted of a great variety of insect life collected during the summer and kept frozen until required. Like Monsieur Delacour, I was also astonished to see a Great Anteater in a tree.

Another collection we visited was that of Dr. Amadei where there

was a nesting pair of Black Storks. The display of the male was very interesting to see. Our next call was to the fine collection of Dr. Roberto Bucci at Faenza. A large area of lake, woodland, and lawn provided a splendid setting for the waterfowl, flamingos and others. Among the parrots I especially remember a pair of Spix's Macaws and three species of *Pyrhura* that I had not seen before. The very good and well-arranged collection that Dr. Bucci has set up in one of the town's public parks was visited by us and here the "homing" Quaker Parrakeets were again seen.

On our return to Rome we visited the zoo and were entertained by Drs. Bronzini and Baschieri. The famous large stainless steel aviary contained a variety of birds ranging in size from storks to the Pied Crow. Some fine new aviaries were in the course of construction and other large-scale improvements were being carried out. Three forms of Crowned Pigeon (*Goura*) and, of course, very many other rarities were on view. Naturally I saw Dr. Clarke's own collection of wallabies and other mammals as well as the birds among which was *Crax carunculata*, Yarrell's Curassow, which he succeeded in breeding. Without making constant notes it would be impossible to recall more than a fraction of the avian wonders that we saw on that memorable tour: what is, however, readily remembered is the hospitality and welcome of all our kind friends in Italy.

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FAVOURITES AT CHESTER ZOO

By SHEILA M. ROGERSON (Whitegate, Cheshire, England)

I have many favourites at Chester Zoo but perhaps those housed in the Temperate House attract me most of all. Here, in this attractive setting, some of the real bird characters of the Zoo can be found. An excellent photograph and description of this house has already been given by M. F. Coupe in Vol. 71, No. 5, of this magazine. Since the photograph was taken the foliage has grown well and the whole effect has mellowed.

The birds in free flight certainly enjoy life to the full. The Touracos and doves take a particular delight in swooping at great speed just above the visitors' heads. A Fairy Bluebird hen spends her days flirting outrageously with two beautiful cocks, one in free flight and the other in an enclosure, while close by, a cock Great Indian Hornbill enjoys the company of a newly acquired hen of the same species. At present they are getting to know each other in separate enclosures. All the birds in free flight appear quite unafraid of humans yet they also lead a very natural life. From the numbers of young birds flying around, it is obvious that good breeding results are obtained in spite of the large numbers of visitors during the breeding season.

My strangest favourite in the Temperate House is Billy, the Boat-billed Heron. I have watched his progress since his arrival and have noted a great improvement in him. From a pathetic and timid bird who had to be fed by hand in an effort to keep him alive, he is now so confident and "at home" that it is surely a tribute to his keepers who have shown such patience and understanding of him. Billy in turn is completely devoted to them and as soon as he sees a familiar face, he claps his beak in joyful greeting. His favourite food is herrings and I am told that he will go on a hunger strike if a substitute fish is offered. On one visit during winter I was dismayed not to see the Heron but an inquiry to his keeper revealed Billy's secret hide-a-way. I was taken to the heating unit which is situated behind the waterfall and there, sitting all alone on a wooden bar in most un-heron-like surroundings, was Billy, enjoying the extra warmth. In the wild these Herons live a quiet secluded life in the mangrove swamps of Mexico and Brazil. They are mainly nocturnal in their habits and have the large brown eyes always associated with animals of the night. This of course explains Billy's preference for solitude during the day.

In the enclosures on each side of the Temperate House live the birds which for various reasons, are not suitable for free flight. Several Hill Mynahs occupy one of them and all seem to have accomplished the art of copying the human voice. One in particular will readily inform you in a most refined voice that his name is "Charlie Charlie". He inquires about your health and has several other polite phrases to hand. But his reply is far from polite if you teasingly call him "Fred". In a low, determined voice he tells you in no uncertain terms . . . what to do!

Across the way lives one of my oldest friends at Chester Zoo, a Kookaburra fondly known by me as "Kookie". He seems content to live a solitary life and gazes in silence at his many admirers. Occasionally the house echoes with his cheerful laugh which induces dozens of other birds to join in. His diet includes two mice each morning, one of which is always eaten straight away. The other is held firmly in his beak sometimes for an hour or more. This unusual habit reminds me of my son's baby days. When offered a box of sweets he would inquiringly say "One now and one waiting for me?" Kookie so often has one waiting for him!

* * *

BREEDING THE PACIFIC BRENT GOOSE

(Branta oceanica oceanica)

By MAJOR J. M. HAY (Edinglassie, Aberdeenshire, Scotland)

In early March, 1966, I observed that one of my pairs of Pacific Brent were mating. As so often with geese and ducks, the mere act of mating does not necessarily mean that a nest and eggs will follow, so I was not unduly hopeful. However, nearly three months later, on 24th May, I found a soft-shelled egg at the waterside which was definitely the egg of a Brent Goose. As I keep two species of Brent, and all the females looked as if they were about to lay at any moment, I had no idea which female had laid the egg. Unfortunately at this stage my only other female Pacific Brent died of a kidney infection. This resulted in the two ganders fighting for the remaining female. I was doubtful, if she laid, whether her eggs would be fertile. Fortunately after a day or two the ganders stopped fighting and they swam and wandered about as an apparently happy party of husband, wife, and boyfriend. I could not catch up the odd male as this would have meant disturbing the other breeding geese. There was also the possibility of removing the wrong gander. The female was showing great activity and wandering about all over the place. I began to hope.

On 30th May, six days after finding the soft-shelled egg, I found a sound egg lying in an almost imperceptible depression in the ground a few feet from the waterside. I thought that this was probably another random laid egg. But just in case it was to be the start of a nest I covered the egg lightly with some withered grass and left it there. I never found the female anywhere near the egg and the ganders took no interest in the site.

On the following dates, 31st May, 1st, 2nd, and 3rd June, no more eggs were laid. I decided that I would remove the egg on the next day, 4th June, and try to incubate it. I went down to the pond on the morning of 4th June to remove the egg. To my surprise I found the female sitting. Now I had to decide whether to allow the female to complete her clutch and hatch the eggs herself or to remove the eggs and replace them with substitutes. I decided to remove them, as it was too big a risk leaving them. The next problem was to catch the goose off her nest. Despite repeated visits to her nest, I could never catch her away from it. I think she must have been feeding and watering at night. The two ganders were proudly guarding the female. On 10th June I decided to disturb her and exchange her eggs for Mallard eggs. I expected that she would have completed her clutch of eggs. I approached the nest slowly and was promptly attacked by the ganders, however, I persisted and got my hand to within 12 inches of the female before she left the nest. I quickly exchanged the eggs and retired. She

had laid a clutch of four eggs. I weighed and measured them and put them under two broody bantams, two eggs each. The average size of the eggs was : weight $3\frac{1}{8}$ oz. The average measurements were : 75 by 47 mm. I went back to the pond and found that the female had settled quite happily on the Mallard eggs.

On the fourteenth day of incubation I tested the eggs, only one proved to be fertile. This egg chipped on the twenty-second day of incubation and hatched on the twenty-third day. The incubation period is stated to be twenty-five days. So this was about right. The bantam sitting on only one egg, would probably hatch it a little earlier than normal. After drying off, the gosling and bantam, were removed to a coop and small run and put on the lawn. Food for the first week was grated hard-boiled eggs, finely chopped lettuce, and chick mash. This was fed five times a day. Like most other goslings, the young Brent started eating and pulling at grass almost at once. Even at this early age it showed the typical Brent posture and behaviour. The second week grated egg was discontinued and feeding reduced to four feeds daily, the size of the run was extended. The third week finely chopped lettuce was discontinued and the gosling and bantam were moved to a small field with short grass. During the following weeks the chick mash was gradually reduced and replaced by biscuit meal and small grained imported wheat, this eventually being fed twice a day only. No access to swimming water was given until the gosling was fully feathered.

The gosling is now over six months old and has proved to be a female. So perhaps in two to three years' time another successful breeding may take place. It would be interesting to know how often these birds have been bred, and how many hand-reared birds exist. If some numbers have been reared it should be possible by sale or exchange to arrange for a nucleus of hand-reared unrelated birds to be formed. I do not think that the Pacific Brent has ever been bred in Scotland and I would be most interested to hear from anyone who may have done so.

Note.—The Mallard eggs duly hatched, but the ducklings did not live more than three days. Their main trouble was that they seemed unable to distinguish their mother from the other Brent geese, and consequently got chilled and died. I think that if they had been on a pond by themselves the female Brent would have reared them.

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[J. A. Ingleby

YOUNG PACIFIC BRENT GOOSE.

[To face p. 44



FRANCIS E. FOOKS.

IN MEMORIAM

FRANCIS E. FOOKS

1892-1967

A first period of nearly a half century of the history of the Park, at Clères, has just ended. Frank Fooks, its director for many years, died on 27th January, 1967, after a long illness.

Born at Briantspuddle, Dorset, on 6th March, 1892, Fooks came to Clères in the spring of 1920, as I was settling down in the Château. Seriously wounded in action in France during the First World War, he had worked for some time at the livestock department at Derry and Toms, in London. Before the war, he had kept and reared birds which he loved as a boy.

At Clères, Fooks at first attended to the animals and birds, and, after a few years, he took charge of the whole property, which became the unique object of his interest and devotion. It is because of his great efficiency and reliability that I was able to leave every year on expeditions to Indo-China and elsewhere, and to travel extensively. I knew that he would take the most excellent care of everything during my long absences. He was a master at keeping and rearing birds, and also a perfect agent to run the estate.

Innumerable species of birds were successfully kept under his supervision, ranging from Ostriches to Humming Birds. A number were reared for the first time in captivity, among them the Crested Argus, Imperial, Edwards's, Berlioz's and Lewis's Pheasants, Comb Ducks, Australian Shelduck, Madagascar White-eye, Meller's Duck, Hooded and Elliot's Pittas and Brazilian Water Tyrants. Ostriches, Rheas, Manchurian, White-necked, Australian, Eastern Sarus, Stanley's Demoiselle and Crowned Cranes were raised a number of times, as well as large numbers of all sorts of Waterfowl, game-birds, Pigeons and Doves, Parrakeets and various small birds.

Frank Fooks had to take refuge in England between 1940 and 1945, but he returned to his beloved Clères as soon as it became possible. He promptly restored the ruined park to its former state, despite tremendous difficulties. Conditions had changed since pre-war days, and we now had to rely on visitors to stand the main part of the burden of its upkeep. He proved to be a most capable manager, and he was very successful in carrying on the work, practically single-handed as, until 1960 when I retired from the directorship of the Los Angeles County Museums, I could not spend at Clères more than a few weeks each year.

His loss has been a terrible blow to me, after forty-seven years of close association and friendship.

Dr. P. Ciarpaglini, a veterinarian and an assistant at the Paris Zoo,

has come to succeed him, and I have taken measures so that the Château and the Park will go, after me, to the Museum National d'Histoire Naturelle and the Departement of the Seine Maritime. It is the only hope to perpetuate what is perhaps the last of the larger country homes adorned with an extensive collection of birds and park animals, such as we knew a number in Europe before the war, which have since vanished. I therefore trust that all the years of incessant labour that Frank Fooks has devoted to Clères will not have been in vain. To me, it never can be the same without his presence.

J. DELACOUR.

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DIET DEFICIENCY RESULTING FROM REARING INSECTIVOROUS BIRDS ON MEALWORMS AND MAGGOTS

By W. D. CUMMINGS (Athens, Greece)

I have just been reading through my copy of the AVICULTURAL MAGAZINE and two articles—one by Jeffrey Trollope, Breeding the Red-crested Finch, and the other by Philip Wayre on breeding the Wheatear—raised a point which I meant to bring up in the Magazine a long time ago. In other cases young were reared with leg deformities, and the diet on which they were reared was mealworms and maggots.

In my experience of rearing Shamas, Western Blue-birds, Niltavas, and other wholly insectivorous birds on a diet of mealworms and gentles alone, I have found leg deformities, i.e. twisted feet and weak legs; vertigo (caused through thin skulls) occur in a good 70 per cent of the broods. This points to a diet deficiency, partly lack of calcium, but there is more in it than this. Grated cuttlefish bone sprinkled on the live food helps in some cases but I believe there are other deficiencies, as yet unknown. It might help if one knew more of the diet on which mealworms were reared, and possibly alter it accordingly.

I kept mealworms on puppy meal, on which they seem to do well and is meant to be a balanced diet but with no obvious improvement in the young birds fed on these.

I mentioned 70 per cent of the broods, because I have found the odd pair of insectivorous birds that will rear perfect young year after year on a rearing diet of gentles and mealworms alone, but this is definitely the exception. I have also found that a pair will sometimes rear perfect young the first time they breed and never again.

Most insectivorous birds will take nothing else but insects when rearing young—otherwise the remedy would be simple. Small amounts of mincemeat (raw) sometimes helps and they will feed it to their young—but this is very apt to overstimulate the parents so that they

turn the young out of the nest. Other artificial foods like Bemax sprinkled on the live food might be the answer, if regulated to avoid this overstimulation.

The deficiency could be apparent in the parent bird after years in captivity, so affecting the make-up of the embryo and the egg before it is ever laid. To this end it is important to give wholly insectivorous birds a nourishing insectivorous mixture and make them eat it over the winter by tailing off the supply of live food, and adding wild berries, especially elderberries which they will all eat, and which are nature's winter tonic.

The complete answer I have not yet found, but it must be some formula to be sprinkled over the mealworms and gentles, thus providing the parent birds with a complete diet on which to feed their young. Gentles and mealworms they must have, for this is the most easily procurable form of live food, and they need live food in order to stimulate them into feeding their young. But my point is that these two forms of live food are not, in the majority of cases, of sufficient nutritional value to rear generations of healthy aviary-bred insectivorous birds.

Other forms of live food, of course, is the solution, and wood-ant pupae and eggs are one of the best forms of food, but most people have not the time or facilities for collecting these. Hence I suggest some synthetic food in powder form is the answer.

Thrushes, Tanagers, and other more omnivorous feeders will feed their young on a far wider range of foods (including mincemeat and bread and milk) after the first few days, and so one does not have the same problems as with the more specialized feeders.

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FEEDING FRUIT PIGEONS

By PROFESSOR CARL NAETHER (Encino, California)

Quite large importations of numerous varieties of fruit pigeons during 1966 have prompted many an aviculturist to try his hand at keeping and breeding them. This happens to be especially true of California, where now a considerable number of individuals—the zoos kept fruit pigeons for many years past—are in possession of one or more pairs of these colourful birds.

With many of these persons, the feeding of fruit pigeons poses a problem. Given *only* soft food in the form of various diced fruits, perhaps mixed with some cooked rice, the droppings of fruit pigeons are usually very soft and loose. If these birds are kept in relatively limited space, frequent cleaning of their aviary becomes necessary, else flies will be attracted, particularly in warm weather.

In an attempt to “firm” fruit pigeons’ droppings, this writer mixed small millet with the chopped fruit; later, large millet; still later, milo corn—all of which would cling to the fruit and be swallowed readily by the pigeons. However, he soon found that none of these seeds were digested, being expelled whole in the droppings. He recently solved this problem by mixing the diced pieces of fruit with chicken pellets, so-called “all-purpose chicken pellets”, containing 16 per cent protein. Being thoroughly mixed with the moist fruit, the pellets are slightly softened and are thus rendered more palatable to the pigeons, which take them readily. While, naturally, they prefer the fruit, picking it out first, they will then take also the chicken pellets. Thus, the writer’s fruit pigeons have been “cured!” of loose droppings, rendering their keeping, especially in relatively small space, much more sanitary.

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THE WINGED WORLD

By C. G. ROOTS (Curator), “Winged World,” Heysham, Lancs.,
England

Everyone is familiar with the “walk through” or free-flight aviary where usually a fine display of exotic plants take pride of place and a small number of nectar feeding and other inoffensive species, as far as the plants are concerned, are presented. Imagine such an exhibit, a relatively small one measuring 20 by 22 yards where over fifty of the larger species of softbills live quite amicably and future plans include the addition of possibly as many again. True, the plant growth is not dense and possibly never will be, but surely the impressive sight of Hornbills, Toucans, Motmots, Touracos and Fruit Pigeons winging their way overhead is worth the effort required to encourage plant growth.

This then, is the showpiece of the superb new Tropical Bird House completed in July, 1966, at Heysham just outside Morecambe, for the Morecambe Corporation, who realized the need for such an educational and pleasing amenity within their borough. It is certainly the largest and most modern building, devoted entirely to the exhibition of birds, within the British Isles; and the aim is to acquire over the next few years an unsurpassed collection of softbills.

In design the building is modelled upon the successful Frankfurt Zoo bird house which was constructed several years ago, and like it has three halls, the Freeflight, Main Hall, and Jewel Hall. Many rare species are exhibited in the Freeflight area, including the Tropic Hornbill, Buffon’s Touraco, Yellow-breasted Fruit Pigeon, Greater Rufous Motmot, and Long-crested Magpie Jay. The paucity of

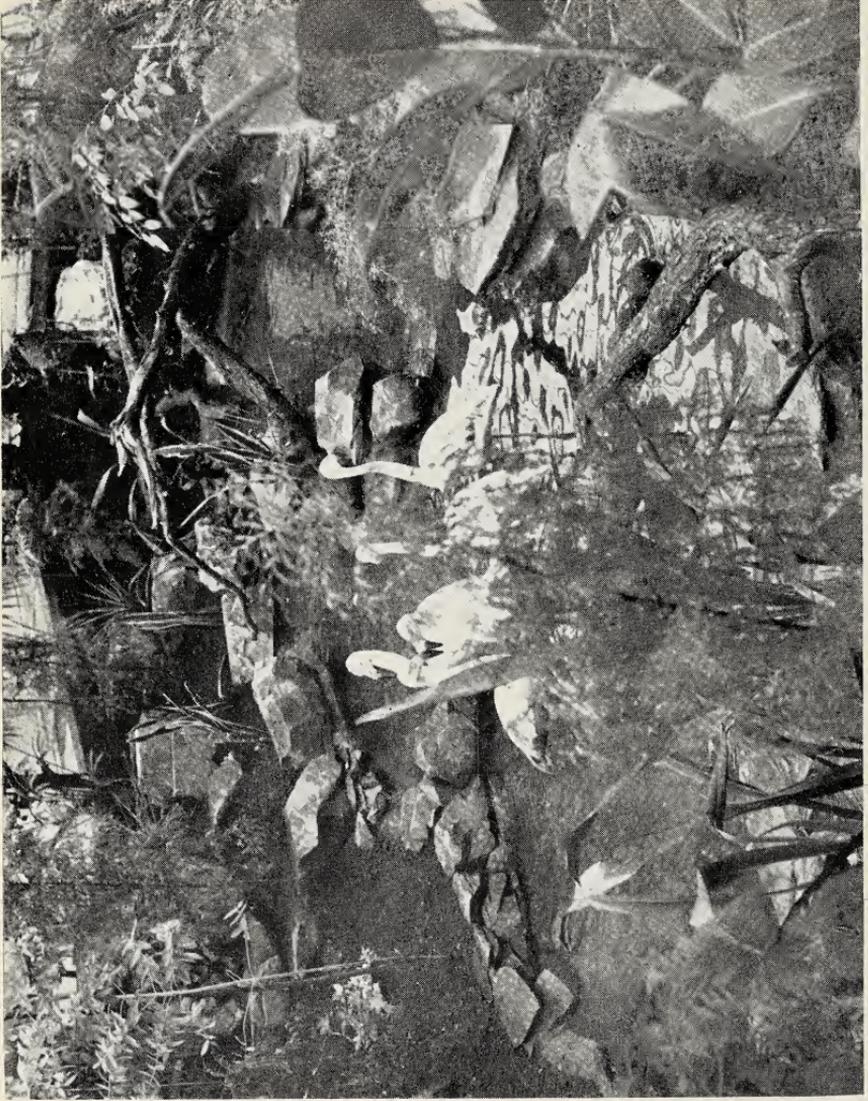


[C. G. Roots

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THE MAIN HALL AT "WINGED WORLD" WITH GLASS-FRONTED COMPARTMENTS.

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[C. G. Roots

A VIEW OF THE LARGE POOL IN THE FREE FLIGHT AREA AT "WINGED WORLD".

Copyright]

[To face p. 49

terrestrial species is to be remedied as soon as possible with Asiatic Lapwings and the larger species of waders.

Access to the Freeflight from the Main Hall is through a "bead-curtain" only, which restrains all but the more confiding species which frequently push through. There are glass-fronted compartments on either side of the Main Hall, which project outwards at an angle into the concourse. All contain community groups of compatible species. One of the larger compartments houses a fine collection including the Scarlet Cock-of-the-Rock, Sun Bittern, Bristle-crowned Starling, Blue-winged Pitta, Hoopoe and Blue-winged Mountain and Black-eared Golden Tanagers. Whilst of the smaller compartments the one containing Egyptian Plovers, Dwarf Bitterns, Superb Manakins, Flycatchers and Redstarts is typical of the variety and number of the birds exhibited throughout.

Included in the Main Hall compartments are several uncommonly exhibited species—The Southern Treepie, Coletto Mynah, Whiskered and Scarlet-browed Tanagers, Amethyst Brown Fruit Pigeons, Scaly feathered Malcoha, Pygmy Flowerpecker, Dollarbirds, and the Grey-hooded, Woodland and Pygmy Kingfishers. The collection of Barbets is particularly impressive, there being pairs of Double-toothed, Black-spotted, Red-headed, D'Arnauds, Black-throated and Red-fronted on exhibit.

There is also a large waterbird exhibit in the Main Hall in which Ibis, Egrets, Flamingoes, and Trumpeters can be seen. The Ibis and Egrets are fully flying and frequently fly out over the 3-foot high barrier, circling the public concourse before returning.

The Jewel Hall contains ten smaller glass-fronted compartments designed primarily for the nectar feeders and smaller species of softbills. They are illuminated with overhead spotlights which give a greater jewel-like effect because the public area is in comparative darkness. These compartments can be serviced through a small door in the rear, or from the front, the whole of which hinges upwards. Fortunately the majority of birds exhibited have quickly learned to go through the small door into the safety-porch beyond, so that even regular daily servicing can be done with comparative ease from the front. Species housed in these compartments at present include the Van Hasselts, Superb and Malachite Sunbirds and the Yellow-bellied, Isthmian and Blue Sugarbirds.

Throughout the building full use has been made, as far as finances would allow, of rocks, water, and plants. A different effect has been created in each compartment by landscaping with various types of rock and having pools of varying shape, depth, and size. In some cases waterfalls have been created. It is intended to improve these as the opportunity occurs and create more ecologically suitable environments where possible. One definite task for the near future is to replace a

non-planted Psittacine exhibit with a bamboo and bullrush exhibit suitable for Bittern, Bearded Reedling, Dabchick, etc. Softbilled birds and plants are not always compatible however. Our experience is that most members of the Rhamphastidae, Icteridae and Thraupidae, in particular, are destructive to plants, whereas the smaller insectivorous species, nectar feeders, and many species of pigeons, particularly Fruit Pigeons, have never interfered with the vegetation. Naturally the plants have been chosen for their toughness and resilience and have been carefully placed to avoid favoured perching places on the dead branches provided for this purpose.

Glass has been used extensively throughout the building as a means of restraint and is certainly more in keeping with a modern building than any type of wire mesh or tensioned wire. In addition to providing an unrestricted view of the exhibits it has many other advantages; possibly the most important is that it allows both temperature and humidity to be controlled, allowing variation of exhibits within a building. Where it is intended to show the more exacting insect-eating species, glass-fronted compartments are invaluable as the use of live insects—blowflies, locusts and crickets, is then possible. There is the risk of course that birds will injure themselves by flying into the glass, but my experience, even if perhaps somewhat limited, has been that the percentage of injury through this is very low if the necessary precautions are taken when the birds are introduced to their new habitat.

Heat is provided by a large oil-fired boiler equipped with the latest in automatic controls. The temperature is maintained at approximately 70° F. with a slight reduction at night, whilst the automatic dimming and lighting system allows a full twelve-hour day during the winter months.

Mealworms are used infrequently and more blowflies than maggots, which many of the smaller birds have trouble in digesting, are used in the glass-fronted compartments. Most of the smaller species of softbills seem able to catch blowflies, particularly when these have just emerged and are less active. For those birds which have difficulty with blowfly maggots, houseflies are bred and their larvae used when about half grown, at which size they seem ideal for small Tanagers and Sugarbirds, and are far less trouble to rear than wax moths or allied species. Due to the greenhouse-like conditions necessary for plant growth to thrive, the provision of carbohydrate and oil-rich foods is carefully regulated.

In keeping with the modern trend the service area is spacious and contains a large kitchen, storeroom, staff room, office and large birdroom well equipped with flights and small cages, as it is considered essential to have ample space behind the scenes for new arrivals and those off-colour. In the adjoining insect room large numbers of locusts are reared. Their rapid rate of reproduction and size range from soft-

bodied juveniles to roughage-providing adults give them a clear lead over other forms of home-bred live food.

With the exception of a few birds acquired since opening, the collection of approximately 450 birds of 190 species was gathered together within a few months last spring. The majority of uncommon species—Bee-eaters, Chats, Asiatic Kingfishers, Ant-thrushes, etc., which we had hoped to acquire were not available then and it is our intention to concentrate our efforts on obtaining these and others of equal rarity during the forthcoming years, in order to exhibit a collection worthy of the finest bird house in the British Isles.

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OF BIRDS AND WORMS

By Drs. L. A. and G. SWAENEPOEL (Lembeek, Belgium)

Obviously most Parrakeet-breeders have become "worm-conscious" in recent months, and in my opinion this is a happy state of affairs, as only when one is aware of a problem can a solution be looked for. Personally I cannot afford, from financial and sentimental reasons, just to discard the harvest of corpses into the dustbin and think of more pleasant things. I hope every breeder will take the same attitude, so we may be able to preserve in our aviaries the more rare species, many of which are still in a very precarious situation.

It is certain that in recent years parasites have become a real plague in most establishments, if not in all. This seems due in part at least to the Australian Parrot ban, with subsequent shortage of fresh blood and the extensive exchanges of birds between different breeders. A few infested birds are quite sufficient to disseminate the disease through the different collections in a short time. Wild birds, especially Starlings, may have given a helpful hand: I have no idea of the identity of the *Ascaridia* transmitted by these pests. It is quite probable that the *Capillaria* have been distributed largely by domestic pigeons and poultry. To our knowledge we all have an ample provision of these parasites in our collections, some more than others, but up till now we have never had the opportunity of visiting a clear collection. As a consolation, I can affirm that according to news from friends everywhere, not one single country has a monopoly of these pests, but there is an even distribution all over Western Europe and even other continents.

We have the impression, on examining what little statistics are available, that mortality by worm-infestation is quite high and may be estimated as at least 25 per cent of the total mortality in Parrot-like birds, excluding Budgerigars. The first step to prevent further losses, due to any kind of disease, is to have a post-mortem of each casualty.

This can be done, preferably in an official laboratory, but attention should be called to the possible existence of parasites in the bowels, as some laboratories are not used to examining Parrot-like birds. Alternatively it can be done by a veterinary surgeon interested in aviculture, or by the breeder himself, who will at least be capable of noticing major alterations to vital organs and who will jump from his chair when witnessing for the first time a heavy infestation by *Ascarids*. Human nature is thus that one gets used even to this.

I have neither literary nor scientific pretensions and quite possibly this article will contain errors in some part. I do hope that some specialist in parasites will take the trouble to rectify where necessary.

ASCARIDS

The *Ascaridiae* are the most spectacular parasites, colonizing the digestive tract of Parrakeets. They are round worms, commonly called Roundworms, and may attain several inches in length, but usually 1 to 1½ inches. I am still in doubt which species of *Ascaridia* we find in our Parrakeets. Some label them as *A. galli*, others as *A. columbae*; a Belgian specialist affirms it is a specific kind only found in Parrot-like birds. He hints that there are little or no outward differences, but that experimental contamination with the non-specific species is not possible. I would be very interested to obtain data on this very important point, capital indeed in the prevention of reinfestation.

Ascaridiae are sexually dimorphic: female worms are longer than male and possess a fantastic egg-laying capacity, which makes it a far easier proposition to breed worms than young Parrakeets. I have never counted the eggs laid per day per worm, but it is estimated that an adult female of a related species, the human *Ascaris lumbricoides*, lays up to 200,000 eggs per day!

On evacuation in the faeces the worm-eggs complete their embryonic development in about fourteen days to a month under favourable circumstances of moisture and warmth. They possess an extraordinary resistant shell, excellent protection against atmospheric, chemical, or physical action. In fact most of the usual disinfectants are utterly useless to destroy them. There is one weak point though in this carapace: susceptibility to heat of some sort. It seems that the eggs are destroyed at 40° C. after a short time. Direct sunshine, boiling water, or a flame-gun are excellent to sterilize the soil and shelters.

The only chemical¹ I know to be of value is Hydrol which has to be used in a 1/4 dilution in paraffin: a friend of mine flooded his aviaries with this mixture and as he is of the careful kind he gave up smoking. He left the birds in the aviaries and noticed no accidents, though I could not advocate this, the product being quite toxic, especially in an enclosed room. At the same time he treated his birds and during two

years he did not detect one single parasitic egg in his birds. As a test he dug up three aviaries last spring and within three months he again found signs of infestation in two of these aviaries. This means that the top layer of the soil was apparently sterilized, but that the eggs lower down were still alive and well, thank you ! This also confirms the extraordinary protective capacity of the outer cuticle of the eggs, which may remain contagious for many years.

Now, whilst writing this article, I had a phone call from this friend telling me he had done a check-up in all his aviaries a few days ago and that about 50 per cent again were infested by *Ascarids* ! It is difficult to explain everything, but it shows that the battle against these parasites is not a simple matter !

To return to our birds : the ingested egg containing a larva is broken open in the digestive tract and the larva digs itself into the mucosa of the small intestine. The human *Ascaris* makes a peregrination through liver and lungs before returning to the small intestine, but this does not seem to be the habit with *Ascaridia*.

CAPILLARIA

Capillaria obsignata, which seems to be by far the most frequent species found in poultry and parrot-like birds, is much less spectacular.

This roundworm is somewhat less than an inch long, but so thin that it escapes detection by the naked eye. The egg-laying capacity of the female approximates a very modest hundred per day. The eggs develop somewhat quicker than those of *Ascarids*, but they have a similar resistance to external agents. Again heat and the chemical hinted at earlier are effective means of destruction.

These very small worms dig themselves into the bowel-wall and feed on lymph or blood. Some specialists (for instance in our country) stress the danger of *Capillaria*-infestation ; on the other hand in Great Britain this parasite seems to be considered " more a nuisance than a real danger ".

PATHOGENIC ACTION

A slight infestation of either kind of parasite is not bound to cause much harm to the host. The trouble is to keep the numbers down and prevent heavy infestation, when the inmates of an aviary can pick up the eggs by the million on the soil. The same problem is not posed to the birds in the wild where droppings are scattered over a wide area and reinfection becomes a possibility, not a probability.

The principal danger of heavy *Ascarid* infection is obstruction of the bowel by a clot of entangled worms. Not seldom one witnesses peregrination of *Ascarids* in the bile-ducts, even in the intra-hepatic canals, where they may cause obstruction or severe inflammation. Intestinal perforation has been observed with ensuing peritonitis,

though it is considered improbable that an Ascarid can break through a healthy bowel-wall. The droppings may seem normal, but are mostly gluey, due to the presence of mucosity.

Though the enumerated mechanical causes are by far the most easy to observe and probably the most dangerous to the host, there are more. In all cases there exists a more or less pronounced alteration of the intestinal mucosa, mostly hemorrhagic enteritis, brought about by the irritation of this pathologic presence, which facilitates secondary infection. Disturbances in the absorption of food and vital substances is a logical corollary.

The worms, when numerous, help themselves to a considerable part of the digested nutrients in the bowel and this necessitates a higher intake of the bird to counterbalance. Vitamins and oligo-elements are skimmed off by these pests and may cause deficiencies of the host, already living on a diet rather poor in several vital elements.

It seems likely that the parasites secrete substances, which act as real poisons and cause a variety of intoxications, especially in cases of diminished resistance. Often nervous accidents of epileptic, meningeal, convulsive, or paralytic type may be seen, caused by the toxins excreted by the worms, though of course these symptoms may be brought about by totally different causes in completely worm-free birds.

DIAGNOSIS

The only efficient diagnostic possibility is the systematic search of the faeces for eggs of the two kinds of worms mentioned. This is not a complicated business though not easy to explain in an article. A demonstration is much quicker and more convincing. An ordinary microscope with a magnification of 60 to 150 is quite sufficient, ranging in cost from maybe £5 to £200, according to the craftsmanship. The lowest-priced apparatus are really toys, meant for studious children, but they are quite sufficient for a small collection. Owing to the fatigue to the eye, a higher-priced microscope should be recommended for a large collection.

A small particle of faeces (the dark part, the white being the urine of the bird) is spread out on a glass plate with a drop of water. Care should be taken to avoid grit, which hinders the close adherence of a small cover glass used to flatten out the field. This field has to be searched systematically in even, regular strokes from one side to the other. It is no good just to twist the glass around a bit: if very few eggs are present, you may miss them. It might do to send the faeces of each bird to the laboratory, but apart from the financial objections there is loss of time between the taking of the sample and the response.

I always cage the birds up inside until I have been able to collect a nice fresh dropping. Many breeders strongly object to the handling of

their birds, so they have to find a way of ascertaining that the dropping comes from a particular bird.

Eggs of *Ascaridia* are ovoid and measure about $80 \times 45 \mu$. They present an outer cuticle, a thin black line and a broader white shell. The inner part is blackish or dark grey and gives the impression of a network. Due to the fantastic egg-laying capacity, a thousand and more of these eggs can be found in 1 g. faeces.

The eggs of *Capillaria* are rather smaller and much more oblong. They have a light-coloured outer shell and the inner is mostly greenish, depending on the light used. A definite characteristic is the presence of a blister-like "plug" at each pole, which makes them resemble an elongated lemon.

GENERAL CONDUCT

It is of the utmost importance, in view of the complication of the matter, to carry out a plan of campaign and let the little grey cells do some work! It is of no avail to clear the birds without a thorough disinfection of the aviaries. Even this is not sufficient as the lawn and the paths in front of the aviaries are sown with eggs, carried about on boots, blown by the wind, or washed in by the rains. It must be remembered that the offal taken out of the aviaries is highly infected and that this is no place to take a lovely bunch or chickweed. A regular check-up should be made of the droppings of each bird in each aviary: it is not sufficient to take two droppings in an aviary, they may belong to the same bird and it has been noted that quite often one partner is highly infected whilst the other, usually the female, is quite free. It is certain that an individual, and variable susceptibility exists, perhaps regulated to some extent by hormones.

TREATMENT OF THE BIRDS

Many different methods and drugs are used, but only those with which we have some experience can be mentioned.

Some breeders put the drug into the drinking-water: but one has no control on the intake with our parrakeets which drink little. Others put the product into the beak with a fountain-pen-filler. The best method, we find, is direct into the crop with the aid of a syringe and catheter. It could also be done by injection into the crop through the skin, a method commonly applied to pigeons. This will be tried out one day.

Piperazine is probably the best known drug. Different combinations and salts are available from several firms and give fairly good results. Some of these may be more potent than others for all I know. The usual dose is approximately 100 mg. piperazine per 100 g. (4 oz.) live weight. This corresponds to the weight of a Rosella, Pennant's, Princess of Wales, etc. Piperazine does not seem very toxic, so extreme accuracy

is not necessary. This drug has no action whatever on the larvae dug into the intestinal mucosa, so the treatment should always be repeated fourteen days to three weeks later, when these have become adult. A microscopic control is also absolutely indicated as one single dose gives no guarantee at all. It should be remembered that it is wise to give small progressive doses over a length of time in case of heavy infestation : one massive dose may kill off too many worms, which may very well cause an obstruction of the bowel of the patient.

*Pamoate of pyrvinium*² has similar activity. Dose : 1 ml. per 100 g. live weight.

R8299, an imidothiazol,³ exists in injectable form for the larger domestic animals and in tablets for oral administration to poultry and pigeons. We have always used the injectable presentation, as the other is quite recent. This contains 100 mg. active substance per ml., which we dilute 1/10 and this dilution contains 10 mg. per ml. The normal dose is 40 mg. per kg. live weight or 4 mg. (= 0.4 ml. of the dilution) per 100 g., which corresponds to the weight of a Rosella. Toxicity is rather low and I tried out increasing doses of up to 2.5 ml. (25 mg. active substance) on a Budgerigar of about 50 g. The bird showed no ill effects at all, even when given ten times the normal dose. Some birds, however, show vomiting : this can be prevented to some extent by treating the birds at evening when the crops are full.

We have found this drug to be extremely active on *Ascaridia*, both in adult and larval form. In only two cases of approximately one hundred birds treated, one single Ascarid remained, though the bulk was evacuated. A second dose took care of this escapee. As a precautionary measure, we always give the bird a second treatment even when the microscopic control is negative.

Unhappily the destructive action on *Capillaria* is not comparable. If it is possible or even likely to clear a slight infestation, there is never certitude. In one case of very heavy Capillariosis of a hen Cockatiel, five successive and increasing doses brought no apparent difference in the number of eggs found in the faeces. A cock Green Rosella of 175 g. received about 30 mg. (3 ml.) without apparent ill effect on the host, or on its guests. His Ascarids, however, had been cleared at the first small dose.

*Methyridine*⁴ exists also in injectable and oral forms. We started by using the first, but have now fallen back to the second as more easy to handle. This is an excellent product for treating Capillariosis. Unhappily it is only slightly active towards Ascarids. The use of this substance is not without danger as I experienced some time ago. The toxic dose is about 250 mg. per kg. live weight. One should keep well below this.

We now use the oral form in a dilution of 1/50 (i.e. 1 ml. oral product to 49 distilled water). This dilution contains approximately 10 mg.

methyridine per ml., which I consider a dose sufficient for a bird of Rosella-size. Results are very encouraging concerning *Capillaria*. Even the extremely infested hen Cockatiel was very nearly cleared after one single dose and was completely free after a second identical treatment. All the other infested birds treated, perhaps a score, were cleared apparently in one single treatment. I say apparently, because the comparatively low egg-laying ratio commands an extensive and repeated search for the eggs before one can declare a bird free of these pests. One Ascarid (female of course!) cannot be missed, but a thousand *Capillaria* cannot equal the egg-laying output of this champion! When only a few *Capillaria* are present, it is not impossible that no eggs are detected in one single preparation. Examinations should always be repeated.

TECHNIQUE

I touched a word on the different techniques of administering a drug to a bird. My friend, D. Young, convinced me to use a syringe with catheter, much superior to the fountainpen-filler I was used to. Indeed this method is much easier, quicker, and less dangerous to the bird.

I use a plastic syringe of 2 ml. with a medium-sized metal needle attached. The tip of this needle is filed off, a plastic catheter (the plastic coating of an ordinary electric wire after removing the inner cable is ideal for this purpose) is firmly pushed around the needle and extends beyond the tip. The length of this catheter should be 3 inches. The bird is held in the left hand in the classical way, thumb and index at the base of the head. The catheter is introduced sideways at the commissure of the beak, pushed behind the tongue, and held in the direction of the throat. It is absolutely unnecessary to continue pushing and it may be harmful: far better to let the bird swallow the catheter which weighs lightly downwards. The catheter should be introduced about 2 inches for Neophemas, Bourke's, and Red-rumps, about 3 inches for Rosellas, Princesses, Parrots, etc. Once the end of the crop attained, the catheter will not proceed further and the light weight of the syringe will not cause any harm. The injection can be made steadily then, and with gentle movement the catheter is withdrawn. It is wise to try your hand on a small bird of the gentle species, such as Bourke's, Neophemas, or Red-rump. In cases of doubt a veterinary surgeon will be of great help.

After the worm-treatment, we always advocate a dose of a multi-vitamin preparation; it is easier though to give proper indications to fellow breeders than to apply them yourself and I must humbly confess that often this last part was not executed in our aviaries. All these little jobs, trivial by themselves, total up to quite a business and time is limited!

I do hope that correct treatment of our aviary inmates will in time put a stop to the sometimes heavy losses that occur in many collections. If the loss of a Rosella is not an irreparable catastrophe, it may be a very severe setback for a small breeder and anyway the loss of a few Blue Bonnets or Hooded is a catastrophe even in very extensive collections.

¹ Hydrol, by Whitmayer, U.S.A.

² Marketed as "Vanquin" by Parke and Davis.

³ Marketed as "Ripercol": injectable, and "Apercol": oral, by Janssen Pharmaceutica, Beerse, Belgium.

⁴ "Promintic": injectable, and "Mintic": oral form, marketed by I.C.I.

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INFORMAL CONFERENCE ON CONDITIONS OF TRANSPORT AND IMPORTATION OF LIVE BIRDS

In view of the increasing concern regarding the numbers of birds which have been found dead or dying on arrival at London Airport, the British Section, International Council for Bird Preservation decided to convene an informal conference of bird preservation societies, aviculturists, representatives of airlines, the pet trade, and other interested bodies to discuss the whole problem of the conditions of transport and importation of live birds.

The Conference was held on Tuesday, 17th January, 1967, in the Meeting Room of the Zoological Society of London, under the Chairmanship of the Rt. Hon. the Earl of Cranbrook. The meeting opened at 10.30 a.m. and continued in the afternoon after a break for lunch which was arranged in the Fellows Restaurant. It was attended by over sixty participants including observers from the Board of Trade, Home Office, Ministry of Agriculture, Fisheries and Food, Ministry of Health, and Nature Conservancy. Four major airlines, B.O.A.C., B.E.A., B.U.A., and K.L.M. were represented including the Chairman of the I.A.T.A. Study Group on the transport of animals. The Directors of Bristol and Chester Zoos and of Birdland and the Tropical Bird Gardens, Rode, were present together with representatives of the Avicultural Society, National Council for Aviculture, Foreign Bird League, the Pet Trade Association, Livestock Importers Advisory Committee, and many other organizations.

No formal papers were presented but a series of statements on various aspects of the problem were given and the main business devoted to discussion. The following statements were made:—

(1) The General Objects of the Conference: Professor W. H. Thorpe, F.R.S., Chairman, British Section, International Council for Bird Preservation. (2) Carriage of Live Animals by Air: S. N. Chilton,

Board of Trade. (3) Statistical Inquiry into Animal Traffic on behalf of the International Council for Bird Preservation and International Union for the Conservation of Nature : Lieut.-Col. C. L. Boyle, O.B.E. (4) International Aspects of the Traffic in Wild Birds : Trevor H. Scott, Chief Administrator, International Society for the Protection of Animals. (5) Birds by Air : Conditions on arrival at London Airport : N. H. Whittaker, R.S.P.C.A. London Airport Animals' Hostel. (6) The Import of Birds of Prey : J. G. Mavrogordato, C.M.G., President, British Falconers' Club. (7) The Parrot Ban : A. A. Prestwich, Hon. Secretary, Avicultural Society. (8) Diseases encountered in recently Imported Birds : Dr. I. F. Keymer, M.R.C.V.S., Hon. Secretary, British Veterinary Zoological Society. (9) Standards for the Transport of Birds : J. J. Yealland, Chairman, Carriage of Live Animals Committee, British Standards Institution. (10) The need for the adoption of Recommendations of the British Standards Institution and for the avoidance of delays at Airports of Entry : Representative of the Pet Trade Association, Ltd.

There was a full discussion on all points and in summing up the Chairman pointed out that there are three stages in the travels of a bird from the point of capture to the Zoo, private individual or pet shop in this country. The first is from the forest to the point of departure and there, although no figures are available, the death rate is believed to be high. In 1966 over 400,000 birds passed through the R.S.P.C.A. hostel at Heathrow, 200,000 coming into this country (about half the total number entering at London airport) and about 230,000 in transit. From the figures supplied by the R.S.P.C.A., it was shown that the average death rate amongst these birds during the journey was between $1\frac{1}{2}$ and 2 per cent. There is a further fairly heavy mortality in this country before the bird settles down, which must be attributed very largely to the shock and strain of transport. There are no accurate figures for this subsequent mortality, but it is estimated at a further 2 to 10 per cent. These figures are an improvement on those of twenty years ago, and this is doubtless due very largely to better containers and efforts by the airlines to ameliorate the conditions of travel.

In 1959 the British Standards Institution produced specifications of containers for the transport of birds and other animals and the Conference was satisfied that if these were universally adopted a great improvement should result. The Conference heard with great satisfaction that the International Air Transport Association Study Group was working on the whole problem of the transport of live animals by air.

A full report of the Conference will be issued.

P. B.-S.

* * *

NEWS FROM THE BERLIN ZOOLOGICAL GARDENS

By Dr. HEINZ-GEORG KLÖS

A number of interesting species have arrived since our last report was published in September–October. Our Waterfowl collection has been enlarged by the following birds :—

1 African Black Duck, 3/4 European Eiders, 2/3 European Golden-eyes, 0/1 Abyssinian Blue-winged Geese, 0/1 Australian Shelduck, 4 Australian Shovelers, 0/3 Pintails, 1/1 Argentine Red Shovelers, 4 Australian Rajah Shelducks, 1/1 Australian Shovelers. During the last months of 1966, five Black Swans and three Black-necked Swans hatched, but because of the bad weather conditions only one of the latter was reared successfully. We bought, from a dealer, nine Andean Flamingos (*Phoenicoparrus andinus*) which we keep together with our James' Flamingos (*Ph. jamesi*). As in all collections, also in the Berlin Zoo, both these species are kept separated from the other Flamingo species because they require a special food. In the Penguin enclosure, a Jackass Penguin hatched, and the Humboldt Penguins laid their first egg. In both species we have had very good breeding results during recent years. This is probably due to the fact that the keeper hand-rears the young ones for a certain time when their parents begin to stop feeding them. This operation is done with a plastic syringe filled with fish pulp.

From Australia we imported 0/1 King Parrot (*Alisterus scapularis*) because our old female had died when her young was just a few weeks old. As the father did not take care of him, it was reared by hand. Also from Australia came two pairs of Crimson Rosellas (*Platycercus elegans*) and a pair of Eastern Rosellas (*P. eximius*).

New in our collection are two Spectacled Owls (*Pulsatrix perspicillata*), which we got as a gift from the Fort Worth Zoo, Texas. We are very happy to have received this beautiful species which we had tried to obtain for many years. The birds are still young but they are now beginning to change their youth plumage. Also new are four Burrowing Owls (*Speotyto cunicularia*). Among the most valuable new-comers are three fine specimens of Great Blue Touracos (*Corythacola cristata*) and two Bald Crows (*Picathartes gymnocephala*), companions for our single bird.

* * *

NEWS FROM CHESTER ZOO

By M. F. COUPE

A large collection of Birds of Paradise have arrived at the Zoo since my last article for the AVICULTURAL MAGAZINE. These birds were accompanied on their long journey by Mr. D. Bush and arrived in excellent condition. The following species arrived: The Carol Six-plumed, Count Raggiana's or Red-plumed, Lawes' Six-plumed, Magnificent, Prince Rudolph's or Blue, Sickle-billed, and Superb. It is now our proud boast that we have one of the largest collections of Birds of Paradise outside New Guinea. These birds, in common with our original Birds of Paradise, are housed in thickly planted aviaries in the Tropical House.

The pair of Red-billed Toucans and a Laminated Hill Toucan which were housed in aviaries, have been released in the Tropical House. In such a large area, they show no signs of attacking any of the other sixty species of birds at liberty. Several nesting barrels have been provided for the Red-bills and they seem to be showing an interest in these. The cock Orange Cock-of-the-Rock (*Rupicola rupicola*) and a hen Scarlet Cock-of-the-Rock (*Rupicola peruviana sanguinolenta*) have also been released in the Tropical House and have settled down very well.

The two young Sclater's Crested Curassows have been transferred to an aviary away from their parents, who remain at liberty in the Temperate Bird House. The adult birds are showing signs of going to nest again and have attacked the young ones.

The Black Swans have one egg at the time of writing (22nd February) and we are hopeful of a continuation of mild weather.

Apart from the Birds of Paradise there have not been a great number of new arrivals in the Bird Section. We have received a pair of young Emus, several Maned Geese, and a pair of Occipital Blue Pies.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

The Zoo's oldest resident, a White Pelican, received in May, 1922, has died. Other deaths include a Black- and White-casqued or Grey-checked Hornbill (*Bycanistes subcylindricus*) presented in February, 1935, and a White-collared Kingfisher (*Halcyon chloris humii*) presented in January, 1955.

Two Speckled Pigeons (*Columba guinea*) have been bred and Black Swans, Cereopsis Geese and Javan Fish Owls are incubating eggs.

An African Scops Owl (*Otus scops senegalensis*) has been presented. It flew on to a ship in the Indian Ocean northward of the Seychelles and, so the donor said, about 150 miles from the nearest land. Two Kenya Black-checked Waxbills (*Estrilda erythronotos delamerei*) have been presented by Mr. Malcolm Ellis: this race has not previously been in the collection. Other presentations include a King Shag (*Phalacrocorax albiventer*) and a Rock or Black Shag (*P. magellanicus*) from Mr. L. W. Hill and from Sir Crawford McCullagh a pair each of Wigeon, Pintail and Carolina Ducks bred at Lismara.

* * *

NEWS AND VIEWS

P. H. Hastings reports that he has very recently received two pairs of blue Ring-necked Parrakeets: both have been bought by Lady Ballie.

* * *

Mr. William R. Lasky has been elected President, Avicultural Society of America, in succession to Mr. Paul Schneider.

Don Hultman has resigned from the Secretaryship and Mrs. Velma McDaniels has again taken over this office.

* * *

The Bronze Medal of the Avicultural Society of South Australia has been awarded to Dr. Alan Lendon, for breeding the Blue-checked Rosella (*Platycercus amathusiae*). Dr. Lendon had already recorded twelve first successes with his parrakeets.

* * *

Paul Schneider writes from California: "A few of my better accomplishments during the 1966 breeding season were five lutino Ringnecks, fifteen Many-coloured, one King, six Rock Peplars, seven Green Jungle Fowl, six Ceylonese Spur Fowl, and eight Blue-headed Quail Doves. Three lutino Ringnecks reared in 1965 have turned out to be three males—a delightful surprise."

* * *

The annual census of the Zoological Society of London, taken on 31st December, 1966, showed that the oldest inhabitant of the London Zoo was an Australian Pelican, acquired in May, 1922. Friday, 13th January, was indeed unfortunate for "Percy" as on that date he was found dead, natural causes. The oldest inhabitant is now a Sulphur-crested Cockatoo "Cocky" who arrived in 1925.

* * *

Mrs. D. A. Speed, Fresno, California, has bred the Thick-billed Parrot. She writes: "My baby Thick-billed Parrakeets are out of the nest, perching and beautiful. They have white bills the same as when they came out of the nest; just starting to darken a little on the lower mandible. Can't understand how the ones at San Diego Zoo have black bills." (*Avic. Bull.*, Dec., 1966, p. 2).

* * *

Walther Langberg, Copenhagen, reports, 1966: "Last year the Australian parrakeets did quite well. I bred ten Crimson-winged, six Princess of Wales's, five Pileated (Red-capped), four Rock Pebbles. Bourke's, Turquoisines, Elegants, and Splendids all did well, but Blue-wings only had one young one. The blue Indian Ring-necks had clear eggs. The finches also bred well, with young from Royal and Peale's Parrot-Finches, Bicheno's, Star, Chestnut-breasted, and Painted.

At the moment (late December) I have on the perch three young Spectacled Parrotlets (*Forpus conspiciellatus*)."

* * *

There are a unique series of photographs by Frederick Kent Truslow, to illustrate "When Disaster Struck a Woodpecker's Home", in *National Geographic*, December, 1966.

Truslow was photographing the nesting of a pair of Pileated Woodpeckers in Everglades National Park, when the dead pine containing the nest suddenly broke off at the nesting hole, despite a complete absence of wind. Later Truslow found that the woodpeckers had so hollowed out the 8½ inch trunk that the walls of the nest measured only a quarter to three-quarters of an inch thick. The female carried off the three eggs to an unknown destination—possibly to a roosting-hole. The whole operation took just sixteen minutes from the time the tree broke.

* * *

Henry Bates, who with co-author Robert Busenbark, has produced standard American books such as *Parrots and Related Birds* and *Finches and Soft-billed Birds*, writes: "We are very busy with quite a number of humming birds. Most are from Ecuador, but we do have two specimens of our native Anna's Humming Bird. One we hand-reared with an eye-dropper. It matured into a charming little hen. The

other is a tailless and bedraggled little urchin who is just blossoming into an attractive male."

For the information of those interested in such matters Anna was the wife of a Duke of Rivoli, son of the French Marshal Masséna. The Duke himself had a humming bird named for him—Rivoli's Humming Bird (*Eugenes fulgens*).

* * *

I have always thought that the name Avocet was singularly appropriate for this lovely wader. It is apparently derived from the Italian Avosetta or Avocetta, probably literally "a graceful or delicate bird".

The Avocet was believed lost to the British scene until quite suddenly newly-hatched chicks were observed in Essex, in 1944. Since then an increasing number of pairs have nested in Britain and the Royal Society for the Protection of Birds has now announced that last year about 145 young were reared—of these 125 were reared on Havergate Island, Suffolk. This remarkable revival is in the main due to the conservation programme of the R.S.P.B. It is indeed fitting that the Avocet is the official emblem of the Society.

* * *

There are now no less than seventy zoological and bird gardens open to the public in Great Britain. The time had surely come for the formation of a society devoted to their interests. The Federation of Zoological Gardens of Great Britain and Ireland has now come into being. Members will be required to maintain the standards laid down by the Federation; these include the care, housing and transportation of animals, hygiene and public safety. In the interests of conservation members will be asked to consult the Federation before acquiring rare animals. The present membership consists of the following Founder Members:—

The Bristol, Clifton, and West of England Zoological Society (Bristol Zoo); The North of England Zoological Society (Chester Zoo); The Royal Zoological Society of Ireland (Dublin Zoo); The Royal Zoological Society of Scotland (Edinburgh Zoo); The Zoological Society of London (London Zoo and Whipsnade Park Zoo); Paignton Zoological and Botanical Gardens, Ltd. (Paignton Zoo); The Dudley Zoological Society, Ltd. (Dudley Zoo and Birmingham Zoo); and two Ordinary Members:—

The Birdland Zoo Gardens, Bourton-on-the-Water, Glos.; The Tropical Bird Gardens, Rode, Nr. Bath, Somerset.

It is especially noteworthy that the Directors or Curators of all nine original members are already members of the Avicultural Society. The Secretary of the Federation is Geoffrey St.G. Schomberg, dedicated to the study of animals in captivity, and author of "British Zoos".

* * *

As a "Tail Piece" to these notes in the January-February, 1966, number of the MAGAZINE I recorded the fact that a doctor in America was offering 4d. each for one hundred English sparrows to be made into a "Fayette sparrow pot pie". Whether he succeeded in obtaining them I know not, but I do know that the landlady of an inn in Essex recently baked a hundred sparrows in a pie for the regular customers—the event was given wide coverage in the daily press. I strongly disapprove but it must be remembered that many countryfolk in our forefathers' day baked such things—they were unable to afford butcher's meat. And people do still bake pigeon pie and to a lesser extent rook pie. It is to be sincerely hoped that no one tries to emulate the old nursery rhyme and bakes four-and-twenty Blackbirds.

Small bird life would seem ever to have been regarded as of little value. In the market places of Galilee, sparrows—the name covered the innumerable species of little dead birds—were offered at two for a penny, or five for twopence. In living memory the bounty paid by the so-called "sparrow clubs" was a mere halfpenny.

Sometimes nowadays one has cause to marvel at the little regard shown by some juvenile courts. A recent case was that of two boys, aged twelve and thirteen, who shot four Blue Tits in a neighbour's garden. They were fined 5s. each!

* * *

Such is the shortage of the larger Australian parrakeets that almost any enthusiast in England would be only too happy to have a pair of Kings or Crimson-wings in his aviaries. But in the "Land of Parrots" the position as regards numbers is *very* different.

In *Australian Aviculture*, January, 1967, Ronald A. Thomas gives an account of a lightning tour he made of some of the aviaries in Queensland. Amongst others, visits were made to Mr. and Mrs. Brosland, with sixteen King Parrots all in one aviary, and a dozen Crimson-winged Parrots; and Bill Hooton, sixteen King Parrots, the adult pair and thirteen cocks and one hen. A visit to Mr. Sutton, Longreach, revealed "In the first aviary he had thirty Kings, sixteen Crimson-wings, two pairs of Galahs, and ten Pennant's Parrots. In the second aviary there were Red-wings, Kings, and Buln Bulns. In No. 3 aviary there were Western Australian Stanley Rosellas, various Doves, and Rainbow Lorikeets. In No. 4 aviary there was a flock of forty White Javas which made a very striking display. In No. 5 aviary there were Gouldians with young, Red- and Black-headed and, in Mr. Sutton's words, "Copper (dilute reds) rubbish bred from his reds." In aviary No. 6 there were forty Corellas and last but not least a Wedge-tailed Eagle. The size of the aviaries is not given but they must have presented quite a sight.

Ronald Thomas says that "those who keep Kings and Crimson-wings find them to be free breeders and long livers. The consensus of

opinion is that if you keep one pair only in an aviary there is little hope of breeding but with three or more pairs they breed very easily”.

It is to be very greatly regretted that there is not the remotest possibility of putting the second part of this theory to the test in England.

* * *

Owen Long, Salisbury, Rhodesia, writes : “ Birdwise this has not been a very good year, definitely not a vintage year. The pheasants did pretty well, especially the Golds, but as most people seem to have suffered a similar fate, perhaps it was not just me. Because of these sanctions, some of the usually available food-stuffs were not available, and I personally believe that this was the main cause. The owls did not come up with anything at all. Most eggs were infertile, and the Eagle-Owl ate all her eggs, just as they were on the point of hatching, due, I believe, to an overdose of disturbance from dogs and things. However, next year will be better. It couldn’t be worse, I’m sure. Last year, I had about a hundred Guinea Fowl eggs, whereas so far this year I’ve had one !

You may be interested to know that five days ago, here in Salisbury, a Zoological Society was formed. We have a committee of eleven, seven of whom are professional zoologists or veterinary surgeons, yours truly as Hon. Sec., and a former warden of Wankie Game Park as President. One of our aims is to establish a Zoological Garden, as and when funds become available. I hope to have something to do with the birds, and one of my aims will be to try to get some of the birds on the Red List established here. I firmly believe that the conditions which we enjoy here would be most beneficial to most of the endangered species, and with a little luck on our part, and a good deal of co-operation from the birds, the bane of Wilson’s life could become one of the major factors in saving some of these animals. For example, no one, to the best of my knowledge has ever tried to breed the Tadjoura Francolin, nor the Swierstra’s Francolin, and where would be a better place to start than here in Central Africa. However, these things are in the future, but so long as they are not forgotten, we might yet be able to do our bit.”

A. A. P.

CORRESPONDENCE

BLUE-HEADED LORIKEET

Is *Trichoglossus caeruleiceps* correct? Peters says that it appears to be a synonym of *nigrogularis*. It would be interesting to know how it differs from *nigrogularis*, and if it is distinctly different, it would be considered yet another race of *haematod* wouldn't it? Whether *nigrogularis* or not, it would seem to be a first breeding.

THE ZOOLOGICAL SOCIETY,
REGENT'S PARK,
LONDON, N.W. 1.

JOHN YEALLAND.

Trichoglossus caeruleiceps is a race of *Trichoglossus haematod*. Cain (*Ibis*, vol. 97 (1955), 447) recognized this race as being smaller than the very similar *T. h. nigrogularis*, with slightly heavier barring on the underside and slightly more purplish-black on the belly. Cain recognized twenty-two races of this species, resulting from its island distribution, and many are only slightly differentiated from each other.

C. J. O. HARRISON.

14 DAWLISH AVENUE,
PERIVALE, MIDDLESEX.

THE ORIGIN OF THE BENGALESE FINCH

In the November–December, 1966, issue of your AVICULTURAL MAGAZINE, the book *Common Cagebirds in America*, by Val Clear, is reviewed by a writer identified as "C. J. O. H." The writer commented, "it is a pity that the erroneous belief in the hybrid origin of the Bengalese Finch should still be with us."

Mr. Clear's book refers to the ancestry probably including the Striated Finch, the Indian Silverbill, and the Sharp-tailed Finch. Since several other American books I have checked also refer to this same origin, I would very much appreciate if you would advise me as to the true origin of this particular finch.

MRS. ROBERT McCLINTOCK.

5076 EVERGREEN DRIVE,
NORTH OLMSTED,
OHIO 44070,
U.S.A.

The Bengalese Finch and its ancestry was carefully studied by Dr. E. Eisner, who, in addition to publishing some of her study of this species in other ornithological journals, gave the results of her investigations in an article in the AVICULTURAL MAGAZINE, vol. 63 (1957), pp. 101–8. She showed that it was a form of the Striated Finch, *Lonchura striata*. The Sharp-tailed Finch is now regarded as a race of the latter. Further notes by Dr. Eisner (AVIC. MAG., 64 (1958); 31–3) and myself (AVIC. MAG., 68 (1962); 30–2) showed that hybrids between Bengalese and Silverbills produced young with variable characters, unlike the typical Bengalese. There seems to be no reason to doubt Dr. Eisner's conclusions, and it should be remembered that in the past there was a tendency to attribute hybrid origin to most domesticated birds, including fowls and pigeons, due apparently to an inability to accept the fact that the variations shown could be produced by selection for recessive characters.

C. J. O. HARRISON.

14 DAWLISH AVENUE,
PERIVALE, MIDDLESEX.

The Editor does not accept responsibility for opinions expressed in articles, notes, or correspondence.

THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

Year ended 31st December, 1966

RECEIPTS		PAYMENTS	
	£	s.	d.
To Balance at Bank, 1st January, 1966		792	15 5
Subscriptions	1,913	13 8	1,633 11 5
Donations	108	1 1	70 10 4
Sales of Magazine	113	11 7	29 12 6
Sales of waterfowl rings	8	3 6	104 16 11
Advertisements	212	19 0	33 17 8
Dividends	91	0 9	125 5 0
Miscellaneous receipts	3	1 3	129 0 0
			6 0 0
			4 10 0
			15 15 0
			7 10 0
			27 11 1
			23 8 0
			64 3 3
			10 0
			25 0 10
			2,300 17 0
			942 9 3
			£3,243 6 3

This Statement has been prepared from the books, records and vouchers of the Avicultural Society, and is in accordance therewith.

LONDON.

31st January, 1967.

J. WATKIN RICHARDS, }
 Certified Accountant. }
 Hon. Auditor.

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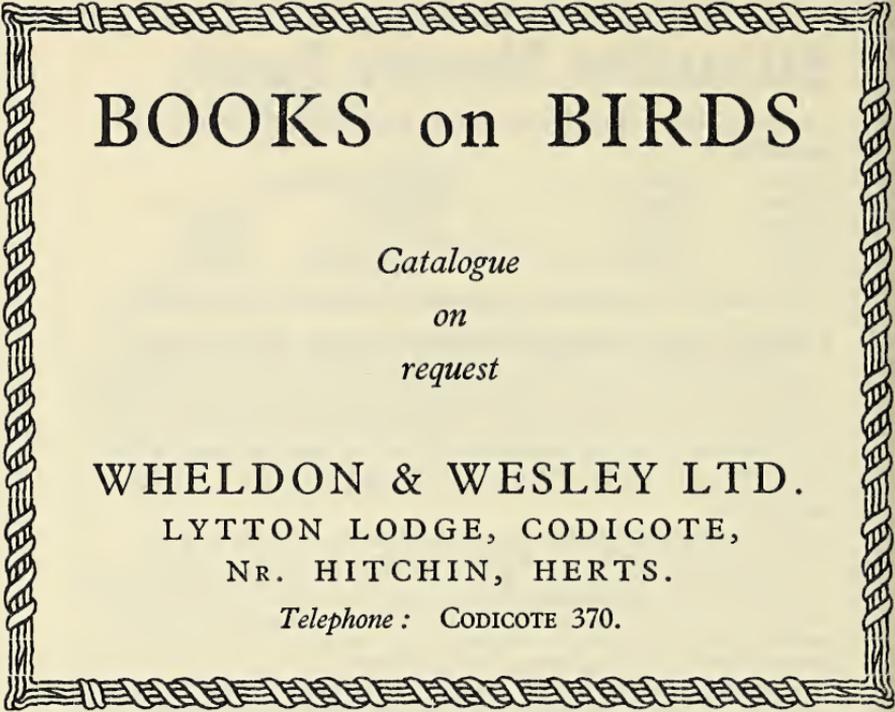
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The Avicultural Society of America

Founded 1927

Hon. President: Dr. Jean Delacour.

President: Mr. William R. Lasky.

Secretary: Mrs. Velma M. McDaniels,

2265 West 239th Street, Torrance, California 90501, U.S.A.

The annual dues of the Society are \$4.00 per year, payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Members receive the *Avicultural Bulletin* monthly.

Correspondence regarding membership, etc., should be directed to the Secretary.

The Avicultural Society of South Australia

Founded 1928

The oldest Avicultural Society in Australia invites all interested in aviculture to become members. Subscription is £1 0s. 0d. sterling per annum, and this includes a monthly magazine *Bird Keeping in Australia* mailed to all members. This is entirely original and deals with the keeping and breeding of many Australian and exotic species of birds.

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2 lb. 9/9	3 1/2 lb. 15/6	3 1/2 lb. 15/6	3 1/2 lb. 23/-	7 lb. 32/9
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BROWN GROSBEEK.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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MAY-JUNE, 1967

THE BROWN GROSBEAK

(*Neorhynchus peruvianus*)

By ROBIN L. RESTALL (Cheam, Surrey, England)

The Brown Grosbeak is a species which, I gather, may well have been imported into Britain for the first time in 1966. I bought a pair from Messrs. R. W. and V. K. Drury, which were listed as Slaty-coloured Seed eaters (*Sporophila schistacea*). One can hardly blame Mr. Drury for getting it wrong because, apart from a line drawing of a head, the accompanying plate is probably the only illustration ever published of the species. Certainly the description of *S. schistacea* in de Schauensee's list could be read to be very like *N. peruvianus*.

After successfully identifying the bird with the invaluable assistance of the skin collection at the British Museum, and the expert advice of Mr. Derek Goodwin, I wrote to Mr. Allen Silver to see if he had any record of the species in confinement. Part of Mr. Silver's reply read as follows: "In all probability, few people in Europe have seen or owned it, much less bred it. Neunzig, who goes back to Russ, has no mention in his index, and whatever the London Zoo may have had in recent times it is not in the last list published. I note Brabourne and Chubb call the Peruvian bird Brown Grosbeak and the Ecuador race (apparently shorter) Verreaux's Brown Grosbeak. *B.M.C.* descriptions, p. 80, Vol. XII, give colour descriptions which imply much brown and ashy-brown areas in its plumage somewhat different to that of the grey *Sporophila*.

"Its female plumage is dissimilar and there is a note of fresh plumage (December and January) regarding the male. From a head figure it appears to have a devil of a beak compared with the *Sporophila* as a whole, in fact reminding me in that respect of *Melopyrrha nigra* of Cuban fame. . . ."

I must comment on some points raised in Mr. Silver's letter before proceeding with my own notes. Firstly, in deference to Brabourne and Chubb, I have used their English names, but I think they are inappropriate. Much more suitable names, I suggest, could be Black-throated Seed eater, or Grosbeak Seed eater. The name of Brown Grosbeak, in the list of South American birds is misleading, for at best the birds are ashy-brown above, and "Grosbeak" to me

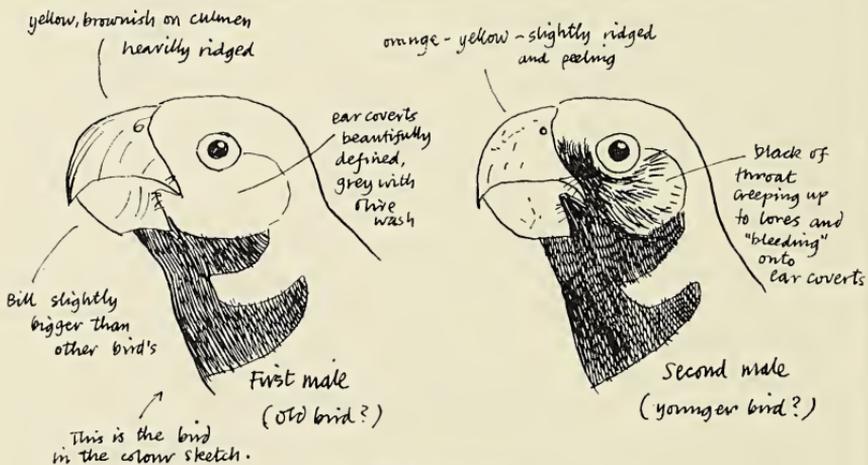
always suggests a larger bird, and not a *Sporophila* as this bird quite clearly is. At the time of writing (December, 1966) both birds are in a moult.

I know nothing of habitat, range, or distribution, and neither of the references mentioned by Mr. Silver helps in this direction. The labels on the skins in the Bird Room suggest that the nominate race is restricted to the northern half of Peru, while the Ecuador bird is found roughly in the north-eastern part of that country. Both of these areas abut the boundary of Colombia, but I have scoured de Schauensee with no success.

Incidentally, I should make it clear that the genus *Neorhynchus* only has the one species, *peruvianus*. The Peruvian bird is the type, *peruvianus*. The race from Ecuador is known as *devronis*.

The accompanying colour plate is drawn from life from my first pair, which I am sure is the Ecuador bird, *N.p. devronis*. Knowing the problems of colour reproduction in all its forms, I doubt if the subtleties of racial difference could be accurately portrayed.

The male of my pair died of a respiratory complication after about four months—almost certainly a benign weakness made malignant by the nasty fogs we had in November. Mr. Drury sent me another male who is blacker around the face, and slightly smaller in the beak, which is not so ridged. One of the sketches illustrates the difference.

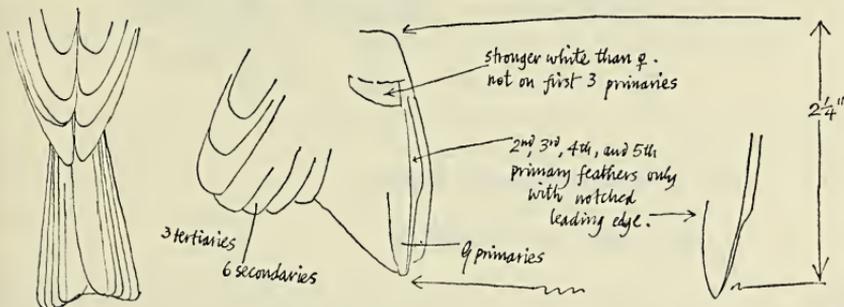


DESCRIPTION

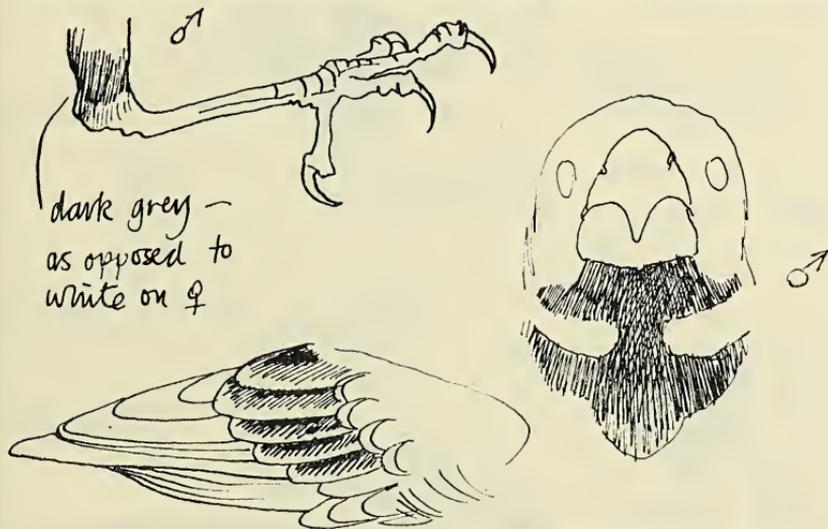
General notes.—It is a dull sparrowy little bird, barely $4\frac{1}{2}$ inches long. But for the enormity of the bill and the lack of chestnut on the back, it would look very much like a miniature sparrow. The bill is very large and compressed in relation to the body size, and it is very powerful. All three birds have nipped me with considerable strength, and both males have drawn blood. The legs and feet seem to vary. Some name tabs at the museum gave "feet: brownish grey" (*N.p. peru-*

vianus) and "feet : blue-white" (*N.p. devronis*). All three of my birds are different! The female's feet are hornish. The old male's were distinctly on the blue-grey side of horn, but the young male's feet are on the blue-pink side of horn. Irides are dark brown.

Male.—Forehead, lores, crown, ear-coverts, nape, neck, back, mantle scapulars, rump, and upper tail-coverts are grey with a

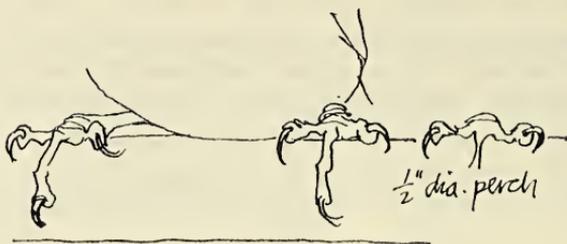


brownish-olive wash. There is a tendency for blackish markings to the centre of the feathers around the face. The lesser wing-coverts are olive grey. Median wing-coverts have dark spots at the centre with white edges to the innermost four or five. The greater wing-coverts are dark greyish-brown with pale fawnish edges and the secondaries too.



The tertiaries are dark brownish with frayed, very pale margins. The primary coverts are dark brown—nearly black; primaries are dark brown. The inner six of the nine have a white patch near the base (see sketch). The second, third, fourth, and fifth primaries only have a notched leading edge. The tail feathers are dull grey-brown, with pale olive-fawn outer edges. The bill is yellow, growing progressively more horn colour towards the culmen, which is ridged and brownish.

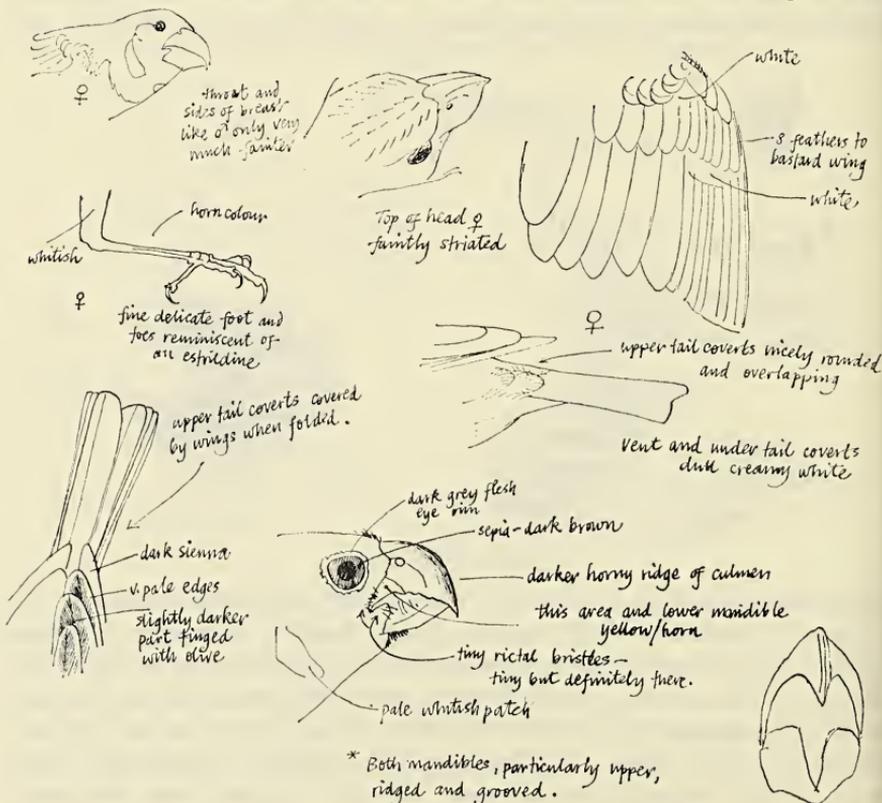
very typical mummy-like pose on perch



♂ whiter below than ♀
and not so creamy.

Below, the chin, throat, and breast are black, with a patch of white on the side of the neck, which cuts into the black (see colour, and black-and-white illustration). There are some faint greyish striations on the lower breast. The belly and under tail-coverts are dull off-white.

Female.—The female lacks the black and white bib markings of the



* Both mandibles, particularly upper, ridged and grooved.

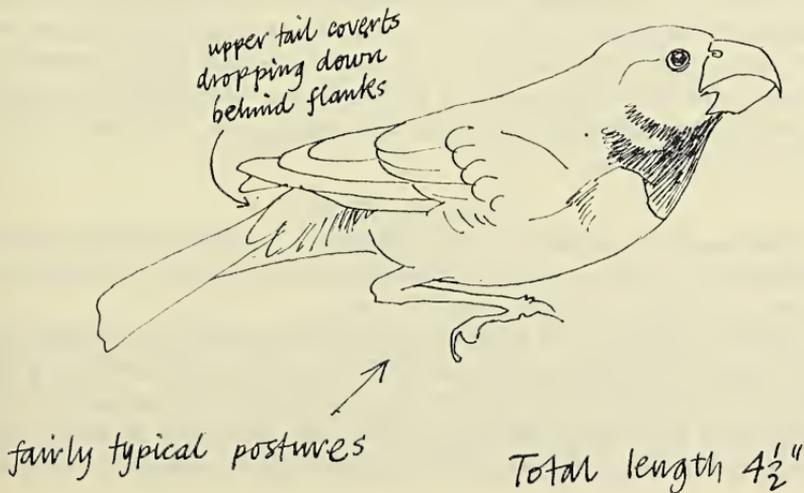
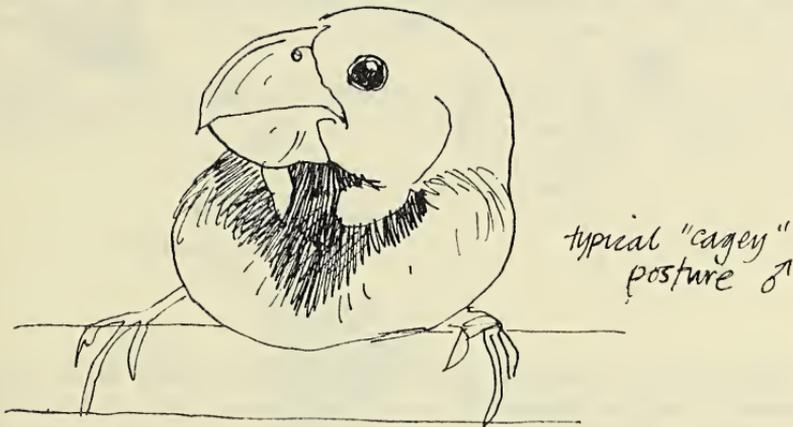
male, although there are shadow markings of this. Throughout, the female is a one-shade-lighter version of the male giving a more fawn, less striated impression. The pale belly and ventral regions are more creamy than on the male. My female was definitely slightly smaller than the old male, but is just about as big as the new male.

Sub-specific Differences.—The points of difference between the two races may have escaped me but they appear to be (a) the nominate has a smaller bill, (b) *devronis* is slightly browner on the upper parts.

GENERAL BEHAVIOURAL NOTES

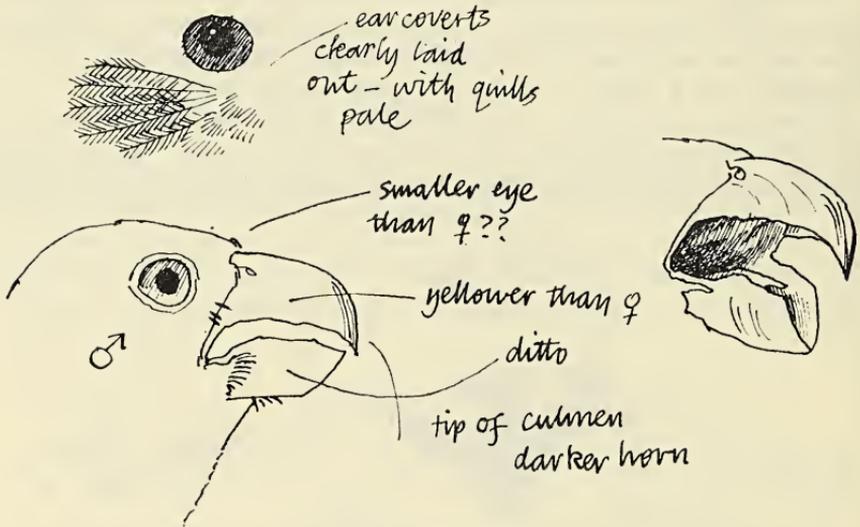
The flight is direct but light, and they are very nervous and quick to react to the faintest stimulus. The perching stance is very reminiscent of a *Lonchura* as opposed to a *Fringillid*. I am not very familiar with the *Sporophila*, but I suspect it is fairly typical in this respect.

Morrison is generally fairly cautious about the temper of male *Sporophilae* and suggests they can be rather nasty at times. My first male would often threaten other birds with his massive beak half open, but in



a passive, defence threat sort of way. However, he would often hit his mate with a solid forward thrust with a half-open beak, hitting her midway on the body. The two mandibles never closed into a bite, and often the male would never actually connect. It was such a ritualized movement that I wonder whether it might not signify a more complicated display.

I have studied their roosting habits, and, while they roost near each other on the same perch, I have never seen them actually touching each other. So it seems unlikely that they indulge in clumping.



SONG

Marchant says that the male performs a song flight with a feeble, unmusical song in defence of its territory. I have seen no courtship or pre-mating display song, but the male would often sit up on a perch outside the entrance hole to the house and sing a fairly continuous weak little song. He would stop as soon as he realized I was creeping up through the shrubbery to get a better view. Throughout the performance he just sat with scarcely a movement, and completely without any histrionics at all.

NESTING HABITS

Marchant is extremely helpful here, and is about the only source of information on the species. Unless otherwise credited, the following is largely a summary of Marchant's report.

Nest site.—The nest is built in woody herbs, bushes, and small trees, often more or less slung in a fork, either in the centre or top of a small plant, or towards the ends of long branches and among the leaf-bunches at the outside of crowns of trees. The bird is clearly quite liberal in its choice of site and will build in almost any species of tree at

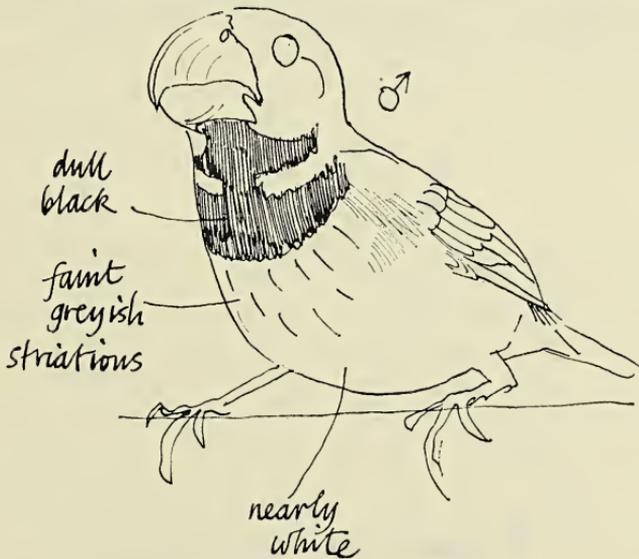
any height from about 2 to 23 feet from the ground. There appears to be a marginal preference for muyuyo or porotillo.

In broad-leaved bushes the nests are often arranged just below a leaf, which then forms a sort of lid. This may have some significance to the aviculturist, and, when I turn my birds out in the spring, I will see that at least one nest site has this kind of situation.

Nest.—A thinly woven, open cup, about 4.5 cm. across and 3.5 cm. deep. It is usually a mere network of material, through which the contents are easily visible, nearly always of a bright brown or greenish brown, hirsute tendrils of a certain unidentified creeping or trailing plant. These are invariably fresh and impart an unmistakable appearance and show at once if the nest is new because the material fades before the young fledge. Later in the season, some nests are made of dry grass, but these are exceptional. Only the male has been seen actually building the nest.

Eggs and Clutch.—The normal clutch is two or three (average 2.69). The eggs, quite variable in shape, size, and marking, are laid daily, and all hatch out together after 11½ days. There are up to three broods in a season.

Nestlings.—The young birds obviously grow quickly, as they are able to leap from the nest at eight days old, if disturbed, and scramble away



on the ground. This must have survival value in the face of a particular predator(s). It is certainly worth remembering for the aviculturist, as some precocious young nestlings are almost impossible to persuade to return to their nest. The adults do not remove the faces from the nest so they collect round the rim, and probably on

the ground below the nest to some extent. The youngsters fledge in about ten to eleven days.

The food, as seen through the transparent skin of the young, appears to be all grass seeds. Marchant does not comment on the food of the adults, and the labels on the skins at the museum do not help either. But this remark does tally with my comments in the "Food" section.

FOOD

Mr. Drury told me that the birds had been shipped on budgie mix (canary seed and mixed millets) together with some sunflower, which they should be able to deal with easily judging by their beak.

I have kept both pairs under controlled conditions, when first owned—followed by a couple of months in a planted garden flight—then in a cage again. Throughout the whole time I have watched their diet carefully, and they only eat millet.

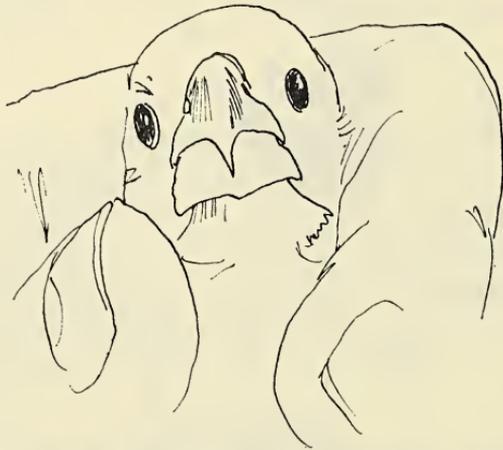
Food taken readily: millet on the spray and white (pearl) millet.

Food taken in small quantities: brown millet (pannicum, etc.).

Food tasted, but not at all significant (below 5 per cent in total, I suggest): canary seed, canary mixture, hemp, paddy.

Food ignored (as far as can be judged): Apple, pear, banana, grapes, peach, sunflower, mealworms, maggots, earwigs, cherries, cooked peas, oats.

There was plenty of growing grass in the flight, but I never saw the birds on the ground other than to drink.



♂ darker grey above than ♀

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 S. MARCHANT. "Ecuador Breeding Birds." *Ibis*, 102 (1960), 349-82.
 A. MORRISON. "The Sporophilae." *The Foreigner*, Vol. III, 1936.

BEHAVIOURAL CHARACTERS OF USE IN THE TAXONOMY OF PARROTS

By J. LE GAY BRERETON, P. WATTERS, R. PIDGEON (Zoology Department, University of New England, Armidale, N.S.W., Australia)

Many reports on breeding and other aspects of parrot behaviour appear in AVICULTURAL MAGAZINE, *Australian Aviculture*, and other such journals. A recent example is that of Brown (1966). However, few of the reports contain the special information which would be of most use to the investigators here working on the behaviour and evolution of parrots. The reason for this is obvious enough: aviculturists cannot observe and report on all the behaviour of all the birds in their aviaries. On the other hand, if a short list of behaviour patterns of especial interest were to be listed, many aviculturists might enjoy looking for this data and subsequently publishing their results in avicultural journals. Further, we would be very happy to store this information in a systematic way if it were to be sent to us directly.

Our primary aim is to elucidate the evolution of social behaviour in parrots, and we hope from this to learn much of the adaptive significance of social behaviour. One of our major tasks is to place the present-day parrots of the world in their correct natural groupings. To do this we are using all possible evidence; for example, soft and bony morphology, zoogeography, ecology, and behaviour. It is in this last category that we lack much information which could be supplied by aviculturists. I shall outline some of the data which could be obtained which we badly need.

(1) *Head Scratching*

Method of scratching the head region with the foot; is it over the wing, or under the wing? Broadtail Parrots (*Platycercus*, *Barnardius*, *Purpuricephalus*) and related parrots (*Psephotus*, *Neophema*) always scratch over the wing. Galahs, White Cockatoos (*Cacatua*), and Black Cockatoos (*Calyptorhynchus*) scratch under the wing. All the true Brushtongues (*Trichoglossus*, *Glossopsitta*, etc.) also scratch under the wing. On the other hand, some species of *Opopsitta*, and the Swift Parrot (*Lathamus diversicolor*) scratch over the wing, as does the Budgerygah (*Melopsittacus undulatus*) and the Quarrion (*Nymphicus hollandicus*). We should like to obtain the maximum amount of further evidence on the manner of scratching in parrots.

(2) *Holding Food in the Foot*

Cockatoos and platycercines (i.e. broad tails) hold food in the foot. Budgerygahs and Quarrion never do. Further data are required, especially on non-Australian forms.

(3) *Courtship Feeding*

The male feeds the female in some forms, but in others this does not occur. We should like to know in which species this occurs, and where it is absent. It is also important to know if it occurs before copulation, before incubation, or during incubation.

(4) *Feeding Chicks*

Do both parents feed the chicks? Does the male feed the chicks before they leave the hole, or after, or not at all?

(5) *Incubation*

In some forms the male assists in incubation. We need information on this matter, especially the proportion of time given by each sex to incubation. We should also like to know of any change-over ceremonies. Care is required here, as in *Agapornis*, the male enters the hole, but does not incubate.

(6) *Colour of Down of Chicks*

The colour of down varies between genera and families and appears to be a useful character.

We have a large body of information already under these headings, especially for Australian parrots. We are, however, lacking in much of this sort of detail for non-Australian forms, and we should like to have further evidence wherever it is available. Variation, which undoubtedly occurs in different degree in different forms is especially interesting.

In addition to behaviour data, there is also a need for the bodies of dead birds for morphological studies. Here again our gaps are chiefly in the non-Australian forms. Dead material can be sent in plastic bags containing a small volume of formalin, if the belly is opened and some formalin is placed around the viscera and in the pleural cavity.

All aid of this kind received directly will be of great benefit to us and will be correctly acknowledged. We shall endeavour to answer any queries that are sent. While we would like to receive data direct it is clearly important that information of this sort should be published by those collecting and assessing it, in avicultural journals. In this way it is accessible to all who are interested.

REFERENCE

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SOME NOTES ON THE FOHKIEN
GREY-HEADED CROW-TIT*(Paradoxornis gularis fokiensis)*

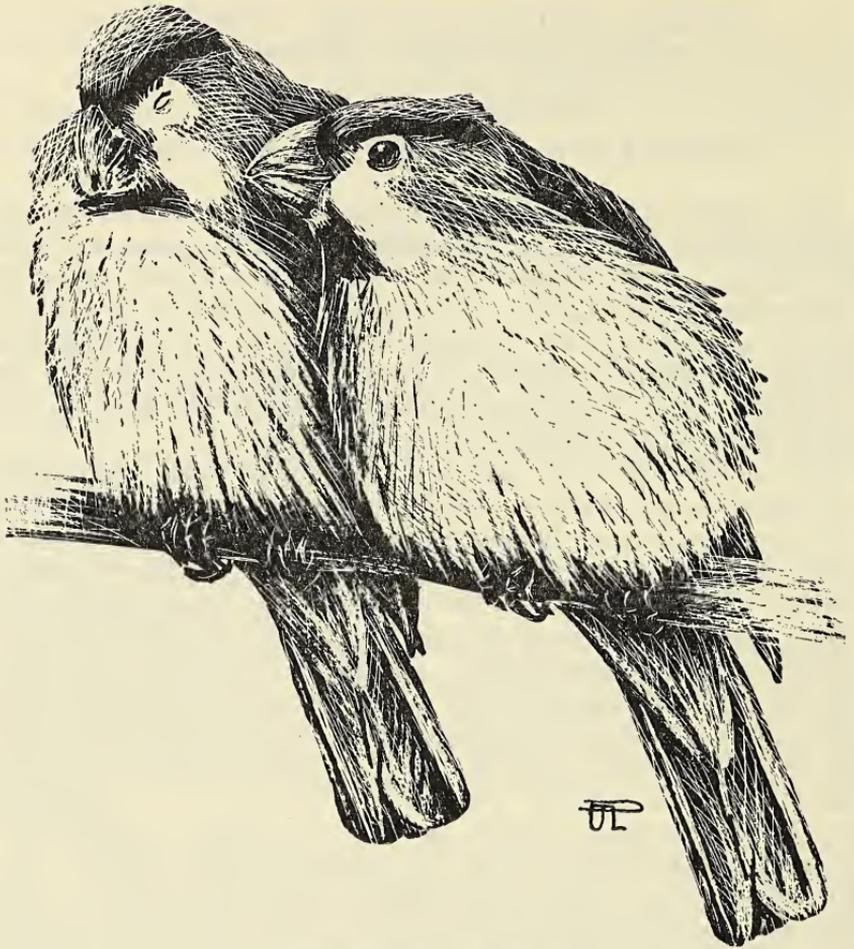
By PETER J. LEVI (The Zoological Society of London)

The information supplied in this paper, was acquired partly from observations on five of these interesting birds in a large aviary in the Bird House at the London Zoo. The aviary is very large and picturesque, containing two big ponds surrounded by much peat, which is adorned with two trees and many rocks ; in the foreground there is an expanse of concrete. There, birds share the aviary with a variety of other passerines—Bulbuls, Tanagers, Starlings, etc.—as well as many aquatic species—Avocets, rails, etc.

The central and east Asian sub-family of crow-tits (Panurinae), also known as parrotbills or suthoras, present something of a problem to taxonomists, because although their feeding habits and nest-building recall the babblers, the thick bristle covering the nostrils, ten primary feathers, and the similarity of the plumage of the young to that of the adults, simulate the true crows and tits ; in fact, they were formerly classified with the latter family. To confuse the layman even more, their bills, as the name parrotbill relates, is reminiscent of the parrots (Psittacidae), but they have no connection with that family at all. There are seventeen species of *Paradoxornis*. Another member of this sub-family which was formerly classified with the titmice, is the Bearded Tit (*Panurus biarmicus*), which, in view of this fact, is more aptly described by its Norfolk names of Reedling or Reed Pheasant. The Wren-tit (*Chamaea fasciata*) of California and coastal Oregon is sometimes put in this sub-family also, but is so unusual that some authorities have even placed it in a family by itself (Chamaeidae) ; according to Peters' *Check-list of Birds of the World*, however, it is a member of the babbler family (Timaliinae).

The head-plumage of this bird is very striking, indeed, even clown-like, viz. the forehead, stripe extending back to the nape, and throat, being black ; eye-ring, lores, broad moustache, and chin (the latter being marked with black), white ; rest of head rich grey. The entire upper-parts, including the wings and tail, rufous-brown, the inner webs of the wing-feathers being darker. The under-parts are creamy-white, the sides of breast and flanks being tinged with buff, though this is subject to seasonal variation. The bill is orange, iris dark-brown, legs and feet light blue-grey with whitish claws.

They are extremely agile and tit-like in their acrobatic behaviour—they will often turn in a complete circle on a branch whilst engaged in ripping strips of bark from it. This is an act born of purely destructive motives, as very little, if indeed any at all, is actually consumed.



GREY-HEADED CROW-TIT

These birds are very sociable with other members of their species (in the wild all crow-tits travel in parties, often quite large ones, in search of food), but often aggressive toward other species—all five of them at Regent's Park once attacked a Red-headed Marsh Bird (a Blackbird-sized bird with quite a formidable bill) when the latter was introduced into the aviary. They were often observed chasing each other among the trees, during which they emitted a constant series of chirping noises; I have also known them to produce a nasal "*cher, cher*". Much social preening was also seen to take place, and they would always roost together, bodies touching, on a branch. When on the ground, their mode of locomotion is a series of hops—another Paradine feature.

In the wild, the diet of this bird is tree-buds, seeds, etc., as well as insects and larvae, and the latter, so Mr. J. J. Yealland informs me, are often obtained by biting open the stems of bamboos. In the Zoo, I have

seen them take sultanas, insect-mixture, tomato, orange, and seed, the larger food being held down with the feet, tit fashion, and ripped apart with the powerful bill.

Although the birds at Regent's Park have never built a nest or laid eggs, the nesting is worth mentioning, however, as their nests are fine examples of bird architecture. They are beautiful cup-shaped structures composed of strips of bamboo, cobwebs, and lined with fine grass, one of which La Touche found 14 feet up on a bamboo at Kuatun.

Also known as the Chinese Hoary-headed Crow-tit, this is a race from south-eastern China, and is about 7 inches in length.

* * *

BREEDING THE PEARL-HEADED SILVERBILL

(*Odontospiza caniceps*)

By P. SCALLY (Grendon Underwood, Bucks, England)

I am really a novice at breeding birds, and in 1966 was the first time I ever bred any birds. I do not think it would have been possible to breed my Pearl-headed Silverbills if I had not bought an outside aviary.

In 1966 I bought an aviary from Stoners of Crawley, Sussex, their Model "C". Length 7 feet, width 4 feet, height 6 feet at the eaves.

The birds were placed in the aviary as soon as it was constructed, and within a day or so they started taking lengths of grass about 15 inches long to the nesting baskets which I had previously placed there. During the time this was happening I kept a continual supply of long bladed soft grass on the aviary floor. After a few days the birds deserted this nest and I could not understand why. Thinking that they needed more nesting materials I placed a few packets of nesting materials which I had bought, in the aviary, but these were completely ignored. I then decided to try feathers which I obtained from one of my wife's cushions, much to her annoyance. She is now glad I did this because the birds started building again, using the feathers from the cushion.

The first egg was laid on 16th June, then one each day until there was a clutch of six. All the eggs were white without any marks at all. Both the parents took turns to incubate the eggs.

Five out of the six eggs hatched and in the other one there was a dead chick in the shell. Within a few days two of the young had died so I removed them from the nest.

On 27th July the three remaining youngsters left the nest for the first time, but on the same day one was killed by my neighbour's cat when it landed on the wire.

The young birds were exactly the same colour as the parents except they did not have the same speckles on their head.

The food consisted of mixed millet and canary with "Johnsons Vit-min" mixed in with it. They were also supplied with soaked millet, millet sprays, seeded grasses, and a continual supply of fresh clean maggots which they really enjoyed. I also gave them fresh chickweed every day.

Also in the aviary with the Pearl-heads were two pairs of Bengalese, one pair of Aurora finches, one pair of Lavender finches, and one pair of Red-eared Waxbills.

On 12th August the Pearl-heads started laying a new clutch, which all hatched out, but within a week all of them had died.

At the end of autumn I brought my Pearl-heads inside.

At the end of October I lost the hen of the pair which I had bred.

This year, if all goes well, I intend to use my Bengalese as foster parents for the Pearl-heads' eggs, and place the Bengalese's eggs under the Pearl-heads. Perhaps by doing this I will have better success.

I hope that what I have written may help your members, but if any of them have specific questions they need answering I will be only too pleased to answer them.

* * *

BREEDING OF TASMANIAN ROSELLA

(*Platycecus caledonicus*)

× PILEATED PARRAKEETS

(*Purpureicephalus spurius*)

By IVOR GOULD (Palmerston, New Zealand)

I have forty flights from 10 to 30 feet long with mainly one pair of hook-beaks per flight and attribute my success in breeding hook-beaks to this.

I also have one flight 50 feet long by 15 feet wide and 8 feet high with a shelter at each end where I keep any odd birds plus a few pairs.

It was in this flight that I had a hen Pileated and a cock Tasmanian. In 1964 the cock spent a lot of time with the hen and on odd occasions I saw him feeding her but that was all they did. On 24th November, 1965, I noticed the hen was missing and on looking in some nest-boxes I had just put up a few days earlier found her in one with an egg. I looked in each day and found she had laid five eggs by the end of the fifth day. They all proved fertile and the first one hatched on the eighteenth day and one each day after that. I should add that the hen was very wild up to going to nest and was very hard to get a good look at in the aviary as she flew around so fast. But she became very quiet and I could lift her off her eggs and, later, chicks without her getting upset. At six weeks of age all five chicks left the nest and although not very brightly coloured were obviously three cocks and two hens. At

four months I lost the cock Tasmanian and three of the young with round worms but managed to save two young cocks. I had to dose them often to keep them alive but since have had no trouble. At six months these birds were showing a lot of colour being somewhat like a Rosella in shape but the colouring threw to the Pileated. I had considerable success at bird shows in the Hybrid class winning at the National bird show with one.

This season I had hopes of mating the Pileated hen to one of the hybrids but it did not show any interest in her although she went to nest on five eggs and sat solid for seven weeks. They have now coloured up into magnificent birds and I will try one again this season with the hen.

* * *

THE BIRDS OF BULGARIA

By NIKOLAV BOEV (Research Associate, Institute of Zoology, Bulgarian Academy of Sciences)

An exceptional variety of mountains with snowy peaks and dark-green conifers, crystal-clear mountain lakes, meandering brooks, calm swamps, a most picturesque coast, golden fertile plains, and cool deciduous forests constitutes the colourful habitat of 325 species of birds which occur in Bulgaria. This is the area, crossed by the Balkan Range, which forms part of the routes of the migratory birds from Eastern Europe to the warm south in autumn and from sunny Africa to the north in spring. One of the most important among these routes is that along the coast of the Black Sea. Numerous flights follow one another along this aerial "Via Pontica" and they find temporary refuge in our country. A very mild winter in the southern parts of Thrace, along the foothills of the Strandja Mountain (as also at the mouth of the beautiful Ropotamo which is a game reserve), and along the valleys of the Mesta and Struma the routes the birds take toward the Aegean, makes winter quite a small hazard there as only a small area is covered with snow. That is why birds often find it a very nice place and quite a number forget about their Mediterranean passports and spend the winter there. It is no exception for that favourite of all hunters—the Woodcock—to decide to stay in this winter residence for a long time, while the large doves may choose to stay there throughout the whole winter. Again in winter, one can see roaming flights of various birds or single specimens. The towns and villages then become the gathering places for roamers such as Crested Larks, Yellowhammers, tits, Bramblings, etc. Other winter guests are the melancholy Waxwings which come from the woods of northern Europe and which like to concentrate in

the parks, being particularly fond of the pods with sticky seeds hanging on the Japanese acacia (*Sophora japonica*).

At the moment when we are hanging the new calendar on the wall, the return flight has already started. It is led by the small ducks—the teals—or by the large Mallards. The spring procession then continues with many more species and it probably finishes at the end of April or the beginning of May. It is then that the master-singer, the Nightingale, sings its unscored romances, and the clumsy Dalmatian pelicans in the Sreburna reserve make enormous nests of dry cane in which later on the shaky, ugly, though in a way handsome baby pelicans appear. At this time, too, the red-winged Wallcreeper has already returned to the mountain and flies from rock to rock like a large exotic butterfly in search of food for its young. The serenades of the enamoured Capercaillie are over and his harem has already been dismissed. In the plains below, another troubadour, the Quail, repeats his hysterical appeal and from the hollows in the trees in the city parks rise the wide open bills of the hungry progeny of the Syrian Woodpecker. The noisy Herring Gulls brood in their nests on the roofs of Varna and Bourgas, while the elegant Avocets and Black-winged Stilts lay their eggs by the salt ponds near Pomorié. In Plovdiv and in Pazardjik, in addition to the common Kestrel, the Lesser Kestrel from the south is also to be seen on the roofs of the old houses. There are birds all around, and it is a good thing that over 200 species are protected by law in Bulgaria—be it because they are rare, be it because they are useful, or simply because we like them and we feel they are necessary to Nature.

Not many species are kept in captivity and I will only mention a few. The most numerous are probably the descendants of the Rock Dove. We must thank the dove-breeders for their love of these birds which has helped to preserve certain old breeds of doves which are no longer to be seen in the Orient and are unknown to the pigeon-fanciers in Western Europe.

Canaries in Bulgaria belong to no particular race, and their colours are snowy-white, yellow—varying from pale lemon to almost saffron orange—and from olive to greenish-brown or spotted and mottled. There are also crested canaries, which are somewhat like the English Norwich. Our canaries are quite hardy and can live at ordinary room temperatures and this does not interfere with their singing. Certain canary-breeders prefer to train them to sing like a Nightingale, and since the song of our southern Nightingales is much more mellow, with a velvety timbre, the singing of the canary-pupils is bound to be similar. That is why their songs are softer and more sonorous, and not as shrill as is the case with Canaries taught by the Thrush-Nightingale. The Thrush-Nightingale never breeds in our country but passes through in flights from the north, as early as August. I know a lorry-driver, a friend of mine, who kept southern Nightingales for tutors, and he used

to listen to them very carefully before catching them in the localities where they were singing, because, in his opinion, there were certain important differences in them. He put so much loving care in looking for his Nightingale-tutors that one of them used to sing from dawn till dusk in winter as well. It stopped singing only during the moult, to start anew immediately after.

My friend has long ago released all his Nightingales. The age of technical progress offered him its tape recorders, and his young Canaries are now enriching their musical culture from recordings.

The Australian Budgerigar (*Melopsittacus undulatus*) is yet another introduction which appears not only in its natural green colour but also in all the variations achieved by breeding these birds. There are white specimens with sky-blue markings, pale yellow ranging up to intense yellow, others ranging from reseda to grass green, and still others varying from cobalt blue to lead grey. The unfailing optimism and buoyancy of these birds convey the idea of "perpetuum mobile". The third cage bird is also an introduction. This is the domesticated Barbary Dove (*Streptopelia roseogrisea*). It is a distant relative of the migratory Turtle Dove and seems to be closely related to the wintering Eastern Collared Dove (*S. decoacta*) in Bulgaria. This is a modest bird and it makes no great bid to be classified as a singer, but its frequent repetition of "cucurru, coo" followed by continuous giggling is very pleasant. In addition, it is a lovely creature to look at. These Turtle Doves are found in two colours: creamy or sandy yellow and white, but the white doves are comparatively poor fliers. Some ten years ago I had the chance of observing a family of wild Turtle Doves. They had acclimatized themselves of their own free will and spent three years in an old tree in one of the Sofia parks where they had their nest. This couple used to repel with aggressive and militant postures all their relatives—the domesticated wild Turtle Doves—that tried to approach them.

Unlike certain European countries, as is the case with Italy and France, for instance, the law in our country forbids the catching and killing of Starlings, Thrushes, Blackbirds, Skylarks, and buntings. That is why in our country there is little netting of birds, nor are gourmets interested in the piquancy of pâtés prepared from the meat of singing birds. Is it not better for these birds to be allowed to live in freedom?

There are a number of other singing birds that are bred occasionally in the country, in particular the beautiful Goldfinch. Bird-fanciers are sometimes very happy when they can obtain hybrids, resulting from crossing a female Canary with a male Goldfinch. Sometimes, however, the result obtained follows the example given by Bernard Shaw and the offspring may have none of the beautiful feathers of the father nor any of the rich song of the mother. Another bird of this category is the

handsome Siskin, then more rarely the Linnet, the plain Greenfinch, and the humble Bullfinch. Crossbills, Chaffinches, and buntings are usually spared by the bird-catchers.

As for the pigeons bred in the country, there is such a great variety of them that many would be valuable acquisitions to pigeon-breeders regardless of the particular breeds they may like : sporting pigeons that fly well and can perform interesting figures, or pigeons that are just beautiful to look at. This is a very rich choice.

* * *

BREEDING HAWAIIAN GEESE

By S. T. JOHNSTONE (The Wildfowl Trust, Slimbridge, Glos., England)

During the past fifteen years 195 Hawaiian Geese have been reared at Slimbridge, and from birds distributed to other collections a further 124 have been raised.

The Slimbridge birds have been segregated for breeding purposes. The male is very aggressive when the female is laying or incubating. Whilst he is prepared to attack geese twice his size, we have felt that he might not be able to sustain a fight against some of the opposition he might meet in our communal pens. The ideal size for a breeding pen is 300 square yards of grazing. The amount of water can be quite small for in their native land there are few ponds. In consequence they seldom swim and prefer to walk round the pond rather than to cross it. Copulation invariably takes place on land.

Naturally we paid great attention to our first Ne-nests. Little straw huts were built to shelter them on cold winter nights. In practice it was found that the apprehension caused by driving the birds to get them in probably outweighed the advantage gained. Furthermore, the cold appeared to cause no undue hardship. But the huts did serve a useful purpose for in each case they were used by the birds as a nesting site. The straw huts have been superseded by wigwams. These are made by pushing willow wands into the ground on the circumference of a 2-foot circle, and tying them together about 3 feet up. An entrance is left about a foot wide.

The Ne-ne goose almost invariably lays at two years. Generally the birds lay two clutches and often a third, the number of eggs varying between three and five. On Hawaii the birds nest in November, here the earliest eggs have been in mid-January, but more usually in February. The first goslings we had in 1952 were hatched with 2 inches of snow on the sitting-box. Generally an egg is laid on alternate days but there have been cases where three eggs have been laid in four days. Throughout the years a number of females have been lost through

impaction of the oviduct. Subsequent post-mortem examination has shown a great deal of fat deposited not only below the skin but also around the viscera. This condition we sought to eliminate by changing the diet from wheat to barley but the birds would not take the latter. We then changed, on expert advice, to a diet of turkey starter crumbs which proved acceptable and for some years appeared to increase the fertility. One feels that a possible explanation for the excess fat in the laying bird might well be due to the fact that nesting here takes place at a time of year when the birds have stored up the adipose tissue for winter protection. Perhaps if other species of geese were induced to lay at this time of the year they would likewise suffer from oviductal impaction.

The original trio of birds were a great success in that the male served both females quite adequately. This happy situation was due to the fact that the females elected to come into laying condition at different times, the male being extremely attentive to the laying female. When the eggs were removed and the nest destroyed he would transfer his affection to the second bird which had commenced nest building. Subsequent attempts to "trio" the birds have been unsuccessful where both females commenced nesting activities at the same time. We have almost invariably removed the clutches and incubated the eggs under bantams, partly because the birds are thus induced to lay a second clutch and partly because of loss of eggs from predation. On the few occasions when the eggs have been left for the female to incubate, desertion has taken place towards the end of the incubation period, the one exception being where a pair hatched and reared five goslings.

The following table shows the annual results for each of the fifteen years. In all 1,162 eggs have been incubated of which 40 per cent were fertile, 50 per cent of fertile eggs hatched, and 81 per cent of hatched goslings were reared :—

Year.	Breeding females.	Number of eggs.	Infertile.	Addled.	Dead in shell.	Hatched.	Reared.
1952	2	19	5	5	—	9	9
1953	2	17	10	2	—	5	4
1954	5	24	13	4	2	5	4
1955	6	31	22	3	—	6	4
1956	6	62	40	4	2	16	15
1957	7	70	42	11	3	14	5
1958	9	77	43	9	4	21	19
1959	15	91	43	18	6	24	21
1960	18	150	70	42	13	25	20
1961	21	140	76	25	10	29	26
1962	20	146	108	16	8	14	13
1963	18	120	83	11	6	20	16
1964	16	72	42	5	9	16	14
1965	16	80	47	11	—	22	17
1966	14	63	43	5	2	13	8

A considerable number of the goslings were helped out of the shell. This is probably a doubtful practice. Certainly more could have been hatched by the Caesarean method but one wonders in the long run if it is beneficial to hatch out the weak goslings. Of course, in a species so rare, the temptation is very great. The goslings have come in two kinds of down. The one with normal thick woolly variety, the other with thin pale "cottony" down. There appeared to be no difference in the vigour of the two kinds and after feathering no distinction could be detected. On one occasion a gosling on feathering had a completely black neck but unfortunately it only survived for six months. The young in their own country are fond of watercress and sow thistle. Here the babies are always provided with the former of which they are particularly fond. We have tried watercress on other species without success.

Ne-ne goslings are quite hardy and apart from an occasional malformation of a particular bird, losses have been mostly from gapes and aspergillosis. One must assess the high infertility either as a result of interbreeding or possibly as a factor which has helped to bring the species to near extinction. From the data it is obvious that the first birds to arrive at Slimbridge had a relatively high fertility rate and this declined considerably over the years. In 1964 two males containing wild blood were sent over from Pohakaloa, the geese that these birds were paired to have shown a high fertility rate.

It appears that incubation should be studied. Our method of using hens and bantams instead of incubators is adequate in the general run. Something between 80 and 85 per cent of fertile eggs are hatched. By comparison the Ne-ne hatch is bad (50 per cent). Whether this is due to cold weather at the time of incubation or to a weak germ or a combination of both, it is difficult to say.

Our research department has now taken on the problem of looking into ways and means of increasing the fecundity of our flock and it is hoped that their findings will enable us to increase the world population of this enchanting goose at a considerably greater rate.

* * *

THE KINGFISHERS OF AUSTRALIA

By HARRY FRAUCA (Canberra, A.C.T., Australia)

Around Christmas, summer time in Australia, is the breeding season of the fascinating kingfishers. At that time the laughing Kookaburra (*Dacelo novaeguineae*), one of the world's largest kingfishers, is busy either feeding its young or protecting the nesting hole. The brightly coloured Forest and Sacred Kingfisher fly swiftly about, pouncing on insects or chasing birds that trespass into their breeding territories. The Azure Kingfisher, sky-blue on the back and wings, can be seen disappearing with an insect in its bill inside a burrow on a river bank.

Kingfishers are found throughout a large section of the world and are characterized by long sharp bills and rapid flight. Most females nest in burrows or tree holes and produce round white eggs.

Dr. Ben Keast divided the kingfishers of Australia into two main types ; the wood kingfishers that have medium tails and bills, live in the forest and usually pick up the food from the ground, i.e. the Kookaburra, the Sacred and the Forest Kingfishers. And the water kingfishers that have long bills, short tails, and dive for fish, tadpoles, small frogs and others, i.e. the Azure Kingfisher.

In this article we are concerned with the wood kingfishers of which this writer did a four-year study.

The Sacred and Forest Kingfishers (*Halcyon sancta* and *H. macleayii*) are both migratory species breeding (in north-eastern Australia) between September–October and April ; thereafter both adult and juvenile birds fly north to New Guinea and other islands where they remain until the next Australian spring.

The Kookaburra, on the other hand, is more or less sedentary and, if not disturbed, a population of these birds may stay in the same bush for years. But like the Sacred and Forest Kingfisher, the Kookaburra too commences breeding around October or so in north-eastern Australia and occupies more or less the same habitat as the other two kingfishers ; in fact, the three species can breed in the same area.

In my Queensland study-area, the three species above always nest either in tree holes or hollow spouts up trees, or make a tunnel or burrow on a termite mound up a tree. Arboreal termitaria are very common in these parts of Australia, some trees, mainly wattles (*Acacia*) having enormous clay mounds built by termites high on the tree-trunk. A large mound may take upwards of twenty years to be built by the industrious termites.

The association between those three kingfishers and the termite mounds is a fascinating subject for studies. This is how it goes ; a pair of kingfishers selects its breeding territory in a given area in which there are arboreal termitaria. Approximately between early October

and mid-November, our hypothetical pair of birds alternate feeding with periods of resting and burrowing in termite mounds. Suddenly, a bird will land on a termite mound, hang on there with its feet and peck away at the clay-like material. After a few strokes of its bill, it ceases work and flies away to perch again. Down comes its partner and it too proceeds to hammer away at the mound with its bill.

There is evidence that a pair of kingfishers can make more than one burrow during the breeding season, as almost every termite mound in the area of study has at least two to three burrows. In some cases, there is evidence that the same burrow may be used by kingfishers over several consecutive years but this has not yet been confirmed. To do so, some birds should be banded and captured periodically. We do know, however, that a population of Sacred and Forest Kingfishers may utilize the same breeding area year after year.

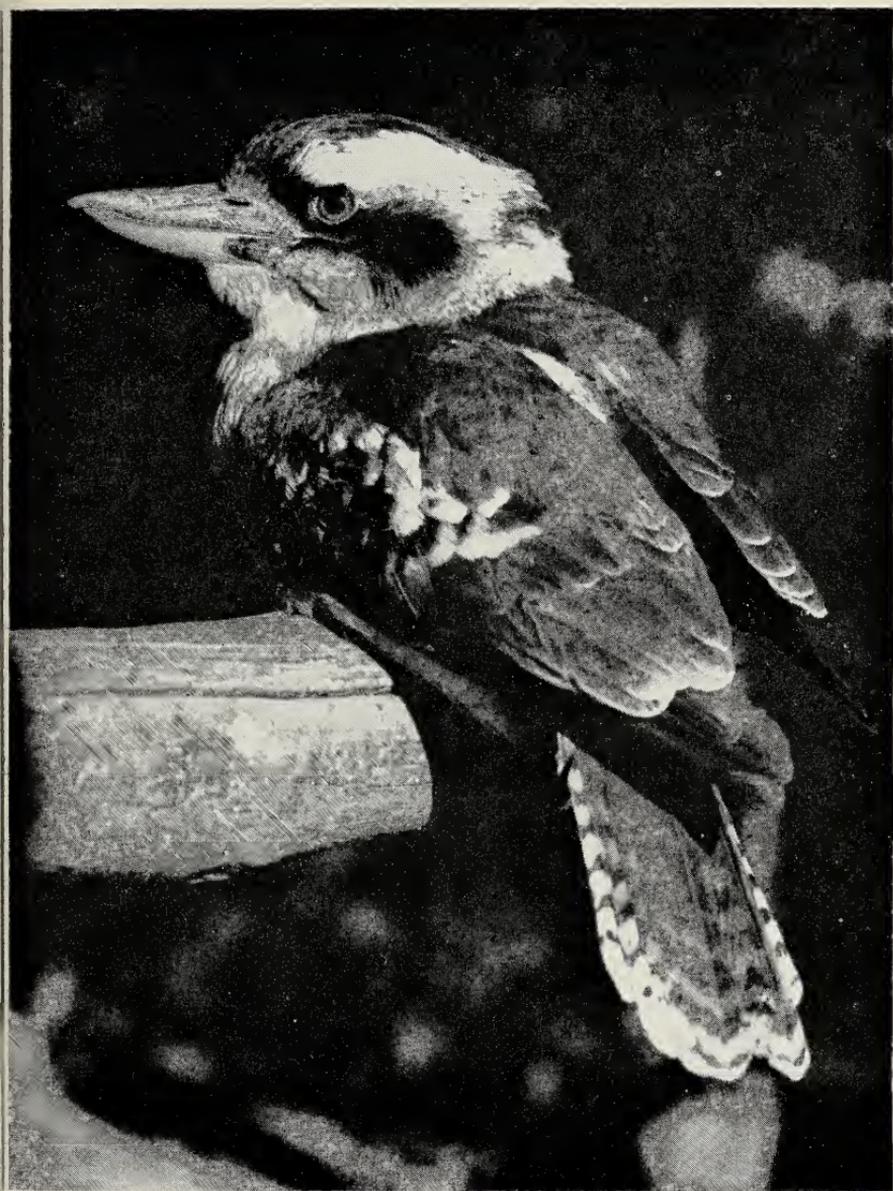
The entrance of the burrow on the termite mound is about 2 inches in diameter and of circular shape. The depth of the burrow varies but it can be upwards of 2 feet deep. Many of these burrows are dug in live termite mounds so that, in effect, the breeding birds and their young live in association with the termites or white ants. It has been suggested, but not proved, that the young may actually eat termites while they remain in the burrow. But the adult kingfishers may also dig burrows in dead termite mounds in which case the young could not rely on getting white ants at all.

The Kookaburra too utilizes termite mounds for nesting purposes. Being a much bigger bird than the Sacred and Forest Kingfisher, the Kookaburra's burrow is considerably bigger too, the entrance, also circular, is over 4 inches in diameter and the depth of the burrow well over 2 feet. Usually, the Kookaburra chooses larger termite mounds than the other kingfishers.

The three species, however, may also nest in tree holes or in hollow spouts of trees, or may make a burrow on a soft slope. But where termite mounds are available both the Sacred and the Forest Kingfishers nest in those and the same, with some exceptions, can be said of the Kookaburra.

The three kingfishers are very pugnacious and defend their breeding holes most tenaciously. If you climb up a tree on which the burrow contains either eggs or young, the parent birds will usually put on an aggressive display which consists of loud alarm cries with "dive-bombing" attacks upon the intruder, the birds passing only a few inches from the intruder's head. These displays are regarded as bluff rather than real attacks but there are exceptions.

Sugar-chemist Paul Farmer of Bundaberg, Queensland, a keen amateur bird-watcher was examining the nest of a Kookaburra in the hollow spout of a tree in November, 1966. There were four eggs inside and he was holding one in his hand when suddenly one of the parent



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KOOKABURRA (*Dacelo novaeguineae*)

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FOREST KINGFISHER (*Halcyon macleanii*)

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birds dived down and struck Farmer on the side of his head with its powerful bill.

The blow drew blood and such appears to have been the force of the impact that the Kookaburra fell to the ground stunned. It took a few moments to recover and so fly again. Farmer himself was feeling pretty shaky as he climbed down the tree.

Ornithologists, however, believe that the Kookaburra and the other kingfishers' attacks are usually bluff and that if the bird does hit a human as it hit Paul Farmer, it may be an accident. That is, the Kookaburra might have miscalculated distances and hence collided with the man's head. They point out that the head and neck bones of the bird are not really strong enough to withstand the impact of such a crash and that after many of those crashes, the bird could sustain internal injuries.

At present there is much evidence to indicate that most birds synchronize laying with a time of the season when, on hatching, the young will have plenty of food, mainly insects which form the main bulk of the diet of young birds. In Australia an abundance of insects usually follows periods of rain. Thus, the kingfishers too usually lay at a time when, on hatching, there will be plenty of insects for the young.

The Kookaburra, however, feeds abundantly on small lizards and also on small snakes as well as on birds and mice. But, perhaps, insects constitute the main diet of the nestlings.

In any case, in our study area, eggs were found in the burrows of Kookaburras, Sacred and Forest Kingfishers early in November and young towards the end of the month when the bush was teeming with insects and small skinks.

On hatching, the young of the three species are completely naked of feathers and with their eyes shut. The incubation period of the eggs varies. Of the Kookaburra, Sydney bird-watcher Keith Hindwood said that it lasted between twenty-seven and twenty-nine days. The young opened their eyes when ten days old and stayed with the parents for a month or two.

The incubation of the eggs of the Forest and Sacred Kingfishers takes about twenty days and the young stay in the burrows for some twenty-five days or so. After this, they remain in the neighbourhood until around April when, together with the adults, they set off on their migration journey to the islands north of Australia where they spend the winter.

The breeding burrow of the Sacred and Forest Kingfishers can be extremely dirty and evil smelling. The young pass their waste products near the entrance of the burrow but even so the place is permeated by a very strong smell. Usually, the parents feed the young more intensively early in the morning and during late afternoon. At these times, every few minutes, one of the parent kingfishers flies in with an insect

in its bill, lands at the entrance of the burrow, hangs on there by its feet, deposits the food inside, and flies away again, the whole operation taking only a few moments.

The Kookaburra, the Sacred and the Forest Kingfishers are very common throughout a large section of Australia occupying a wide variety of habitat. From a scientific point of view, the association of these birds with termite mounds is interesting and fascinating to watch. Few sights in the bush are as quaint as that of a Kookaburra hammering away at a termite mound on a tree with its big bill so that, gradually, it makes a nesting burrow in it. And then the young hatch out of the eggs and for many days live in the depths of the mound, sharing their world with the industrious white ants which live in the honeycomb of cells inside the mound.

But as far as colour is concerned, the Sacred and Forest Kingfishers steal the show for they are amongst the most vividly coloured birds in our bush. As they fly swiftly by, their sky blue and green feathers catch the sun and glitter with the most glorious colours.

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PSITTACINE BIRDS IN THE SAN DIEGO ZOOLOGICAL GARDEN

By JAMES M. DOLAN, Jr., Associate Curator (California, U.S.A.)

In the March–April issue of AVICULTURAL MAGAZINE for 1951 (Vol. 57, No. 2), Ken Stott, Jr., at the time General Curator of the San Diego Zoological Garden, gave a list of parrots that were currently on exhibit in the collection. Since then sixteen years have passed and there have been a number of interesting forms added to the collection, some of them extremely rare. Therefore, a current list of the species and sub-species of psittacines now (1st February, 1967) on exhibit in the San Diego Zoological Garden may be of interest to the readers of this magazine.

PARROTS CURRENTLY EXHIBITED

- Kea (*Nestor notabilis*).
- Red Lory (*Eos bornea bornea*).
- Buru Red Lory (*Eos bornea cyanonothus*).
- Blue-faced Lorikeet (*Trichoglossus haematod intermedius*).
- Swainson's Lorikeet (*Trichoglossus haematod moluccanus*).
- Edwards's Lorikeet (*Trichoglossus haematod edwardsii*).
- Forsten's Lorikeet (*Trichoglossus haematod forsteni*).
- Red-collared Lorikeet (*Trichoglossus haematod rubritorque*).
- Scaly-breasted Lorikeet (*Trichoglossus chlorolepidotus chlorolepidotus*).
- Ornate Lorikeet (*Trichoglossus ornatus*).
- Perfect Lorikeet (*Trichoglossus euteles*).
- Purple-capped Lory (*Domicella domicella domicella*).
- Blue-thighed Lory (*Domicella lory erythrothorax*).
- Chattering Lory (*Domicella garrula garrula*).
- Yellow-backed Lory (*Domicella garrula flavopalliata*).
- Solitary Lory (*Phigys solitarius*).

- Stella's Lorikeet (*Charmosyna papou stellae*).
 Musk Lorikeet (*Glossopsitta concinna*).
 Little Lorikeet (*Glossopsitta pusilla*).
 Musschenbroek's Lorikeet (*Neopsittacus musschenbroekii major*).
 Double-eyed Fig Parrot (*Opopsitta diophthalma diophthalma*).
 Edwards's Fig Parrot (*Psittaculirostris salvadorii edwardsii*).
 Swift Parrakeet (*Lathamus discolor*).
 New Guinea Great Black Cockatoo (*Probosciger aterrimus stenolophus*).
 White-tailed Black Cockatoo (*Calyptorhynchus baudinii*).
 Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*).
 Red-tailed Black Cockatoo (*Calyptorhynchus magnificus magnificus*).
 Gang-Gang Cockatoo (*Callocephalon fimbriatum fimbriatum*).
 Greater Sulphur-crested Cockatoo (*Kakatoe galerita galerita*).
 Triton Cockatoo (*Kakatoe galerita triton*).
 Timor Cockatoo (*Kakatoe sulphurea parvula*).
 White-crested Cockatoo (*Kakatoe alba*).
 Salmon-crested Cockatoo (*Kakatoe moluccensis*).
 Leadbeater's Cockatoo (*Kakatoe leadbeateri leadbeateri*).
 Southern Bare-eyed Cockatoo (*Kakatoe sanguinea ashbyi*).
 Philippine Cockatoo (*Kakatoe haematuropygia*).
 Eastern Slender-billed Cockatoo (*Kakatoe tenuirostris tenuirostris*).
 Rose-breasted Cockatoo (*Kakatoe roseicapilla roseicapilla*).
 Cockatiel (*Nymphicus hollandicus*).
 Hyacinthine Macaw (*Anodorhynchus hyacinthinus*).
 Blue and Yellow Macaw (*Ara ararauna*).
 Northern Military Macaw (*Ara militaris mexicana*).
 Red and Yellow Macaw (*Ara macao*).
 Red and Blue Macaw (*Ara chloroptera*).
 Golden-naped Macaw (*Ara auricollis*).
 Mexican Conure (*Aratinga holochlora holochlora*).
 Northern Petz Conure (*Aratinga canicularis eburnirostrum*).
 Caribbean Brown-throated Conure (*Aratinga pertinax aereginoso*).
 Jendaya Conure (*Aratinga jendaya*).
 Nanday Conure (*Nandayus nenday*).
 Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*).
 Greater Patagonian Conure (*Cyanoliseus patagonus byronii*).
 Red-bellied Conure (*Pyrrhura frontalis frontalis*).
 Quaker Parrakeet (*Myiopsitta monachus monachus*).
 Aymara Parrakeet (*Amoropsitta aymara*).
 Turquoise-rumped Parrotlet (*Forpus cyanopygius cyanopygius*).
 White-winged Parrakeet (*Brotogeris versicolurus*).
 Northern Tovi Parrakeet (*Brotogeris juglaris juglaris*).
 Tui Parrakeet (*Brotogeris st. thoma st. thoma*).
 Black-headed Caique (*Pionites melanocephala melanocephala*).
 White-bellied Caique (*Pionites leucogaster leucogaster*).
 Red-vented Parrot (*Pionus menstruus*).
 White-crowned Parrot (*Pionus senilis senilis*).
 Jamaican Yellow-billed Amazon (*Amazona collaria*).
 Salle's Amazon (*Amazona ventralis*).
 Northern Spectacled Amazon (*Amazona albifrons saltuensis*).
 Black-billed Amazon (*Amazona agilis*).
 Green-cheeked Amazon (*Amazona viridigenalis*).
 Finsch's Amazon (*Amazona finschi*).
 Yellow-cheeked Amazon (*Amazona autumnalis autumnalis*).
 Festive Amazon (*Amazona festiva festiva*).
 Blue-fronted Amazon (*Amazona aestiva aestiva*).
 Yellow-fronted Amazon (*Amazona ochrocephala oratrix*).
 Yellow-naped Amazon (*Amazona ochrocephala auro-palliata*).
 Panama Amazon (*Amazona ochrocephala panamensis*).
 Mealy Amazon (*Amazona farinosa farinosa*).
 Guatemalan Amazon (*Amazona farinosa guatemalae*).
 Senegal Parrot (*Poicephalus senegalus senegalus*).

- Tanganykian Meyer's Parrot (*Poicephalus meyeri matschiei*).
 Jardine's Parrot (*Poicephalus gulielmi gulielmi*).
 African Grey Parrot (*Psittacus erithacus erithacus*).
 Timneh Grey Parrot (*Psittacus erithacus timneh*).
 Greater Vasa Parrot (*Coracopsis vasa vasa*).
 Lesser Vasa Parrot (*Coracopsis nigra nigra*).
 Pesquet's Parrot (*Psittirichas fulgidus*).
 Grand Eclectus Parrot (*Lorius roratus roratus*).
 Red-sided Eclectus Parrot (*Lorius roratus pectoralis*).
 Solomon Island Eclectus Parrot (*Lorius roratus solomonensis*).
 Everett's Blue-rumped Parrakeet (*Tanygnathus mulleri everetti*).
 African Ring-necked Parrakeet (*Psittacula krameri krameri*).
 Indian Ring-necked Parrakeet (*Psittacula krameri manillensis*).
 Alexandrine Parrakeet (*Psittacula eupatria nipalensis*).
 Derbyan Parrakeet (*Psittacula derbyana*).
 Moustache Parrakeet (*Psittacula alexandri fasciata*).
 Abbott's Moustache Parrakeet (*Psittacula alexandri abbotti*).
 Blossom-headed Parrakeet (*Psittacula cyanocephala cyanocephala*).
 Barraband's Parrakeet (*Polytelis swainsonii*).
 Rock Peplar Parrakeet (*Polytelis anthopeplus*).
 Queen Alexandra's Parrakeet (*Polytelis alexandrae*).
 Australian Crimson-winged Parrakeet (*Apromictus erythropterus erythropterus*).
 New Guinea Crimson-winged Parrakeet (*Apromictus erythropterus coccineopterus*).
 Australian King Parrakeet (*Alisterus scapularis scapularis*).
 New Guinea King Parrakeet (*Alisterus chloropterus wilhelminae*).
 Madagascan Lovebird (*Agapornis cana cana*).
 Peach-faced Lovebird (*Agapornis roseicollis*).
 Abyssinian Lovebird (*Agapornis taranta taranta*).
 Fischer's Lovebird (*Agapornis fischeri*).
 Masked Lovebird (*Agapornis personata*).
 Black-checked Lovebird (*Agapornis nigrigenis*).
 Nyasaland Lovebird (*Agapornis lilianae*).
 Southern Vernal Hanging Parrot (*Loriculus vernalis phileticus*).
 Blue-crowned Hanging Parrot (*Loriculus galgulus galgulus*).
 Crimson Rosella (*Platycercus elegans elegans*).
 Adelaide Rosella (*Platycercus elegans adalaidae*).
 Yellow Rosella (*Platycercus caledonicus flaveolus*).
 Eastern Rosella (*Platycercus eximius eximius*).
 Golden-mantled Rosella (*Platycercus eximius ceciliae*).
 Western Rosella (*Platycercus icterotis icterotis*).
 Blue-faced Rosella (*Platycercus adscitus adscitus*).
 Pale-headed Rosella (*Platycercus adscitus palliceps*).
 Northern Rosella (*Platycercus venustus venustus*).
 Port Lincoln Parrakeet (*Platycercus zonarius zonarius*).
 Yellow-banded Parrakeet (*Platycercus zonarius semitorquatus*).
 Barnard's Parrakeet (*Platycercus zonarius barnardi*).
 Cloncurry Parrakeet (*Platycercus zonarius macgillivrayi*).
 Red-capped Parrakeet (*Purpureicephalus spurius*).
 Red-vented Blue-bonnet Parrakeet (*Northiella haematogaster haematogaster*).
 Yellow-vented Blue-bonnet Parrakeet (*Northiella haematogaster haematorrhous*).
 Rud-rumped Parrakeet (*Psephotus haematonotus*).
 Many-colored Parrakeet (*Psephotus varius varius*).
 Golden-shouldered Parrakeet (*Psephotus chrysopterygius chrysopterygius*).
 Hooded Parrakeet (*Psephotus chrysopterygius dissimilis*).
 Elegant Grass Parrakeet (*Neophema elegans elegans*).
 Blue-winged Grass Parrakeet (*Neophema chrysostomus chrysostomus*).
 Turquoise Grass Parrakeet (*Neophema pulchella*).
 Scarlet-chested Grass Parrakeet (*Neophema splendida*).
 Bourke's Grass Parrakeet (*Neophema bourkii*).
 Red-fronted New Zealand Parrakeet (*Cyanoramphus novaezealandidae novaezealandidae*).
 Yellow-fronted New Zealand Parrakeet (*Cyanoramphus auriceps auriceps*).
 Budgerigar (*Melopsittacus undulatus*).

MEALWORMS

By H. E. HITCHIN (Skenfrith, Abergavenny, Mon.)

I have been concerned for some time—like most aviculturists keeping softbills—as to the position of our live food supplies.

The reported almost total demise of mealworm stocks on the Continent, from where most of our supplies derive, gave rise to the thought are we feeding them correctly?

Some years ago I lived in the house adjacent to an old water mill when it closed down. I had no difficulty in finding supplies of mealworms in the offal left lying about in odd places in the mill. They were always well matured and in good condition.

When I came to purchase supplies this past season I had difficulty in recognizing them as the same species so thin and undernourished were they on arrival.

Consequently, on turning to maggots, when mealworms were no longer available, I decided to carry out a series of experiments on feeding them from the time of their arrival until they were all consumed by the birds—in my case a period of a fortnight or so.

I approached the problem from the premise, that if the maggots were not fed at all during the intervening period then they must live on their own fat until turning into chrysalis. It was found that maggots up to a certain age do actually continue to feed if food is made available this being proved by the incorporation of grated carrot in the mixture the colour being reflected in the gut of the larvae.

Not only so, but the quality of the maggot was well nourished right until the last one was consumed, the fat body being pearly white turning into a yellowish buttermilk colour before turning into chrysalis.

The following method I find to be convenient in my own case.

On arrival the maggots are turned into a cylindrical drum made of three-ply wood and given a good handful of crushed oats and left for 24 hours to clean themselves.

The following day they are fed a basic mixture of:—

1 part left overs of breakfast porridge.

1 part left overs of Farex * from the softbills food receptacles.

1 part freshly grated carrot.

All mixed together in a thin paste with a little milk.

About a teaspoonful of the mixture is fed daily on a small square of cellophane and placed on the bottom of the drum clear of the crushed

* Composition (per cent approximately): fat 2.5, protein ($N \times 6.25$) 14.2 carbohydrate 72.7, mineral salts 3.6, fibre 0.5, moisture 6.5; (per ounce) iron 6 mg., calcium 250 mg., phosphorus 190 mg., vitamin D 200 units, vitamin B₁ 0.4 mg., vitamin B₂ 0.5 mg. Calorific value, 110 per ounce.

Farex Three Cereal is a pre-cooked blend of wheat, oat and maize flours; separated milk powder; bone meal, yeast salt, iron and ammonium citrate, vitamins B₂ (riboflavine), B₁ (thiamine) and D.

oats. Later in the day, when the maggots have found the food, the cellophane is turned over and the maggots will soon congregate underneath.

After a few days it will be found that it is mostly the younger ones that are taking the food the older ones keeping to the crushed oats which require replenishing at the end of the first week. At the end of the fortnight the drum is thoroughly scoured and dried in the sun before restocking. The following additives have all been successfully tried :—

Honey, Malt extract, "Lassie" a liver-rich dog food, they being first worked into the porridge.

Others, like tinned vegetable foods, suggest themselves.

The procedure is strongly to be recommended to those feeding live food to all softbills.

* * *

NEWS FROM THE "WINGED WORLD" AT HEYSHAM, MORECAMBE

By C. G. ROOTS

Several of the more commonly exhibited birds which were obtained in order that our exhibits were well stocked for opening day last year, have now been replaced with rarer species ; and this is to be our policy for the next two or three years until our goal—of exhibiting one of the finest collections of rare softbills in the world—has been reached.

Since Christmas some very interesting birds have been acquired, the most important being a trio of African Jacanas, a Lesser Green Broadbill and a Chestnut-bellied Rock Thrush—a very attractive and seldom exhibited species. We have also received pairs of Natal Robins, Orange Gorgetted and Tickell's Flycatchers, Black-chinned Tit-Babblers and Yuhinas, and a young male Orange Cock-of-the-Rock ; whilst the addition of Tacazzi, Purple and Purple-rumped Sunbirds brings the total of this family on exhibit to eight species.

The "freeflight" area, where the emphasis is upon large softbills, has been enhanced by the addition of three Indian Pied Hornbills, and a group of Roseate Spoonbills have been purchased for the open-fronted waders exhibit.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

Among the new arrivals is a specimen of the Sharp-tailed Conure (*Aratinga a. acuticaudata*) and this appears to be only the second to be received since the first came in 1868.

A pair of Cheriway Carrion Hawks and a pair of Hammerkops are other notable arrivals. Two Wood Rails bred at Bristol Zoo have been received, but not as yet identified: they are somewhat like *Aramides cajanea*.

Owls so far hatched in the Gardens are three Great and three Kenya Eagle-Owls: the Spotted (both the nominate race and the northern *cinerascens*) Eagle-Owls are incubating eggs and the Magellan has laid, but the eggs have been broken. Javan Fish-Owls nested earlier and a chick was hatched, but it disappeared: another egg or eggs are now being incubated. One of this pair is a bird that was in the Leckford collection and was received here in 1945.

A Black-footed Penguin has been bred; also two more Speckled Pigeons. Blacksmith Plovers hatched three chicks, but they did not survive and another clutch is now being incubated: Grey-headed Gallinules nested, but the eight or nine eggs did not hatch. A pair of Pigmy Falcons (*Polihierax semitorquatus*) deposited last autumn were given a large nesting box in which to roost. They took to this at once and in January we thought that they must be nesting: an inspection revealed one white egg which later vanished, but the birds may be nesting again, for, as before, they are not often both out of the box together, though, of course, one could not say that they take turns in incubating. This species breeds naturally in the deserted nests of other birds such as the Buffalo Weaver.

When a number of Birds of Paradise, presented by Sir Edward Hallstrom, came in May, 1965, some were put into the outside aviaries at the Bird House. They have not spent much time during the day in the outer flights, but come out during the evening or whenever rain is falling. Now a deep cup-shaped nest has been built by one of the female Princess Stephanie's; she chose to build it in a privet hedge that is divided from the passers-by only by the wire-netting, though a similar hedge runs along the opposite side of the aviary close by the division between it and the next compartment—a more secluded and desirable site, one would think, but evidently the bird thinks otherwise. To screen the nest from people passing close by we fixed a large sheet of hardboard between the hedge and the netting, but this had the effect of causing the bird to start again further along and in an equally exposed place. The materials used are thin twigs, hay, and grass provided by us and pieces of paper and cellophane supplied by visitors.

Some assistance was given by us in the form of an old nest of a Blackbird and some supporting twigs, for the place chosen by the bird provides little in the way of support for her own efforts. The male is very active and calls from time to time, but so far no eggs have been laid.

* * *

COUNCIL MEETING

A Council Meeting was held on 13th March, 1967, at the Windsor Hotel, Lancaster Gate, London, W.2.

The following members were present :—

Miss E. Maud Knobel, President, in the Chair.

Dr. Jean Delacour, Vice-President.

Miss P. Barclay-Smith, Miss R. Ezra, Mr. C. J. O. Harrison, Mr. L. W. Hill, Mr. F. E. B. Johnson, Mr. F. T. Jones, Mr. A. V. Marques, Mr. K. A. Norris, Mr. W. R. Partridge, Mr. D. H. S. Risdon, Mrs. K. M. Scamell, Mr. N. R. Steel, Mr. J. J. Yealland, and Mr. A. A. Prestwich, Hon. Secretary.

THE PRESIDENT'S MEDAL

The President's Medal was awarded to Dr. Jean Delacour, with the citation "in recognition of outstanding services in the cause of Aviculture".

THE SOCIETY'S MEDAL

The Society's Medal was awarded to :—

Mr. W. H. Brown, for breeding Massena's Lorikeet, *Trichoglossus haematod massena*, in 1966.

Mr. W. H. Brown, for breeding Edwards's Lorikeet, *Trichoglossus haematod capistratus*, in 1966.

Mr. W. R. Partridge, for breeding the Golden-crested Myna, *Mino coronatus*, in 1966.

CERTIFICATE OF MERIT

The Society's Certificate of Merit was awarded to :—

The Kelling Park Aviaries, for breeding the Blue-headed Lorikeet, *Trichoglossus caeruleiceps*, in 1966.

The Norfolk Wildlife Park, for breeding the Wheatear, *Oenanthe o. oenanthe*, in 1966.



DR. JEAN DELACOUR PRESENTED WITH THE "PRESIDENT'S MEDAL"
BY MISS E. MAUD KNOBEL, PRESIDENT OF THE AVICULTURAL SOCIETY,
13TH MARCH, 1967

OBITUARY

Council has learned with profound regret of the deaths during the past year of the following members :—

Hon. Life Members

Captain A. A. Clarence, 1945. G. H. I. Cowley, 1925.

Members

A. W. Stewart Dean, 1951.	Mrs. K. M. McKee, 1954.
Oscar E. Dunmore, 1922.	B. V. Ramanjulu, 1964.
W. L. Eaves, 1936.	T. W. E. Royden, 1951.
J. E. Harris, 1956.	P. H. Schlachter, 1963.
Captain Vivian Hewitt, 1959.	H. W. Simpson, 1924.
Werner Kloevekorn, 1954.	F. N. Tomlinson, 1961.
Major John A. Moore, 1964.	H. J. van Dijk, 1948.

ARTHUR A. PRESTWICH,

Hon. Secretary.

* * *

BRITISH AVICULTURISTS' CLUB

The ninety-fourth meeting of the Club was held at the Windsor Hotel, Lancaster Gate, London, W.2, on Monday, 13th March, 1967, following a dinner at 7 p.m.

Chairman : Mr. K. A. Norris.

Members of the Club present : A. J. Aveling, Miss P. Barclay-Smith, W. H. Brown, R. A. Chester, D. W. Davis, A. C. Edmonds, Miss R. M. Ezra, Mrs. R. Goodman, A. V. Griffiths, I. G. Hale, H. J. Harman, L. W. Hill, Dr. E. Hindle, Dr. J. R. Hodges, H. Horswell, P. Hounsom, F. E. B. Johnson, F. T. Jones, Miss E. M. Knobel, G. B. Lane, K. J. Lawrence, Miss R. Low, A. V. Marques, R. F. Marshall, P. H. Maxwell, W. R. Partridge, A. A. Prestwich, D. M. Reid-Henry, D. H. S. Risdon, R. C. J. Sawyer, K. M. Scamell, Mrs. K. M. Scamell, Mrs. H. Seth-Smith, N. R. Steel, P. Sutton, J. J. Yealland.

Guest of Honour : Dr. Jean Delacour.

Members of the Club present, thirty-seven : guests, seventeen.

The Chairman welcomed Mr. and Mrs. Max A. Beaumont, Tasmania.

The President of the Society, Miss E. Maud Knobel, presented the "President's Medal" to Dr. Jean Delacour.

The Chairman gave the Club's traditional birthday present to Founder Member Dr. Edward Hindle.

Mr. M. F. Draper spoke on "50,000 miles from Europe to Brazil to further friendship among bird fanciers", illustrating his talk with coloured slides.

ARTHUR A. PRESTWICH,

Hon. Secretary.

The 1967-68 Session

Dinners and meetings during the 1967-68 session have been arranged for the following dates :

Monday, 11th September, 1967.

Monday, 13th November, 1967.

Monday, 11th March, 1968.

Monday, 13th May, 1968.

The Dinners will be held at the Windsor Hotel, Lancaster Gate, London, W.2.

ARTHUR A. PRESTWICH,
Hon. Secretary.

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NEWS AND VIEWS

Monsieur Walter Van den bergh has been promoted to *Officier de l'Ordre de la Couronne* for his thirty-five years of service, twenty as Director, to the Antwerp Zoo. All members of the Avicultural Society will join in congratulating Monsieur Van den bergh on the high honour accorded him.

* * *

These notes are written at the beginning of April, when purely avicultural news is scarce. And so, they have to be of a more or less reminiscent nature. Several news flashes have, however, been received. Mrs. K. M. Scamell, Violet-eared Humming Birds hatched a young one on 4th April. A second egg was discarded some days previous. L. W. Hill, young Snowy-headed Robin-Chats doing well. Gerald Durrell, the Keas at the Jersey Zoo have laid four eggs.

* * *

R. E. Greed reports that in August last year two or three Venezuelan Wood-Rail were successfully reared in one of the aviaries at Bristol Zoo.

* * *

Dr. G. R. McLachlan, formerly of the Museum, Snake Park and Oceanarium, Port Elizabeth, South Africa, is starting a type of zoo near Cape Town in which he hopes that birds will figure prominently.

* * *

In a schoolboy essay on the English countryside I listed four gems as the Wren, Primrose, Orange-tip Butterfly, and Harvest Mouse. In the intervening fifty years nothing has in any way changed my juvenile opinion. Can anyone suggest a more truly worthy quartet ?

Recently I was asked how to differentiate the Song Thrush (*Turdus ericetorum*) and the Mistle Thrush (*T. viscivorus*); and, perhaps somewhat naturally, whence the name of the latter.

Christopher Merrett's *Pinax rerum naturalium Britannicum*, 1667, contains the earliest known list of British birds: amongst the 170 species listed is the "Mistletoe Thrush". There can be little doubt that Mistle is a curtailed Mistletoe, hence the spelling Missel, as used by some, is incorrect.

* * *

"There be three things which are too wonderful for me, yea, four which I know not: The way of an eagle in the air; the way of a serpent upon a rock; the way of a ship in the midst of the sea; and the way of a man with a maid." Thus said Agur, son of Jakeh, in the *Book of Proverbs*. Alexander Wetmore, with his usual understanding, has written: "Like Agur, untold numbers of men and women have marvelled at 'the way of an eagle in the air'—or, for that matter, the way of a sparrow in the garden."

* * *

One of our neighbouring villages is Merle Common. All too often when one inquires of the inhabitants why their village is called such and such they seem particularly lacking in ideas. But here the answer is almost invariably that Merle means a Blackbird.

The Blackbird *Turdus merula* has been known as the Merle from very early times—perhaps the name was even introduced by the Normans. But more definite is that Randle Cotgrave, the English lexicographer, the author of our earliest French dictionary (1611) anglicized *Merle* as "a Mearle, Owsell, Blackbird".

The name is scarcely used nowadays, so it is the more pleasing that it is perpetuated, even if only in the name of a small Surrey village.

* * *

A gardener credited with "green fingers" is supposed to have a kind of magic touch that makes whatever he plants grow and flourish. But a very knowing old gardener once told me that he did not believe in such things—there was no substitute for plenty of dirt under the finger-nails!

In the realm of aviculture, however, there are those who seemingly have a magic touch—many a breeding success has been achieved in what might be considered far from ideal conditions. I have sometimes wondered what could be considered as an avicultural equivalent of "green fingers". I need wonder no longer.

In the October, 1966, number of the *Avicultural Bulletin* it is mentioned that Dr. Sibley once referred to Edward Lawson, at one time Curator at the Fort Worth Zoo, as "the man with the feathered thumb".

The Society's Medal was first awarded in 1897. The recipients were R. A. Todd, for breeding the Long-tailed Grass-finch, *Poephila acuticauda*, and G. E. Bouskill, for the Golden-headed Parrakeet, *Cyanorhamphus auriceps*.

Since then it has been officially awarded on 267 occasions. It is probable that the number is slightly more than this as the award was not always entered in the Minutes of the Council Meetings, nor was it always gazetted in the MAGAZINE.

The highest number of awards is twenty-nine, to Alfred Ezra. Had our late President claimed all the Medals to which he was undoubtedly entitled the number would surely have been considerably more.

The runner-up is W. E. Teschemaker with twenty-four. Others to reach double figures are the Keston partnership—E. J. Boosey (eight), E. J. Boosey and A. Brooksbank (one), and W. D. Cummings (four)—with thirteen, and W. Shore Baily, eleven. Mrs. K. M. Scamell has been awarded nine during the past seven years and it certainly cannot be long before she, too, reaches double figures.

* * *

On the origin of the name of our Society. In 1894 a small group of bird enthusiasts gathered together with the intention of forming a society devoted to their interests.

It was found necessary to invent or acclimatize a word which would denote "a person interested in the keeping and breeding of birds". Aviculturist, being analogous to horticulturist, was considered to be a very fitting description. According to the *Shorter Oxford English Dictionary*: "Aviculture: Rearing of birds; bird-fancying" has been in use since 1880, but the adaption appears to be to the credit of our founders. Prior to that those with interests similar to ours must have been known simply as bird-fanciers or perhaps aviaries. Aviary is an Elizabethan word, dating back to 1577. The earliest use I know is when Thomas Fuller (1608-1661) says that "Lincolnshire may be termed the aviary of England, for the wild-fowl therein".

Mention of the foundation of the Society recalls that the roots of the Society are deep in Brighton. Of the fifty-two Original Members, fourteen were resident in Brighton. Included in this number were the Honorary Secretary, Dr. C. S. Simpson, and the Treasurer, H. R. Fillmer, who were also Joint-Editors of the MAGAZINE: and the MAGAZINE was printed in Brighton.

* * *

When exercising our Bull Terriers in the woods my thoughts almost invariably dwell upon birds or something connected with them—more often than not on names and their meanings. Recently it was the Shrikes. Why Isabelline, or Fiscal, or Bakbakiri?

The dictionary definition of Isabelline is "of an Isabella colour, greyish-yellow, dull straw colour". It has been bestowed on a Desert Lark, Wheatear, Turtle Dove, and several other birds. But whence the name?

There are two stories, equally improbable, to account for it. Isabel of Austria, daughter of Philip II, at the siege of Ostend vowed not to change her linen until the place was taken. As the siege lasted from 1601 to 1604, we may assume that the worthy lady's clothing became somewhat soiled by three year's wear! The other story attaches to Isabella of Castile who, it is said, made a vow to the Virgin not to change her linen until Granada fell into her hands. *Brewer's Dictionary of Phrase and Fable* says there is no reason for accepting either of these derivations as the word appears in an extant list of Queen Elizabeth's clothes, dated July, 1600: "one rounde gowne of Isabella-colour satten."

* * *

The Fiscal or Fiscal Shrike (*Lanius collaris*) was first named "Le Fiscal" by Levaillant, in 1799. Perhaps the best explanation of the office of fiscal is that given by Arthur C. Stark (*The Birds of South Africa*, vol. II, page 8). He writes: "This shrike derives its name from the title of one of the principal government officers in the old Dutch times in Cape Colony, who had charge of public prosecutions and was responsible for the administration of justice."

As in those days justice was not always tempered with mercy, the word 'fiscal' has come to signify this most fearless and cruel bird, which is constantly in pursuit of its prey and which ruthlessly kills and impales in its larder any creature it is able to overpower."

Levaillant also named the Bacbakiri (*Telophorus zeylonus*), on account of the onomatopoeic call of the male, expressed as "bac-ba-kiri, bac-ba-kiri". This shrike is now usually known in South Africa as the Bokmakierie, one of its calls being construed as "bok-makierie".

* * *

Visits to BIRDLAND or RODE must surely have made many cherish dreams of one day possessing a macaw. Some may even have fulfilled their ambition, but unless exceptional accommodation can be provided the best advice is perhaps that offered by "Punch" on another, and very different, occasion *DON'T*.

The usual practice is, of course, to keep them chained by one leg to a macaw stand. Edward Boosey has likened keeping a bird *permanently* chained to keeping a dog forever on the lead.

The few macaws imported nowadays are almost invariably nestlings that have been hand-reared. The majority make intelligent and affectionate pets, devoted to their owners, but they are inclined to be

spiteful towards strangers, especially children: some of whom do not always accord them the respect they deserve and who seemingly have an irresistible urge to pull their tails.

It must be remembered that they can indulge in a terribly loud and discordant screech, deafening to the owner and hardly conducive to good neighbourliness. I have known both a macaw and a cockatoo banished to outbuildings on this account.

C. W. Gedney, writing in the late 1870's gives an horrific account of a battle between a macaw and a Bull Terrier. He says: "I knew one bird that defied every effort made to tame him, and he killed a bull terrier that shared his place in the stables; you could not live in the house with him! Both his wings were broken in this terrific battle, and a pretty spectacle the place presented when the man went as usual to feed him in the morning. There lay poor Tyke dead, with his throat torn open, the bird covered with blood, and almost featherless, stood by, with destended and drooping wings, a perfect scarecrow, shrieking at intervals either in pain or spite. What was to be done with the creature? Kill him, everyone said, except the man who looked after the bird; so his belief that the injuries would tame him saved his life; and the cripple was consequently shut up in a pig sty. His wings got well, the bones growing out of place, but this old savage never abated one atom of his hatred for everyone that went near him, and he had ultimately to be poisoned."

A tragedy such as this must surely be unique.

A. A. P.

* * *

NOTES

THE "NEAR MISS" IN REARING HUMMING BIRDS

I was very interested in the copious article by Mrs. Scamell on the "near miss" in rearing Humming Birds. I am most surprised, however, that such an experienced aviculturist should use the formula given for rearing the young. Let us examine the formula, first, white sugar, the bulk of the food, contains absolutely no nutrients whatsoever, this is fortified with a protein concoction 60 per cent plus minerals which are not water-soluble, so that the bird has to stir up with the action of the tongue to consume any at all. Such a diet is completely devoid of the essential Fat-soluble Vitamins A, D, and E, etc., all of which are essential to give complete nutrition, and complete nutrition is the only way anything can be successfully reared. It is obvious, therefore, that the babies died of malnutrition (starvation), and not unexpectedly so, the same applies to the failure to rear Sunbirds. It would be a miracle if such solution would rear anything to maturity.

I would add that if a $\frac{1}{4}$ ounce of pure yeast extract, or $\frac{1}{2}$ ounce of crude black mollasses were used in the place of the Gerval product, one would have a better food in every way, but still deficient in the fat-soluble vitamins mentioned.

I feel I am fully qualified to make the above statements by the fact that I have specialized in Nectar feeders since 1919. I am, as far as I know, the first purveyor to import Humming Birds, around 1924 and since that time, with the exception of the war period, and some little time after, been the sole purveyor of these birds until I dispensed with the services of my collector in Ecuador in early 1963. In all these forty-seven years I have handled many thousands and in that time I have had over 800 post mortems on Nectar feeders which show that around 95 per cent die from

excess sugar, this results in the almost complete dehydration of the flesh and muscles, and invariably diseases of the liver, extended, perforated, and cancerous conditions, and in most cases also, severe inflammation of the mouth, gullet and tongue, the latter in very many instances rotting away altogether.

For successful longevity and reproduction, therefore, it is essential for the diet to contain all necessary vitamins as laid down by the world's leading scientists. In my forty-seven years, besides having unparalleled practical experience in the feeding and management of these species, I have received advice from the experts carrying out the post mortems, plus the guidance of a practical chemist who has carried out some one hundred various analytical and nutritional tests on my foods. I have also studied H.M. Publications on vitamins, published by the Medical Research Council and Lister Institutes, and Manual of Nutrition, also by H.M. Government. The published facts cannot be challenged.

Finally, I think, that for their own benefit and the birds they keep, the breeders should forgo the doubtful pleasure of keeping the babies preserved in spirit but send or deliver them for post mortem to the Government Institute of Nutrition and Experimental Breeding Station in Kent. The report on both the deaths of the babies and the food should be published in this magazine. I am sure that their report will support all my statements. Further, whilst it may be cotton wool that appears to have caused the deaths, as stated, this may well be, unconsumed protein powder in a conglomeration probably by fermentation, a post mortem will tell.

P. H. HASTINGS.

* * *

CORRESPONDENCE

THE RED-CRESTED FINCH

I do not think that Jeffrey Trollope's breeding success recorded in the November-December, 1966, number of the *MAGAZINE* can be regarded as a "first". G. A. Petrie, Dunfermline, has bred this finch on several occasions during the past few years. 1959, November. A pair was bought from D. Salteri.

1960, July. Two young were hatched, one reared. It proved to be a cock and is still living.

1961, June. Three young were hatched but due to a shortage of live food only one was reared. It turned out to be partially blind.

1962. Three young were hatched and as one was thrown out of the nest at five days it was decided to allow the parents semi-liberty. The experiment proved a great success; the two remaining young were reared, both were hens which died in 1965.

1963. Breeding was not possible owing to the construction of a new bird-room and aviaries.

1964. Parents at semi-liberty. Two young ones were hatched and reared, but due to the activities of a cat on top of the aviary both sustained broken legs and died three days later.

1965. Clear eggs laid.

1966. Both parents died while rearing three youngsters. They were then seven years old.

Quite a number of our local club members went up to Petrie's house to see the birds flying at liberty and coming to their owner for mealworms.

A. B. ANDERSON.

36 WHIRL BUT STREET,
DUNFERMLINE, FIFE.

BREEDING ABILITY OF JAVA SPARROWS

I have just to-day read the inquiry in the *AVICULTURAL MAGAZINE* and was intrigued by it. I have, although, never bred or even tried to breed Java Sparrows (*Padda oryzivora*), however, I think I can make a few suggestions which might prove to be useful to you.

I have recently become greatly interested in avian reproduction and it seems to me that aviculturists are quite ignorant of the phase of aviculture dealing with the mechanisms which cause sexual stimulation. Birds of the temperate zone (to which most birds bred in captivity are native) many times make use of the photoperiodicity factor (length of daylight) to stimulate the hypothalamus which eventually stimulates the gonads. Since the length of daylight near the equator is nearly the same all the year round, the birds found there (as is the Java Sparrow) have to have some other stimuli both internal and external to induce them to breed. As in so many strictly tropical birds, Javas make use of another important factor and that is periodic rainy seasons. So, I feel that by simulating rainfall, by the use of a sprinkler system, in an indoors, controlled aviary, it would be quite simple to breed Java Sparrows. Gradually stop the daily "rain" and provide paddy-rice. This might depict the concentration of seeds, grain, and insects in their wild state after the rainy season. This might seem complicated, but I think it is the best and most reliable procedure to enable you to build up a breeding stock from wild-trapped sparrows.

You might wonder how the Japanese are able to breed Javas. Correct me if I am wrong, but I am sure that Japan has periodic rainfall much like in south-east Asia.

Seek out the article on Control Mechanisms in the Reproduction of Birds by D. S. Farmer in the August, 1966, issue of *Natural History*, the bulletin of the American Museum of Natural History in New York. I think *all* aviculturists should read that article.

JOHN S. NERO.

1053 ERNST DRIVE,
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The Editor does not accept responsibility for opinions expressed in articles, notes or correspondence.

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- WARWICK P. BONSAI, 5 Stolls Alley, Charleston, South Carolina 29401, U.S.A. Proposed by Mrs. Velma McDaniels.
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- DR. GIUSEPPE CIGNA, Agrigento, Via Cesare Battisti 1, Italy. Proposed by A. A. Prestwich.
- PHILIPPE DOR, Erpekom 6a, Grote-Brogel, Limbourg, Belgium. Proposed by A. A. Prestwich.
- JOHN E. R. FRANCIS, 13 Coombe Hill, Billingshurst, Sussex. Proposed by Mrs. K. Holden White.
- S. HEYDENREICH, 105 Kenmauval, 567 Schaeman Street, Arcadia, Pretoria, South Africa. Proposed by Miss K. Bonner.
- D. C. PAGE, 17 Orion Street, Monument Park, Pretoria, South Africa. Proposed by A. A. Prestwich.
- Mrs. SUSAN PICKUP, Bosworths, Slaugham, Haywards Heath, Sussex. Proposed by Sir Godfrey Davis.
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- K. H. REANEY, Curator, Cleethorpes Marineland and Zoo, Ltd., Humberston, Grimsby, Lincs. Proposed by Miss K. Bonner.
- DR. D. F. SHARMAN, Agricultural Research Council, Institute of Animal Physiology, Babraham, Cambridge. Proposed by Dr. J. R. Hodges.
- HAROLD SMERDU, P.O. Box 161, Carlsbad, California 92008, U.S.A. Proposed by A. A. Prestwich.

NEW MEMBERS

The twenty-three Candidates for Membership in the March-April, 1967, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

READMITTED TO MEMBERSHIP

FRANCIS L. SMITH, Strathaven, West End, Redruth, Cornwall.

CHANGES OF ADDRESS

- R. M. ADAMSON, to 4 The Crescent, Beeston, Nr. Sandy, Beds.
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- JOHN CUNNING, to The Bungalow, Wickridge Street, Ashleworth, Gloucester.
- JAMES LEATHEM, to 55 Liberty Street, New York, N.Y. 10005, U.S.A.
- MARTIN MOGG, to 54 Church Road, Southbourne, Bournemouth, Hants.
- FRANK WHITE, to Greystones, 57 Kimberley Road, Nuthall, Notts.
- The Reverend IVAN J. WILSON, to The Manse, 24 Upper Cavehill Road, Belfast 15, Northern Ireland.

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- EDWARD J. MARUSKA, General Curator, Zoological Society of Cincinnati, 3400 Vine Street, Cincinnati, Ohio 45220, U.S.A.
- DR. A. A. PRIEST, 434-436 Acheson Building, 2131 University Avenue, Berkeley, California 94704, U.S.A.
- DR. W. R. SPOFFORD, State University of New York, Upstate Medical Center, 766 Irving Avenue, Syracuse, New York, 13210, U.S.A.
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D. W. Muirhead	5	0		D. Young	2	10	0

Will members please donate their surplus books on birds to the Society for the benefit of the Colour Plate Fund.

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is FOURPENCE PER WORD. Payment must accompany the advertisement, which must be sent on or before the 15th of the month to A. A. PRESTWICH, GALLEY'S WOOD, EDENBRIDGE, KENT. All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.

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Members of the Society have the exclusive privilege of joining the Club. Members normally resident abroad are invited by the Club to regard themselves as temporary members and to attend any meetings during a visit to this country.

Members of the Society not already members of the Club should write to the Hon. Secretary for particulars of membership.

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LP

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FLORIDA BURROWING OWL

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SOME RANDOM NOTES ON THE BURROWING OWL

(*Speotyto cunicularia*)

By JOHN R. QUINN (Staff Artist, Academy of Natural Sciences of Philadelphia, Penna, U.S.A.)

A pair of malevolent yellow eyes staring balefully from the dark recesses of a cardboard box, and a rattling hiss, much like that of a rattle-snake, was my introduction to the Burrowing Owl.

Arriving as an unwanted part of a live animal shipment to the Natural History Museum at which I am employed, the frightened bird was destined to be returned to the animal dealer; another long, tedious journey. Gallantly stepping in, I snatched the little owl from the returning ordeal of baggage car and mail truck and took him home, so beginning a friendship with this species lasting to this day. I now have a pair of these delightful creatures which tenant a glass-fronted cage complete with artificial burrow, and fly from picture frame to lamp-shade in the evenings, when I am at home to clean up after them.

The Burrowing Owl exists in two distinct races, one residing in Florida, the other in the western portion of the country and down into South America. The species is decidedly diurnal in habit, preferred hunting times though being dawn and dusk. It is next to impossible to mistake one of these little critters for anything else, what with their small round forms and long legs (for an owl), and their amusing habit of bobbing and bowing, while directing a stream of owl profanities at the source of aggravation. They are confirmed hole nesters, but prefer holes in the ground, hence their name. In the west, they often strong-arm prairie-dog burrows from their rightful owners, but in the South they are usually forced to do their own digging, quite a feat for an owl 9 inches long.

But what the Burrowing Owl lacks in size, he admirably makes up in temper and just plain guts. They have been known to take birds nearly as large as they are, and are vigorous defenders of the hearth and home (or is it hole?).

Almost invariably selecting flat, treeless savannah and grasslands to set up housekeeping, the "Ground", or "Billy Owl", as he is often

called, is most often seen flying off close to the ground at one's approach and alighting on a rise in the terrain or a fence post from which to berate the intruder.

In spite of all his spunk and designs for getting along in life, the Burrowing Owl is fighting an uphill battle for survival, particularly in Florida. Here, the intensive development going on in that State, plus the irresponsible element among hunters, has driven the little owl out of areas in which the sight of one was once commonplace. In the West, on the other hand, the bird suffers severe losses as a result of poisoning campaigns aimed at prairie dogs, among which the owls live. One Caribbean island race of the species is already extinct, a victim of introduced rats.

My own birds have, to date, resisted efforts to breed them, but none the less display most of the traits and habits the species is reported to possess. As mentioned previously, my pair are allowed the freedom of my studio in the evening, and it is at this time that their normal behaviour activities may be observed. However, having only observed these owls under captive conditions, I cannot say just how much their activities are curtailed or regulated by cage life.

The plumages are in somewhat less than satisfactory condition due to the inevitable abrasion with the cage walls, although "hunger streaks" or splits are non-existent. Bills and talons must be trimmed and clipped periodically, and I do not use sand as an absorbent as I had found abrasions and open sores on the foot soles until its use was discontinued. I find that any good commercial cat-litter works well, in addition to having a good deodorizing effect.

In my own experience with owls (this includes a South American Striped Owl, Screech, and a Longear I have at present) I have found that allowing the birds a full feed or "gorge" and then alternately decreasing the amount fed, allowing them to become "sharp set", is beneficial, by and large. Natural sunlight is available to them, vitamins are given at regular intervals, and mealworms are fed on occasion to provide proteins and diet variation.

Although the birds have used the artificial burrow provided (as evidenced by droppings and pellets in the nest cavity), they have not shown any definite inclinations to breed. As one of the pair appears to be a bit larger, I have assumed this to be the hen. But I have heard that size is not a factor in sexing these owls, hence, if any member has worked with this species and is acquainted with a method for sexing them I would be most grateful to learn of it.

The Burrowing Owl is an extremely agile flier, hovering like a Kestrel over an object of interest. They are extremely curious creatures, poking and prying in and around furniture. Considering all their amusing traits, and their questionable status and future in the wild state, I would think that successful breedings would be both enjoyable

to record and worth while conservation-wise. Their future, some day, may be up to breeders working with captive-bred birds.

Whatever future awaits him in this over-developed, overcrowded world of ours, the Burrowing Owl will continue to coo and bob from any handy fence-post, as long as there are prairies to hunt over. He will pursue the insect and rodent hordes as long as there are those among men who will protect him, appreciate him, and let him live in peace.

BREEDING THE VIOLET-EARED HUMMINGBIRD

(*Colibri coruscans*)

By MRS. K. M. SCAMELL (Newdigate, Surrey)

In my notes on "Near Misses with Violet-eared Hummingbirds" (AVICULTURAL MAGAZINE, Nov.-Dec., 1966) I mentioned on p. 166 that I was thinking of putting the cock in the adjacent flight-shelter to that occupied by the hen and keep them separate for the winter and then try and pair them up again in the spring. This was done but as was the case last year, the birds in their respective side by side aviaries, came into breeding condition late in the very mild winter which we had.

On 28th February, 1967, there were signs of nest-building 5 feet high on the netting of the hen's shelter facing the pop-hole to the flight. By the next day a cascade of cotton wool, kapok and grasses was falling to the floor as fast as the hen put it up. She was in a great hurry and trying to string up her nest on the netting itself, an almost impossible task, so little progress was made. I then opened a division between the two shelters and thus allowed the cock and hen freedom to enter each other's shelters and flights. On 5th March it was obvious that she would never complete the nest without help. She seemed exhausted and the floor was littered with teased-out nesting material which had fallen. The cock was again separated and knowing that nothing would make the hen change her mind on the choice of nesting site, my husband and I fitted a small cedar support under the nesting material still hanging from the netting. By the next day there were signs that she was attaching her nest to the netting and platform in much the same way that she did last year when she was in the cock's aviary. On that occasion she rested the nest on the aviary framing—this time she was 12 inches above it.

Progress was slow, but the hen seemed stronger so on 8th March we again removed the division and let the cock enter her aviary. Two more days went by and the nest was still unfinished. On the 10th we again closed the division and re-opened it on the 12th and by 15th

March the nest appeared to be complete. The next day she spent most of the day perching low down in the flight which was most unusual. She did not look too fit so once again the division was shut and the two birds separated! The next day there was an egg in the nest so the division was opened once more. At 6 p.m. she was incubating with the male hovering quietly in the same shelter—the most peaceful scene we had witnessed for many days! It was not until the morning of 20th March that she laid her second egg when we again closed the division and shut the cock in his own aviary.

During the next three days, nectar consumption in the hen's aviary remained high, a full tube (0.7 fl. oz.) each day. It seemed that the cock was distracting her from her incubation duties with his close presence and continuous calling so, on 24th March, we caught him up and removed him to another aviary about 30 feet away. He started moulting shortly afterwards and ceased to call. Throughout the incubation period the pop-hole door was left open in the daytime and the hen was free to exercise in the flight. She seemed to spend some time there in the late afternoons. On 28th March one egg had disappeared, but the remaining egg had darkened and seemed fertile.

On 4th April at 8 a.m. when the pop-hole door was opened the hen flew straight out into the flight. It was an opportunity for my husband and me to see if the egg had hatched. On this occasion we saw an almost black chick wriggling in the bottom half of the shell—the upper half was missing possibly just taken into the flight by the hen. We did not linger but it was a sight not easily forgotten. This was the 16th day since the second egg was laid so the first egg must have been infertile or chilled during the three days between the laying of the two eggs, when she sat only occasionally. There were plenty of fruit-flies in the shelter but we added 20 lb. of bananas to a large box of over-ripe fruit which had been in the shelter for over a year. It had supplied fruit-flies throughout the winter as it was near an oil-filled electric radiator and thus got sufficient local heat. Now to make sure of a more rapid production of these flies we wrapped the box around with horticultural heating tape as last year and this increased the local heat. The problem was to supply local heat to the fruit-fly culture and at the same time to keep the bird-room temperature down as I was quite sure there would be no hope of rearing the young bird if the room got too warm. We kept the fruit-box covered up and removed the covers each time either of us visited this bird-room. There were other birds in the same room, our old Rothschild's Grackles on two eggs, a Paradise Flycatcher and pairs of Bulbuls and Grey-headed Thrushes and some odd softbills. As last year, all the birds in cages were quietly removed and placed in their summer aviaries leaving the Grackles, Bulbuls and the Paradise Flycatcher, all of which had access to outside flights.

For the next few days everything proceeded normally—we opened the pop-hole door each day regardless of the weather (the nest was only about 3 feet from the pop-hole) and we had some very chilly days with maximums around 45° F. With such temperatures in the shelter all day and night we were tempted to raise the thermostat, but decided against altering anything as the chick was very active and growing fast. Nectar consumption was higher than last year. On 11th April, when the bird was seven days old it was as large as last years chicks at thirteen to fourteen days when they died. This we knew as we had preserved last years chicks in spirit and were able to make a rough comparison for size. It was a delight to see the young bird throw its head up over the top of the nest—at times we thought it was going to fall out. When feeding, the hen always alights on the edge of the nest before thrusting its beak down the chick's throat.

Diary entries for the next few days read :—

“ 12th and 13th April. Cold days with bitter winds. Maximum temperatures still around 45° F. Young bird almost stands up to gape. Some quills appearing on the back and wings.

15th April. Weather fine and sunny, maximum temp. 60°–62° F. Young hummer growing feathers. In the late afternoon it was lying partly on its side with swollen, dark crop clearly visible. Jet black excreta patches which surround the nest show that ample fruit-flies are available.”

I should mention that this particular birdroom is ventilated through the door (when open) and the five pop-holes leading to the five outdoor flights. Twelve fixed roof lights and two fixed windows let in light and sunshine, but on a sunny day it can get very hot inside even with the door open. We painted six of the roof lights white but on 17th April following a cold night the temperature inside the shelter was approaching 80° F. at 2 p.m. The young bird looked distressed and I thought we were going to lose it. The other six roof lights were painted out and the temperature quickly dropped. The room was now very gloomy as we also shut the door to keep out the sun. Artificial lighting was necessary in the daytime and from 5 a.m. and we had no further cause to worry over excessive heat.

The next day, 18th April, was much cooler—a big drop in temperature and sunshine. The eyes of the chick were now quite noticeable and it was sprouting feathers all over—it was very active. All went well for some days and on 22nd April I noted that almost two tubes of nectar were consumed in the twenty-four hours by the hen and chick as against one and a half tubes by the cock. The hen rarely brooded in the daytime. The weather continued cold and often wet with maximum temperatures ranging between 45° and 50° F. By 26th April the young bird was able to move around its nest and flap its long quilly wings. In the artificial light it appeared quite dark in colour

with a beak $\frac{3}{4}$ inch long, black except for a light coloured base. The hen continued to brood at night. On the 28th it was noticeable that complete feathering had continued down the head and back and wings. the latter almost to the tips which were now finishing. By 30th April, when the bird was twenty-seven days old, feathering was complete except for one primary feather on each wing. The tail was about $\frac{1}{2}$ inch long.

I was getting quite concerned at the long time the bird was in the nest and wondered if it would ever fly! All my reference books stressed, however, that not only was the incubation period remarkably long and variable, i.e. between fourteen and nineteen days, but as the birds must fly strongly from the moment they leave the nest, the rearing period could be from nineteen to thirty days.

2nd May was another cold day with sleet, rain, little sunshine and a maximum temperature of 48° F. The young bird was moving around the nest and changing its position every few minutes and we felt that it would not be long now before it was airborne! The hen seemed to spend most of the day in the flight and as the afternoon went by, it seemed to us that something was wrong. Nectar consumption was very low, about half normal for the time of the day. The young bird had become inactive and seemed soft and very flat in the nest. In the evening the mother was brooding the young bird much earlier than usual, sitting crosswise across its back. At 7.45 p.m. it was very weak and opening its beak at intervals. The hen came off for a moment to feed and we had a closer look. The young bird was torpid, or almost so, and though I tried to move it to see if it could be hand fed, its feet were firmly gripping the nesting material, so we left it where it was. It made the faint squeak that torpid hummers make if one tries to move them in that condition. The hen brooded again almost at once, but at 8.25 p.m. when we switched the light off, nectar consumption for the two birds was three-fifths of a tube as against nine-tenths of a tube by the cock. Torpidity in hummers is always alarming to witness, but in our experience and from all accounts is natural in hummers under certain conditions. Our longest lived hummer, a Greenfly (*Chlorostilbon gibsoni*) went torpid most nights for nearly seven years. What worried us, however, was the low nectar consumption and the possibility that when the young bird came round it might be too weak to gape for food.

I did not expect the young bird to be alive when I opened the aviary the next morning but to my astonishment and relief it was sitting up as perky as ever! Several times during the day I observed it fluttering around the nest and exercising its wings but, as far as I could see, it had not left the nest. The weather was still cold so in the afternoon, for the first time I shut the hen in the shelter with the young bird to make sure that the latter did not become chilled between feeds as I

think was the case the previous day. When the bird was younger it was sheltered from winds by the sides of the nest but now it was so large that most of its body was visible above the nest and, facing the pop-hole as it did, there was no protection from the cold winds. I was glad I had shut the hen inside because that night there was a moderate frost of at least 7 degrees. The nectar in some of the sun-birds' aviaries was frozen solid as was the water in many of the aviaries. Our azaleas and many of the fruit trees caught this frost and were spoilt for flowering or fruit this year.

On 4th May it rained all day. At 8 a.m. the young hummingbird was sitting in the nest—at 10 a.m. when fresh nectar was brought in, it was sitting on a nearby perch side by side with its mother! We only let the hen in the flight for a few short periods during the day in case the young bird got out and possibly drowned. Several times we saw it perched quite still, with its head inclined towards its parent. At 3.30 p.m. it was back on the nest. It had flown at thirty-one days old.

My diary for the next few days reads :—

“5th May. Young hummer on the nest at 8 a.m., perching at 10 a.m. then flew strongly round the shelter returning to the same perch. In the nest at 1 p.m. and 2 p.m., off about 3 p.m. until about 6 p.m. then on the nest again. Occasionally let the hen in the flight.

6th May. A nice day at long last. No rain and temp. about 55° F. with sunshine. Let the hen in the flight at 10 a.m., the young hummer followed her for the first time. We kept a very careful eye on it, but very soon it went in and out of the shelter at will until 5 p.m. when it returned to its nest and stayed there. The flight of the bird has to be seen to be believed, no faltering or hesitation and with a perfect sense of direction. The mother got excited at times. There are a few blue feathers developing on the chest and also two central blue tail feathers, otherwise in sunlight it is dull blue-green generally, without metallic effect. Nectar consumption in the twenty-four hours: cock one and two-fifths tube, hen and young bird one and nine-tenths tube.

7th, 8th and 9th May. Managed to get a few snaps and a few feet of 8 mm. film showing the hen feeding the young bird. This always occurs on a branch—the birds perching side by side with the young bird opening its beak until the mother plunges its own beak down the birds throat. Feeding took place at roughly half-hour intervals, but as we were watching it may well be that the demands to be fed would have been satisfied earlier in our absence. The mother chased her offspring inside from time to time and by 9th May more colour was noticeable. It still retired to its nest at dusk, the hen perching a few inches away. She no longer broods.

10th May. We saw the young bird feed itself from a tube poked through the netting. It was a short drink taken on the wing but on other occasions it clung to the netting to drink."

It was very hot on 11th May, about 75° F. The mother was observed to feed the young bird from time to time and it was also seen feeding itself. The tail and shoulders now show iridescence. It revelled in the thundery rains of the next day and at 8 p.m. was back on the nest with the mother perching close by as usual. 13th May opened dull and then warm and sunny. From 2.15 p.m. to 2.45 p.m. we both tried to film and snap the feeding operation, but not once in that time did its parents try to feed it. She seemed to drive it from the nectar tube in the flight every time the young bird took a short sip on the wing; they also sparred a little. Several non-birdy visitors arrived unexpectedly and our attention was diverted for some considerable time. At 7.20 p.m. we saw the young bird clinging to the netting in the shelter with a very excited mother charging around uttering angry noises. After some difficulty we separated the two and with the hen shut in the shelter netted a very frightened young bird in the flight and caged it in the lounge. It was midnight before we were satisfied that the bird could find the nectar and had settled down in the confines of a cage after the freedom of a comparatively large aviary. It was a near thing and I am quite sure the mother would have killed her youngster by the morning. We have seen this thing happen so often, some birds such as Diamond Doves and Rothschild's Grackles will kill their offspring unless they are removed in time, others will go on feeding them for weeks. It depends a lot on whether the parents want to go to nest again.

The next day, Sunday, 14th May, we transferred the young hummer to an empty compartment in our conservatory where we keep about twenty hummers. It soon found the nectar and drank a full tube in the twenty-four hours. The following day we opened the pop-hole in the compartment and let the bird into a planted flight measuring 10 by 4 by 7 feet 6 inches high which at the time of writing, 12th June, it has occupied alone. We have so far shut it into the shelter each night, but there is really no need to do so. It is hardy and powerful on the wing and enjoys the rain regardless of the downpour and we have had many almost tropical storms during May.

On 14th May we again returned the cock to the hen's aviary and on 19th May she laid another egg in her old nest which she had cleaned up and rebuilt. On 22nd May she laid a second egg about 3.30 p.m. We shut the division between the two shelters and the short honeymoon was over! We then removed the male to his remote aviary and the hen commenced incubating. Somehow, I did not think anything would materialize. She has behaved very strangely. First she located the eggs as far apart as possible, about 1½ inches from each

other. Then she sat with her beak protruding through the netting and looked most uncomfortable. On 24th May one egg disappeared only to reappear two days later. On 28th May no eggs were visible at all yet she sat all day ! A careful look when she was off the nest showed she had buried the eggs beneath the nesting material and the nest itself was twice as thick as it was a few days earlier. She finally gave up incubation on 6th June and we again returned the cock who has completed his moult and is now in wonderful condition and feather. The birds are not shut in at night and I thought I saw a glimpse of her through the pop-hole at dusk this evening, sitting once more on her rebuilt nest. I have still hopes of another clutch of eggs this year anyway, provided she does not go into moult. The young bird is developing more iridescence, but I do not think this will be complete until it has had its first moult. As regards sex, it is possible it is a female as a batchelor hummer in the next aviary is paying it a lot of attention ! The nectar recipe is exactly the same as the one I used last year, i.e. Gevral-Protein-Vitamin food plus sugar and water in the proportions I mentioned in my previous notes.

As described, Mrs. Scamell has bred the Violet-eared Hummingbird (*Colibri coruscans*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

SUCCESSFUL BREEDINGS AT THE EDWARD MARSHALL BOEHM AVIARIES IN 1966

By EDWARD MARSHALL BOEHM (Trenton, New Jersey, U.S.A.)

I am pleased to relate some of the interesting breedings we have accomplished at the Edward Marshall Boehm Aviaries in 1966. First, I will mention, collectively, breedings which I think have not been accomplished heretofore, and I use the word "think" advisedly, because I have no definite way of confirming this.

Came first the breeding of the Princess Stephanie's Bird of Paradise (*Astrarchia stephaniae*). Next, and perhaps the greatest thrill, came the Ribbon-tailed Bird of Paradise (*Taenia paradisea mayeri*), followed by successes with the Golden-vented Bulbul (*Pycnonotus goiavier person*), Schalow's Touraco (*Touraco schalowi*), Striated Tanager (*Thraupis bonariensis*), and Amethyst Sunbird (*Chalcomitra amethystina*).

The following do not have the glamour of first successes, but are equally interesting. The Magnificent Bird of Paradise (*Diphyllodes magnifica*) now has five broods, totalling seven youngsters, and is, at present, residing over two eggs.

A revelation was the latest breeding of the Imperial Fruit Pigeon. The youngster of 1965 was permitted to stay with the parents. The parents nested again in the early spring of 1966, and after the hen had raised her first brood, the youngster of 1965 (which proved to be a female), proceeded to take over the abandoned nest. After fertilization of her egg by her sire, she hatched and reared her youngling, without any paternal help. The new youngster now has fledged and is perfectly normal in every visual aspect. As I write this, on 10th February, 1967, the original pair again has a youngster in the very same nest.

In the case of the Stephanie's and the Ribbon-tailed Birds of Paradise, hatching time was twenty-one days. Time in the nest varied from twenty-two to twenty-six days. In all nestings of the Stephanie's and Ribbon-tailed Birds of Paradise, only one egg was laid.

Continued observation points up the lack of inclination of Birds of Paradise to mate when the individuals have been paired together for an extended period of time. New males, or the same male, introduced just prior to the finishing of the nest, are accepted for mating and copulation quite readily, often instantaneously.

The pre-copulation ceremonies of the Stephanie are quite vigorous and brutal; they grasp one another with their talons, usually in the thighs, or in whatever manner chance may present. At times, it actually becomes "mortal combat", and I say this factually, because I have had hens kill glorious males. I do not wish to conjecture on how often death occurs, but we have lost two beautiful males in this manner, and I have been an observer of this combat on eight occasions. I have



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DANCE OF LESSER BIRD OF PARADISE—I.

To face p. 116



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DANCE OF LESSER BIRD OF PARADISE—2.



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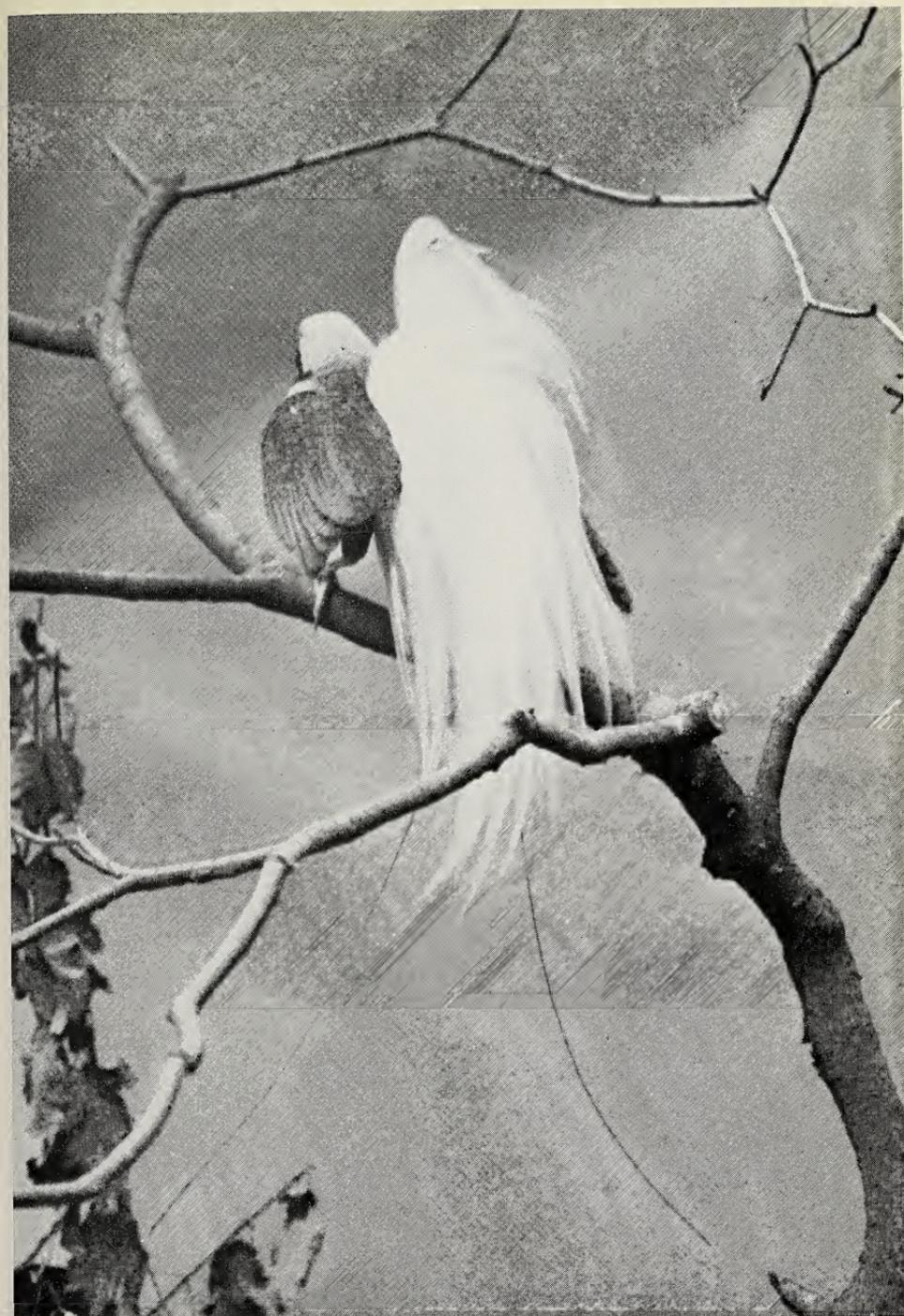
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DANCE OF LESSER BIRD OF PARADISE—5.

also seen a pair, in the throes of battle, fall into a pond of water. The birds would have drowned had they not been rescued. In all cases, their grasp on one another is so intent they fall to the ground ; and they attack one another with their beaks. When the female is overpowered and becomes submissive, they will then fly to a convenient branch where he will crest his hood and shield in a display of colour that is breathtaking ! At the culmination of this display, copulation ensues.

Paradisea minor and *Paradisea raggiana* will display to each other, as well as to like species. Male displays are confined almost entirely to early morning or late evening activity. Of great interest is discovery of the fact that in the displays of *Paradisea minor* and *Paradisea raggiana*, the females take part, even when separated from the males. I have observed, day after day, the females displaying to one another in their abodes, or a female displaying to a male in view in an adjoining aviary. Male and female would cling to the wire separating the aviaries, or perch on branches as near to each other as could be achieved ; dictated, of course, by the growth of the trees in their respective confines. The female repeats the ritual of the male, who rhythmically and spherically umbrages his wings with a pulsation that carries no definable metre. He sends his plumes into a cascade so reminiscent of a waterfall. The female calls out as does the male, but in a much lower key, like the whining of a puppy ; perhaps the begging of a fledgling for food would describe it better.

The females often display among themselves while the males are at rest. Their displays are of longer duration and shorter intervals than those of the males. My observations have not connected these displays with the nesting act, as I have had only one go to nest (*Paradisea minor*) and that was before I had pairs opposite to one another. I wonder if these complex displays are entirely a sexual attraction, or, rather, occasionally for amusement or play acting.

The Amethyst was our third success with Sunbirds, having bred the Scarlet-chested seven years ago, and the Golden-winged three years ago (although the young did not survive thirty days). We seem to have the greatest success in introducing sunbirds to nest by starting a woven cocoon-like nest with heavy cord, weaving fine grasses between the meshes and then lining the inside with cotton. We hang the nest on the very tip of a tree branch. We then place in conspicuous places capok, wool, and dog hair for their choice. Horse-hair is occasionally used, but never before cutting it into rather short lengths, as the long lengths can entwine their legs and wings, or enmesh them enough to hang themselves or make them vulnerable to attacks by other birds.

Eighteen days comprised the incubation period of the Amethyst Sunbird, twenty-one days the nest abode. The hen administered food entirely during the nest period ; however, the cock fed after the

youngster had fledged. Ten days after the fledgling left the nest, the female re-laid and raised a subsequent chick—no animosity was displayed to the first chick by either parent after the arrival of the second chick.

The Striated Tanager raised two broods in 1966. These consisted of two in the first nest and one in the second. Two eggs were laid each time. Nest construction was similar to that of our Wood Thrush (*Hylocichla mustelina*), and was built in the very top of a white pine, 22 feet tall. The entire nest was of their own construction, and both male and female fed the young. At this writing, there seem to be two females and a male. Although the male has not yet come into mature colour (seven months of age), he is showing the colour patterns of a mature male, but in various shades of grey. The grey of the breast in the young male has a slight yellow-olive tint, indicating the brighter hue to come.

We have now a very comprehensive collection of New Guinea birds, consisting of pairs of *Paradisea minor*, *Paradisea raggiana*, Bluebird, Superb, Carol's, King's, Stephanie's, Ribbon-tailed, Sickle-bills, Magnificents, Orange-crested Bower Birds, Mackelot's Pitta, Hooded Pitta, Double-eyed Fig Parrots, Stella's Lorikeets—we have successfully reared the young of four species.

I should like to proffer an opinion concerning often-written articles about parents maliciously destroying their young, or casting them from the nest. The theory that malice prompts these actions is fallacious. I have occasionally seen it happen in our aviaries, but in each case, it was because the parents could not secure enough live food, particularly in the first one or two days of the chick's life. I know that many will say, "Well, I supplied this or that type of live food!" However, the questions to pose are: Was it of small enough size to suit the parent or parents? Were there other birds in the same aviary who might have depleted the supply before the parents could gather enough for the chicks, and before the attendant had returned with a fresh supply? Given a sufficient supply of live food, was there some environmental reason why the parents did not supply enough of it to the youngster?

I think few of us realize how many insects actually are fed in the course of a day. We know from experience it runs into hundreds per young. Many frugivorous, omnivorous, and seed-eating birds will not feed other than live insects until the young have left the nest or are well on their way to leaving it.

This is why I think many parents are unjustly accused of destroying their young. What they actually are doing, in my opinion, is removing the corpses from their nests preparatory to starting new nesting operations. I saw this happen recently when our female Amethyst raised two broods, the third being well into October. The chick was

fifteen days old at the time, and we experienced a rather extended spell of rain. Food offerings were more than adequate, and the "black lights" were left on at night as usual. However, one has only to surmise that due to the rain falling, crepuscular, or night-flying insects, were not in their usual prevalence. Consequently, the chick died before the end of the second day. The parent removed the chick, but not before trying, in vain, to feed it throughout the afternoon on which it died.

It has been found here that the young among all types of birds raised in captivity are subject to rickets. Evidently the condition is brought about by the unavailability of insects containing chitinous or exoskeletal formation. We experienced it in starlings, touracos, tanagers, fairy bluebirds, etc. The parents will raise the young so affected; however, they are crippled for life and are best put down, as they can neither perch nor fly. Experiments were carried out in one case to see how long the parent would feed the affected youngster that could not leave the nest area. Feeding was carried out over a longer period than with the normal chick who went on to fend for itself.

We have developed a positive preventive of rickets. Though simple in administration, it is, as far as I have been able to determine, 100 per cent effective. Preventive measures consist of taking a few drops of tasteless cod liver oil and rubbing them between the palms of the hands. Mealworms are then taken and similarly rubbed to give them a slight coating of cod liver oil. Care must be exercised not to overdo the oil application, as it apparently inhibits the breathing mechanism of the worms. This causes asphyxiation, and the birds are disinterested when the worms display no movement. A mixture of 75 per cent calcium carbonate, and 25 per cent steamed bone meal is prepared and placed in a large commercial-type salt shaker and kept at hand. After the application of the oil to the insects, they are dusted lightly with the above mixture. When the food is placed for the morning feeding, the shaker is carried along and a slight sprinkling applied directly to the food of that particular aviary. This method is essential and beneficial. When the mixture previously had been mixed into the bulk food formula, there were no visible beneficial results. Whether the calcium is lost by being absorbed by the fruit and food juices, I cannot yet determine. I do know, however, that if the direct application of the calcium is neglected on the insects or foods of that aviary where the young is reared, we will experience rickets in the young.

The Schalow's Touraco reared two broods, although the first had to be destroyed because of rickets. The last brood came well into frost time, and before they were caught up to be placed in heated aviaries (the young at this time not being totally feathered), they were exposed to below-freezing temperatures, seemingly without any adverse effects. The parents did not seem to suffer any adverse effects either. The

incubation period was the same as for all touracos, as was the length of stay in the nest.

The Schalow's make a much more elaborate nest than has been observed in other touraco species we have had. The nest is more "jay-like" in its construction. Not having experienced nesting preparations of all touraco species, I cannot say definitely that this is characteristic only of Schalow's.

Our "old faithfuls", the Fairy Wrens, Fairy Bluebirds, Natal Robin, and others previously reported, continue to be prolific. Most have raised two to three broods for the fourth consecutive year, and they are responsible for providing specimens to the San Diego, Washington, Cleveland, New York, and Brookfield Zoos. This tends to prove a long-held contention of the writer that a national or international aviary or aviaries could be established to propagate rare species and species in danger of extinction. Its feasibility would depend entirely on the people behind it—more definitely, on the men directly responsible for its every-day function.

I would suggest that all aviculturists give serious thought to such a possibility and, after a site were chosen and obtained, it could be built and maintained by an assessment to each zoological society in keeping with their available funds. Perhaps it could reach a status where government funds would be available for its use. I feel sure many pharmaceutical laboratories might be inclined to help support it, as it could well prove beneficial to their research programmes. Possibly some of the large foundations could lend support.

As the population continues to explode, there seems little doubt that flower and fauna will be taxed to their limits for survival. Will Rogers once said so aptly, on being asked what he liked most to invest his money in, "Real estate, 'cause that's one thing they 'aint' making any more of."

I expect to be in England some time in the coming year, when I will endeavour to meet as many aviculturists as time and occasion permit. If arrangements can be made at one of the meetings of the Avicultural Society, I should very much like to present a rather fascinating film. It has taken some months to prepare and bring to culmination. It will possess both sound and colour and will be made available for use by any Avicultural Society which desires to view it. It will show many first breedings and the various modes of parental care bestowed on the young by different species. Included will be incredibly beautiful displays by various species of the Birds of Paradise.

I should like, at this writing, to extend to all aviculturists interested in the propagation of birds, an invitation to visit the Boehm Aviaries, where appointments will be established by letter or phone. Some time in the near future, I will attempt an article on the relativity of area as a stimulus to birds to nest.

REPORT ON THE BREEDING OF THE RED-CHEEKED LOVEBIRD

Report from Dr. D. HEY, Director of Nature Conservation, Cape of Good Hope, South Africa. As narrated by R. HORSHAM

Towards the end of 1956 we received a consignment of Red-cheeked Lovebirds which had been confiscated at the Cape Town docks as they were being imported without the necessary permits. There were more than sixty birds in a small box and only thirty-three were still alive, and these survivors were released into an aviary of approximately 20 by 6 by 8 feet at Jonkershoek. It was only after the birds were placed in this aviary we realized that both wings had been severely clipped and the result was that the birds clambered to the roof of the aviary and hung there. When startled they would release their hold and endeavour to fly, but being unable to do so, dropped to the ground, and in this way many were severely injured and of the total number only twelve ultimately survived.

A research project was being undertaken at the time, of the breeding of parrots and lovebirds in captivity and consequently it was considered of interest to try to breed these Red-cheeked Lovebirds. We could find only one account of this being done in captivity for which purpose bales of peat were used. The first veterinary project was to tame the birds somewhat and to improve their general condition by adequate feeding. Among the twelve survivors there were five pairs. These were presented with a wide variety of material including bales of moss and chaff, wooden nesting-boxes of various design, hollow logs, and bundles of rushes. The birds showed no sign of interest whatsoever in the nests. Eventually Dr. David Davies (the late Professor Davies) suggested we try providing them with a termite nest. Four old termite nests were then mounted one on top of each other and cemented together with clay, thus giving a mound of about 4 feet high and 18 inches in diameter.

Holes of approximately 2 inches in diameter were drilled into this structure. This nest was placed in the aviary in the spring of 1958 and by the middle of summer mating was observed among the Lovebirds. Towards the end of summer one pair occupied one of the tunnels in this termite nest and three young emerged in May, 1959.

In the AVICULTURAL MAGAZINE, 1959, page 119, John Perry describes the nesting of a pair of Red-faced Lovebirds in the aviaries of David Dale, Cape Town; five young left this nest on 30th May to 14th June, 1959, and were fully reared. These events must have been only a matter of days after Dr. Hey's success.—ED.

DARWIN'S RHEA

(Avest Ruz De Mag Allames)

By RALPH C. SMALL (Parrot Keeper, Chicago Zoological Park, Brookfield, Illinois, 60513, U.S.A.)

On 20th June, 1966, the first Darwin's Rhea chick to live was hatched in an incubator. Four were hatched altogether. Two died of pneumonia at a few days of age. The third one drowned at forty-seven days. The fourth one lived, and is now nine months old.

It was decided to bring the chick to the Parrot House. The chick was placed in a wire-bottomed cage, 5 by 5 feet. A duckling was placed in the cage to keep it company and help teach it to eat. A heat lamp was placed over it to keep the temperature at about 95 degrees. The heat lamp was gradually raised to lower heat until it was no longer needed.

The chick did not start to eat until the second day. The formula fed was as follows :—

- $\frac{3}{4}$ gallon chopped escarole.
- 2 medium carrots (grated fine).
- 1 apple (grated fine).
- $1\frac{1}{2}$ cups rabbit pellets.
- $1\frac{1}{2}$ cups turkey starter mash.
- 2 teaspoons De Calcium.
- 2 teaspoons Rib Ad Mineral Vitamin supplement.
- $\frac{1}{2}$ teaspoon Vi-Myacin Mineral Vitamin supplement (very concentrated).

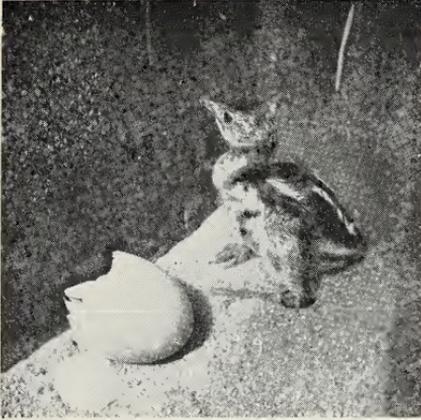
In the drinking water was placed 0.6 cc. Vi-Syneral to 1 pint of water.

The duckling was taken away at fourteen days. At this time, the chick was placed in a corner on sand. Crickets were given when obtainable, but the chick did not seem to care too much for them. The chick grew very fast.

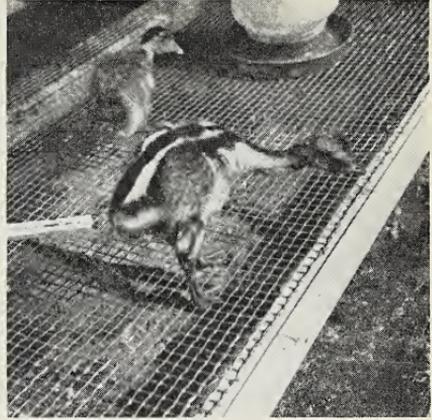
At two months of age, the heat lamp was turned off. The baby enjoyed the heat lamp and would sit under it even though the building was quite warm.

At three months, the baby was moved to the Antelope House where it had a whole cage to itself. Now at nine months it is almost full grown. This Darwin's Rhea is believed to be the first one ever raised in the United States.

I believe that it would be easier to raise Darwin's Rhea chicks if they could be let out to graze in the open air and given the above diet. They would have to be kept from getting wet and then kept warm



ONE DAY OLD.



ONE WEEK OLD WITH DUCKLING.



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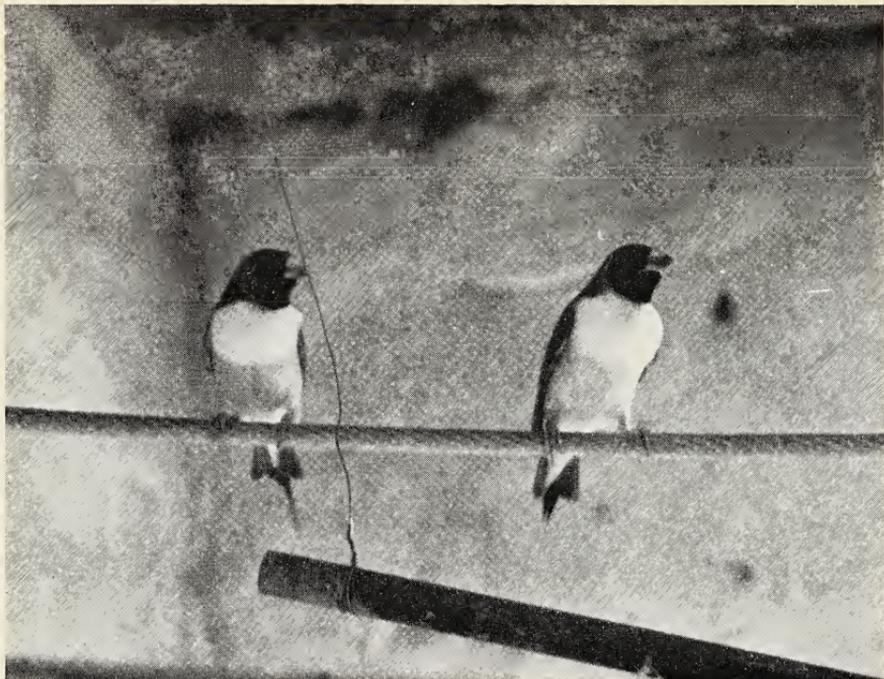
FOUR WEEKS OLD.



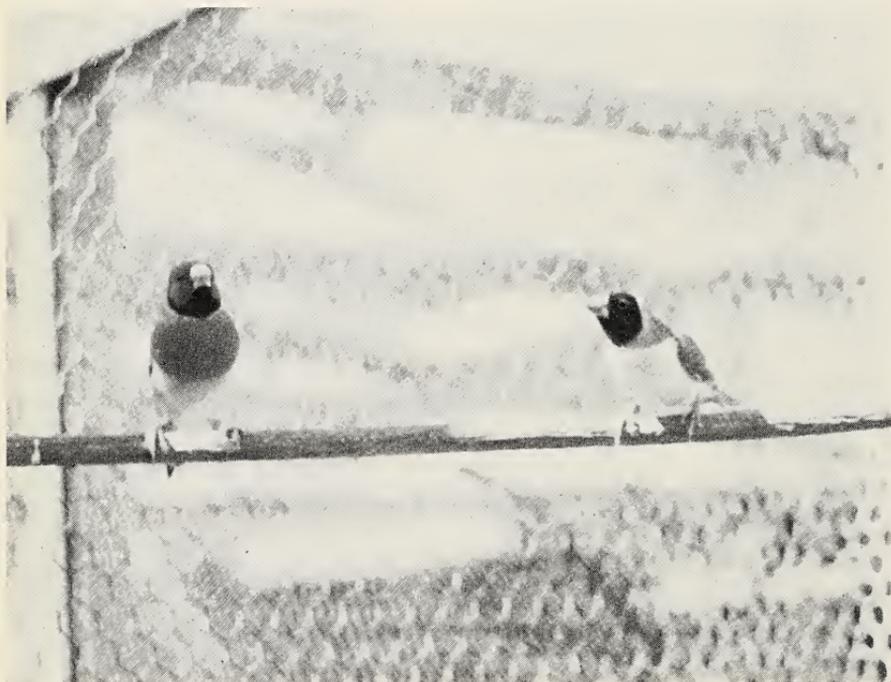
[R. C. Small

SIX WEEKS OLD.

DARWIN'S RHEA CHICK.



PAIR OF WHITE-BREASTED BLACK-HEADED GOULDIAN FINCHES. (Cock on left.)



Copyright]

[F. Barnicoat

RED-HEADED GOULDIAN COCK AND A WHITE-BREASTED BLACK-HEADED HEN.

[To face p. 123

during the night. These should be as easy to raise as the Common Rhea if raised in the above way.

Vi-Syneral vitamin drops. Each 0.6 cc. provides :—

Vitamin A* (palmitate) 5,000 U.S.P. Units	Thiamine HCl (B ₁)	1 mg.
Vitamin D* (ergocalciferol) 400 U.S.P. Units	Riboflavin (B ₂) (as phosphate)	1 mg.
Vitamin E* (d, alpha tocopheryl acetate) 5 Int. Units	Pyridoxine HCl (B ₆)	2 mg.
Ascorbic Acid (C) 60 mg.	Niacinamide	10 mg.
	Panthenol	3 mg.

* Vi-Syneral vitamin drops is the original aqueous solution of oil-soluble vitamins made water soluble with sorbethan esters ; protected by U.S. Patent No. 2,417,299 owned and controlled by U.S. Vitamin and Pharmaceutical Corporation.

THE WHITE-BREASTED MUTATION OF THE GOULDIAN FINCH

By F. BARNICOAT (Johannesburg, Transvaal, South Africa)

For more than ten years I have derived endless pleasure from line-breeding Gouldian Finches. It has been possible to ring dozens of young Gouldians with closed aluminium Zebra Finch rings without resulting in a single loss. The keeping of detailed records of all parentages, only possible because I keep one, or at most two pairs to an aviary, has been a labour I have never regretted, the steady improvement of my stock being the chief reward. Over the past two years, however, the wonderful task and challenge, granted seldom if ever to an aviculturist, of establishing a new mutation has fortunately come my way. News of this mutation of the Gouldian Finch will surely be of interest in avicultural circles throughout the world.

In January, 1965, two white-breasted Gouldian cocks were sold to a leading Johannesburg pet shop. Both were red-headed and were perfectly normal Gouldians except that the entire purple breast was replaced by the purest and most striking white imaginable. Many mutant birds have at first proved rather inferior in physique, but these lacked neither size nor vigour and all their other colours were quite as brilliant as those of a normal Gouldian. Even the turquoise necklace was very prominent, and, now against the white instead of purple chest, showed up in a particularly striking way. I was asked by the manager of the pet shop to attempt to breed a stock of these Gouldians to avoid their being sold into possibly inexperienced hands. The task was eagerly accepted.

The first question was whether this was a genuine mutation and whether these cocks could ultimately reproduce their kind. Of this I was almost certain, because for several years I had heard rumours of the existence of these birds in the Transvaal. One fancier had definitely

bred some of them, but his stock had been lost. Another fancier was alleged to have bought Gouldians from this man and produced one white-breasted bird, but he had gone no further. Although a class for these birds had actually been inserted in the South African National Cage Bird Association schedule, their continued survival was generally doubted. It never appeared on the show bench and remained a rather mythical bird. I do not know whether the two cocks that came to me were remnants of the stock of the fancier who did once possess some of these mutants, or whether they were thrown from some of the stock dispersed by him. At present, however, I have, to the best of my knowledge, the only ones in South Africa. A prominent Australian authority of very wide experience does not know of any specimens of such a mutation anywhere in Australia. Mine could be the only ones in existence.

The fact that both white-breasted Gouldians were cocks seemed to indicate that the mutation would not prove to be sex-linked, as hens usually appear first and predominate in this type of mutation. The chances were that it was a recessive inheritance and, as Gouldians take nine months to colour and never breed until the following year, the road would obviously be a long one.

Given to me with these cocks were two hens supposed to be related, but they looked old and past breeding. Though very healthy, the white-breasted cocks looked old, their feet were very scaly and both had a missing toe. Realizing that I might not have long to experiment, I put them in an aviary with one of the old reputed related hens and with one of my own red-headed hens which I had proved to be an excellent breeder.

As I expected, the related hen never looked like going to nest and died after a few months, to be followed shortly after by the other old related hen; but my own good breeding hen eventually laid a clutch of eggs. I doubted whether they would be fertile, but they were and the white-breasted cock even proved a hard-working and conscientious father. In April, 1965, five babies left the nest, to be followed by another three in July.

The eight offspring moulted out into six red-headed cocks and two black-headed hens all perfectly normal in appearance, but Gouldians of exceptionally good quality. I wondered seriously whether they carried the factor at all, but the breeding programme for 1966 held thrilling prospects none the less.

The two original white-breasted cocks escaped all the disasters that fate often brings to one's most precious birds, and they came through a very heavy moult, spared for another breeding season and in obviously better condition than in the previous year. They were mated to the two black-headed hens, which I hoped would prove splits: if so, 50 per cent of the babies should be mutants.

During 1966 ten babies were reared from the two pairs, three from the father mated to his daughter and seven from the uncle mated to his niece. The long wait for these babies to colour seemed never ending, and I shall long remember the September day when I noticed the first white breast feather in one of these youngsters and realized that the two-year dream had become reality. Yet the final picture proved to be even beyond my wildest hopes. No less than seven were white-breasted, and of these four were hens (three black-headed and one red-headed) and three were cocks (two red-headed and one black-headed). All are magnificent, brilliantly coloured Gouldians and have dazzling white breasts with not one purple feather. It is a wonderful sight to see this mutation now in the black-headed phase as well as in the red-headed. The other three babies, which must be splits, are all red-headed hens absolutely normal in appearance.

The early days of 1967 unfortunately saw one of the original white-breasted cocks go the way of all flesh, and even more unlucky was the sudden loss of one of the young hens through a night fright. Still the prospects for further success this breeding season are good, and, if my luck can hold again this season, the stock will be put on a sounder footing in 1967. I am deeply grateful to my good fortune for this tremendous boon. I like to hope that one day I may see my stock of these gorgeous birds sweep right round the world.

* * *

BIRDCAGE WALK

By A. A. PRESTWICH (Edenbridge, Kent, England)

Countless overseas visitors to St. James's Park, London, must have asked why Birdcage Walk is so named. In very many cases they will, of course, have been correctly informed that here formerly were animal and bird enclosures for the pleasure of Charles II. The collection must have been quite extensive, but few contemporary descriptions are readily available.

Dr. Edward Browne visited St. James's Park in February, 1664, and writes: "I saw many strange creatures, as divers sorts of outlandish deer, Guiny sheep, a white raven, a great parrot, a storke, which having broke its own leg, had a wooden leg set on . . ."

John Evelyn (1620-1706), the English diarist and author, was an acknowledged authority on several subjects, but ornithology was not amongst his interests. He owes his celebrity mainly to his famous *Diary*—a keen and discerning observer of the passing scene he recorded his observations and impressions with meticulous care. It is perhaps not generally known that whereas the *Diary* covers the period 1641 to 1705-6 it was, in fact, not discovered until 1817, in an old clothes-basket at Evelyn's home at Wotton, Surrey.

Evelyn's entry regarding his visit to St. James's Park has often been reproduced, almost invariably with quite a few inaccuracies. Our copy of the *Diary* is dated 1819 and so may be presumed to be the true version. It is perhaps worth quoting it verbatim.

Under the date 9th February, 1665, Evelyn writes: "I went to St. James's Parke, where I saw various animals, and examined the throat of y^e *Onocratylus* or Pelican, a fowle between a Storke and a Swan; a melancholy water-fowl brought from Astracan by the Russian Ambassador, it was diverting to see how he would toss up and turn a flat fish, plaice or flounder, to get it right into its gullet at its lower beak, w^{ch} being filmy, stretches to a prodigious wideness when it devours a great fish. Here was also a small water-fowl not bigger than a more-hen, that went almost quite erect like the penguin of America; it would eate as much fish as its whole body weigh'd, I never saw so unsatiable a devourer, yet y^e body did not appear to swell the bigger. The Solan geese here also are greate devourers, and are said soon to exhaust all y^e fish in a pond. Here was a curious sort of poultry not much exceeding the size of a tame pidgeon, with legs so short as their crops seem'd to touch y^e earth; a milk-white raven; a stork which was a rarity at this season, seeing he was loose and could flie loftily; two Balearian cranes, one of which having had one of his leggs broken and cut off above the knee, had a wooden or boxen leg and thigh, with a joynt so accurately made that

y^e creature could walke and use it as well as if it had been natural ; it was made by a souldier. The Parke was at this time stored with numerous flocks of severall sorts of ordinary and extraordinary wild fowle, breeding about the Decoy, which for being neere so greate a Citty, and among such a concourse of souldiers and people, is a singular and diverting thing. There were also deere of severall countries, white ; spotted like leopards ; antelopes ; an elk ; red deere ; roebucks ; staggs ; Guinea goates ; Arabian sheepe, &c. There were withy-potts or nests for the wild fowle to lay their eggs in, a little above y^e surface of y^e water.”

The Russian Ambassador presented the original pelicans to Charles II in 1662, and it is interesting to note that John Ray (1627–1705) was able to identify them as Grey or Dalmatian. This gift was the start of the pelican tradition in St. James’s Park.

A white Pelican is mentioned by Sir Thomas Browne as having been shot at Horsey Fen, Norfolk, on 22nd May, 1663. Sir Thomas was careful to note that one of the pelicans had flown away from St. James’s Park about the same time, so it may very well have been that one.

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A VISIT TO HOPE BOTANICAL AND ZOOLOGICAL GARDENS

By P. H. MAXWELL (London, England)

In April I paid a visit to Jamaica. One of the wonders of Kingston is the Hope Botanical and Zoological Gardens. I am told people visit these gardens from all over the world. It is five and a half miles from Kingston on the Hope Road.

The Botanical Gardens has a wonderful orchid house which one can walk through from the main gate. There are very wide roads with a profusion of plants and flowers through which cars may be driven.

The Botanical Gardens has a large lake near the Zoo on which I saw Muscovy Duck, but I believe there are one or two swans which I did not see. They grow coffee and other agricultural plants on the

estate, as it is run by the Jamaican Government from the Ministry of Agriculture.

The Zoo itself is in about 20 acres divided off from the Botanical Gardens. They have a small collection of West Indian Flamingos (*Phoenicopterus ruber*) on a small lake near the main gate. There are some Green-winged, Red and Yellow, and Blue and Yellow Macaws on a tree on a pond near the flamingos. They have a collection of Amazon Parrots which consisted of a large number of Jamaican Black-billed and Amazon Parrots, some White-eyed Amazons, Levaillant's, Green-cheeked, also some Yellow-naped Amazons. They were in flimsy, small aviaries and did not have any nest-boxes in which to breed. There were also some Conures and some Parrakeets. I saw the Red-tailed Hawk (*Buteo jamaicensis*) in a small cage; they had a pair of Globose Curassows with them. There is an aviary with some Jamaican and Barbary Doves provided with nest-boxes in which they were breeding.

The Iguanas of the Cayman Islands were displayed—both the Cayman Island and the Blue. A group of Indian Coneys or *Indiageocapromys (browni)* in a small cage, very heavily barred, by the lion's enclosure—this animal is rare. Also a pack of the Central American Grey Fox (*Urocyon cinetorcentus*), a very rarely seen canine. There were some Virginian Deer. Peafowl roam round the Botanical Gardens and the Zoo and I saw a mother Peafowl feed her young with some white bread.

The Zoo unfortunately publishes no guide-book—a great pity when so many interesting birds and animals are in their collection.

* * *

NEWS FROM THE BERLIN ZOO

By Dr. HEINZ GEORG KLÖS

Among the birds hatched between January and May, 1967, the following are worth mentioning: 3 Cereopsis Geese, 3 Eagle-Owls, 3 Great Horned Owls, 1 Rainbow Lorikeet and 2 Banded Plovers (*Zonifer tricolor*). To our great disappointment, a fully developed Kagu chick which hatched in the incubator after an incubation period of 36 days died when it was about 68 hours old. The cause was a sudden breakdown of the current supply in the pheasantry. This accident is the more regrettable as this time the chick seemed to be much stronger than all its predecessors: it was eagerly begging for food and willingly took freshly sloughed mealworms and cockroaches, some minced meat mixed with vitamin, dextrose, calcium, and mineral salt supplements. Our second Kagu pair is now sitting on their nest

incubating an egg. This time we shall not attempt to remove the egg but wait and see if the birds themselves will be successful.

The following birds were purchased: 4 Puna Teals, 4 Andean Crested Ducks, 2 Maned Geese, 1 Western Hartlaub's Duck, 1 Nene (as a loan from the Wildfowl Trust, Slimbridge), 2 Nankeen Night Herons, a pair of Senegal Bustards, 1 Hammerkop Stork, 2 Scarlet Ibises, 2 King Parrots, 3 Keas, 2 Hyacinthine Macaws, 2 Ross's Turacos, 2 Ravens, 1 Wandering Tree-Pie, 1 Rufous-bellied Niltava, 1 Large Minivet, 2 Red-headed Tits, 4 Scarlet-bellied Tanagers.

The most interesting addition to our bird collection are six fine Hooded Cranes (*Grus monacha*). This rare species had already been represented in the Berlin Zoo in pre-war times. One bird lived here from 29th February, 1912, until 17th September, 1937, and another one also purchased in 1912 even lived until 30th January, 1944. Although it is not possible to determine the sex of our newcomers we hope that some of them will breed one day. As far as we know, Hooded Cranes are becoming rarer and rarer in the wild so that zoos should do everything for the conservation of this species.

* * *

NEWS FROM THE WINGED WORLD

By C. G. Roots, Curator (Heysham, Morecambe, Lancs, England)

From Costa Rica recently we received a shipment of great interest, the most exciting of these new arrivals being a group of Long-tailed Manakins, *Chiroxiphia linearis*, which are seldom exhibited in the British Isles. Also included were three Black-necked Stilts and a pair of Thicknees. Other recent acquisitions are pairs of Roulrouls, Blue-headed Rock Thrushes, Orange-breasted Fruit Pigeons and Hoopoes, and a cock Rothschild's Grackle.

Nesting activity has commenced at last, but the first to breed—a pair of White-capped Redstarts—lost their young when they were several days old, apparently having been disturbed by other birds. We are now eagerly awaiting the emergence from her box of a Red-billed Hornbill, sealed in by the cock seven days ago at the time of writing. During this period he has been feeding her through the narrow slit left in the mud-plastered entrance. Both the above pairs were newly imported less than twelve months ago.

We do not expect a high breeding rate at the Winged World, however, as our initial fears that our exhibits—heavily stocked to provide a worthwhile exhibition from the public point of view—are too overcrowded for breeding. Several pairs which attempted to nest have

had to be removed as they completely disrupted the harmony of certain enclosures. This state of affairs is not a permanent one fortunately, as it is proposed to expand our facilities by providing quarters outside our building for those birds demanding a less disturbed breeding territory.

An improvement in our cage labelling system is just being put into operation. Instead of relying upon artists' impressions for identification purposes, we are in the process of having the majority of species recorded upon 35-mm. colour transparencies. These are to be incorporated into our illuminated label holders, and can also be used for publicity purposes and articles. Yuhinas and other small active species have proved difficult to photograph, but it is our intention to construct a glass-fronted planted box for restraining such species in a small area for photographic purposes. The cost of producing these transparencies has proved to be most economical and we are also hoping to offset this by offering a selection of the best slides for sale in our kiosks.

* * *

NEWS AND VIEWS

A pair of Sacred Ibis reared three young ones in the Edinburgh Zoo last year. A similar success is now almost an annual event.

* * *

The Bronze Medal of the Avicultural Society of South Australia has been awarded to Russ Rowlands, for breeding the Southern Figbird (*Sphecothebes vieilloti*).

* * *

The Council of the Royal Geographical Society has awarded the Cherry Kearton Medal and Award to Peter Markham Scott, C.B.E., for Services to Natural History.

* * *

At least fifty-one California Condors were enumerated in the second annual condor count organized by the California Department of Fish and Game, during October, 1966. This is an increase of thirteen over the previous count, but against this must be put the fact that on this occasion the coverage of the condor's range was more complete.

* * *

Hatchings. Mrs. K. M. Scamell, Black Indian Redstart, two or three just hatched ; Festive Tanager, three young two days old. K. A. Norris, Pied Rock Thrush, two days old : last year, their first nesting season, they hatched two broods and promptly threw them out of the nest. K. W. Dolton, Talpacoti Dove, two young fourteen days old. C. M. Payne, Chough, one twelve days old.

Unusual nesting-sites. T. S. Thomson writes : " Last year a pair of my Tree Sparrows nested in a privet bush. Nest-boxes were provided but ignored. This season the same pair have occupied a box."

Paul K. Ballew, Visalia, California, records that a pair of Gouldian Finches made a nest of spray millet and leaves from an Eucalyptus tree on top of a 2 by 4 with a small ledge on it. Three young were duly hatched, with the possibility of a fourth (*Avicult. Bull.*).

* * *

Popinjay is an archaic name for a parrot. But whence the name parrot? I have never discovered who first used this name, but according to the dictionaries it was as long ago as 1525. Etymologists have been at some pains to show that the word is derived from the obsolete French *perrot* (pierrot), a diminutive from *Pierre* (Peter).

There does not seem to be any evidence that in France parrots were ever commonly called *perrots* or *pierrots*. The latter is in fact a colloquial name for the House Sparrow.

* * *

Longevity. On 29th June, 1930, Olin Sewell Pettingill, Jr., was amongst a party of four that visited Duck Rock, not far offshore from Monhegan Island, Maine. During their stay of an hour they banded 81 young Herring Gulls (*Larus argentus*), whose ages averaged about ten days. One of the nineteen young banded by Pettingill was found dead on 20th June, 1966, by a group of Girl Scouts, on the shore of Little Traverse Bay, near Petoskey, Michigan. This thirty-six year life-span of a wild bird may well exceed any other so far reported. The previous record was held also by a Herring Gull, banded as a chick and recovered 31 years and 11 months later (see *Auk*, 1967, 123).

* * *

Country lore has it that anyone trying daily to eat a whole Wood Pigeon would not survive a year. Whether death would be the result of severe digestive disturbance or from sheer monotony is anybody's guess. In any event, no one is likely to test the theory. But one is reminded of this by a very descriptive account in *National Geographic*, April, 1967. Roger Tory Peterson and a party recently visited the Galapagos Islands and in the course of their cruise dropped anchor at San Salvador (also known as Santiago or James Island). On the island there is a salt mine and in reference to this Peterson writes : " For five months no boat had come to supply the men who worked the pit. Out of provisions, they had lived mostly on the island's small wild doves, snaring them and clubbing them with sticks. Each of these ten men had eaten an average of ten doves a day for three months, consuming a total of 9,000 birds." Peterson's party took off the ten men and one imagines they were *very* glad of a change of diet !

The *54th Annual Report*, 1966, of the Royal Zoological Society of Scotland, recounts some very interesting but, unfortunately, unsuccessful breeding attempts by a pair of Cassowaries in the Scottish National Zoological Park, Edinburgh. "In 1965 the female laid three eggs, and the male had taken over incubation, when it is thought the appearance of a stray dog at the enclosure frightened the female and caused her to run into the hut beside the sitting male. A fight ensued, during which an electric heating tube was torn from the wall, the smaller male bird suffered injury, and all the eggs were broken. They were found to be fertile ; and as the male recovered from his injuries, and the pair resumed friendly associations, precautions were taken to prevent the repetition of such an accident in the event of the birds again breeding. During the year under review four eggs were laid and accepted by the male, who was then isolated, though the pair were able to see each other. On this occasion only one egg was fertile, and from this a chick was hatched, but it survived only for three days."

* * *

The year 1966 at the Edinburgh Zoo was a disappointing one where the breeding Gentoo Penguins were concerned. "At the beginning of the breeding season the colony consisted of fifty-one adult and five one-year-old gentoos, and from this number twenty-four nests were occupied and fifty-one eggs laid. This constituted a remarkably high percentage, as the five year-old birds had not reached maturity. Twenty-five chicks were hatched, which was also satisfactory, but from then on a series of unfortunate mishaps was experienced. After seven chicks had been lost in three weeks due to the neglect of parents, and as the other pairs were also showing a lack of interest in their young, it was decided to remove the surviving chicks for hand-feeding. These accepted food freely, and appeared to be progressing, when a number of deaths occurred from aspergillosis, only four chicks surviving to the adult moult.

Of the King Penguin colony, which at the breeding season numbered thirty-five adults and three one-year-old chicks, twenty-six birds paired and thirteen eggs were laid. Of these, however, only four hatched, but all four chicks have been successfully reared" (*54th Annual Report*).

A. A. P.

* * *

REVIEWS

AUSTRALIAN BIRDS IN COLOUR. By KEITH HINDWOOD.

A. H. and A. W. Reed, Sydney, Wellington, and Auckland, and Bailey Bros. and Swinfen, Ltd., London, 1966. Price 26s.

Parrots and Grassfinches apart, the birds of Australia have been poorly served by illustrators since Gould, and it is pleasant to find that with the spread of colour photography they are at last coming into their own. This is perhaps poor consolation for the European aviculturist who may now have good illustrations of the birds he may no longer have the opportunity to keep. The present small volume, some 5 by 8 inches, contains a series of fifty-two colour portraits of different Australian species, selected from the work of eleven different photographers. The pictures are mostly of adults at the nest, and have been well chosen to present a range that includes many of the smaller and less well-known species. The pictures are clear and the colours in general very good, ranging from the vivid blue of the Blue Wrens to the sober colours of Thornbills and Thrushes. Although many of the species show vivid colours some of the best pictures in this book, to my mind, are the soberly-clad Wonga Pigeon, the Rufous Fantail, and the Ground Cuckoo-shrike. The only defects with which one might quibble are the tendencies for some greys to appear too blue, and to appear as glosses on brown plumage, as in the pictures of Lyre Bird and Bristle-bird. The page facing each portrait contains a text account of the species by the Australian ornithologist Keith Hindwood. His extensive and intimate knowledge of the birds has made it possible for him to present, not the usual rather trivial text that tends to appear in books where the plates takes precedence, but interesting accounts with a great deal of useful and original information.

In all I found this an enjoyable little book, and one that might well be emulated in other regions whose birds are unfamiliar to us.

C. J. O. H.

NESTING BIRDS, EGGS, AND FLEDGLINGS IN COLOUR. By

WINWOOD READE and ERIC HOSKING. Blandford Press, London, 1967. Price 25s.

In the preface to the photographic section of this book it is claimed that the authors have attempted "... to show by photographs ..." the principal breeding birds of Northern Europe. In this aim they have certainly succeeded. There is a thick "wodge" of photographs showing different species at the nest. A majority of these photographs are coloured and the general standard of colour reproduction is very good and, so far as my experience goes, decidedly above average.

Some, but by no means all, show nestlings, fledglings, or eggs as well as one or both parents.

One of these pictures may well, as the proverb says, be worth a thousand words. As, however, many of them illustrate interesting points of behaviour (e.g. the male Cirl Bunting turning his head so as to place food in his mate's bill and thus showing the underside of his head to the camera) and the book seems at least partly aimed at beginners, I think some of them should have had a few words to indicate *what* they show beyond the fact that the bird is a "Cirl Bunting" or whatever it may be.

The book is also illustrated with coloured plates of eggs and a great many black and white drawings. The former are adequate, allowance being made for modern colour-printing and the individual variability in the eggs of many species. The latter, by Robert Gillmor, are delightful and a main charm of the book. Besides many sketches of adults and young of different species there are three schematic drawings of habitats, showing the typical birds thereof and with typical nesting sites for each indicated.

The text is mainly adequate though hardly so detailed in its descriptions of breeding behaviour as the publishers' blurb might suggest. There is, however, a tendency to make some doubtful statements without giving the evidence (e.g. that brightly coloured drakes divert predators from the incubating ducks, p. 4) or statements which although sometimes true or true for some species are certainly not always true as is implied by their context and lack of qualification (e.g. that "song is a means of establishing territory", p. 5, or that "Truly wild Rock Doves nest in inaccessible sites", p. 206).

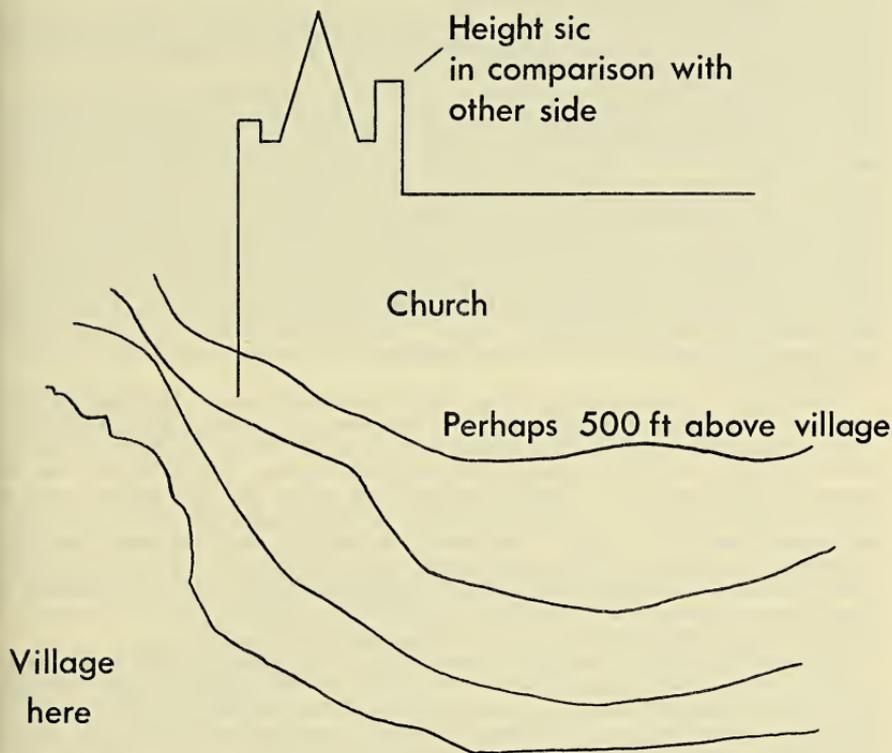
The book is compact and convenient in size with a pleasing format. For the photographs and drawings alone it is well worth the money.

D. G.

* * *

CORRESPONDENCE

THE AVIARY OF ADMIRAL GEORGE CHURCHILL



I understand that your Society is interested in establishing the whereabouts of the aviary of Admiral George Churchill, and I send you the following scrap of information in the hope that it may provide a clue.

I have a signed oil painting by Bogdani, which I believe was painted for the Admiral to record some of his birds. The picture shows a village in a valley in the near distance with a church with an unusual spire on top of a low range of hills. The birds are in natural surroundings, chiefly waterfowl ducks and ducklings predominating species, some of which are in flight. There is also one Kingfisher, a Blue Tit and a Yellow Wagtail.

Leaving out of account the possibility of artistic licence and the probability that you have some idea of the location of the aviary I have made a rough sketch below of the church and tower, which is partly obscured by trees.

I have been working on Gra(e)y family history and genealogy for a number of years and I appreciate just how valuable odd scraps of information such as this can be on occasions.

CHARLES GRAY.

DONOHILL RECTORY,
CO. TIPPERARY,
IRELAND.

* * *

IN SUPPORT OF "THE FANCY" AND THE SHOWS

Having long been an admirer of the articles of Mr. Derek Goodwin with their keen observations, published in this journal, I was the more surprised at his observations on his visit to the National Show, recorded in the January-February issue of the MAGAZINE. I feel they cannot go unchallenged.

In South Africa a note to the effect that show cages are used for the duration of the show only appears in the catalogue and sometimes is displayed in large print in the hall, so that the casual visitors will be aware of that fact.

I know that fanciers are occasionally misled by the craze for size or exaggerate a defect to a ridiculous degree as in the Scotch Fancy Canary, but surely it must be admitted that the wonderful pattern of the Lizard Canary and the striking yellows and variegations in the other breeds do not make them "mere travesties" of *Serinus canarius*; that since the formation of the Zebra Finch Society in 1952 *Taeniopygia guttata* with its remarkable mutant forms has been stamped with a degree of interest and a quality beyond the wildest visions of breeders in the early years of this century; and that, though the "nebulous grey colour was relatively unattractive", the glorious hues of the Budgerigar, like violet and sky-blue, and the development of other features, have made the name of *Melopsittacus undulatus* illustrious the world over. These things have been partly achieved by the "Fancy" and greatly aided by the shows, which are the stimulus behind such avicultural endeavours. Are the values of the "Fancy" always perverse?

Aviculture is a hobby of many facets. Some aviculturists take to breeding the rarer and more difficult species, especially if they can attempt a first breeding in captivity. It is perhaps primarily with these achievements that our Society is concerned and in which regard it has served so well these seventy-two years. Others believe that the greatest achievement is in founding aviary-bred strains of wild species, such as Mr. Norman Nicholson has so ably done with the Red-headed Parrot Finch. Others, again, prefer to enter a "fancy" and breed to a standard, which can hardly always be considered "perverse", although some unfortunate things may have been foolishly, though inadvertently, done. While we of this Society may not interest ourselves in these other achievements, it is a pity to deprecate the valuable efforts of so many of our fellow aviculturists and not to give credit where credit is due.

To breed Budgerigars is one of the last things I should personally like to do, but, in contrast to Mr. Goodwin, whenever I visit a show of Budgerigars, I do not wistfully long for the original wild bird. I, for one, find the fuller development of their size and natural or mutant features, provided not overdone, most attractive; and the overall achievement, looking back down the years, quite amazing. In fact I do not think that natural beauty ends in the wild state. If the blue and lutino Ringnecks are anything to go by, I hope that a great deal more of natural beauty is waiting to be unlocked and developed by aviculturists in the years ahead. If we stand still we shall perish: we must go on and the fanciers and the shows have a not inconsiderable part to play, provided that the standards are sane; and I am sufficiently optimistic to hope that wisdom in the matter will prevail.

F. C. BARNICOAT.

207 ST. AMANT STREET,
MALVERN,
JOHANNESBURG,
SOUTH AFRICA.

* * *

CROSS BETWEEN PHEASANT AND BANTAM

There are few references to crosses between pheasants and chickens, but I did not expect one to appear in my aviaries as the result of a little indiscretion on the part of a golden hen bantam and a cock Silver Pheasant. The bantam was running with a trio of pheasants intending to be foster-mother for the chicks in due course, and I had picked her for her good colours. Apparently the plumpness of her form caught the eye of the pheasant and the first notion I had of any happening was when my Boy said, "Master, he is using her for a wife." Even then the impact did not sink in, and in due time the bantam went broody on a clutch of five Silver Pheasant's eggs. Apparently as a gesture of affection towards her pheasant-lover she added one of her own eggs. Some weeks later I was surprised to see six chicks emerge and the stranger has grown into a fine bird clearly showing its mixed ancestry.

It is a mule with male colouring and is slightly heavier (strangely enough) than an ordinary Silver Pheasant, and about the same shape but with a somewhat shorter tail. The silhouette is therefore of a pheasant, but the colouring is much more like the bantam, being generally a speckled golden brown. It is an alert bird but is generally shunned by the others, of both sexes, which is why I conclude that it is a mule; but it is quite well behaved in the aviary, apart from, unfortunately, regarding any eggs as items of diet.

RONALD HORSHAM.

Box 3456,
CAPE TOWN,
SOUTH AFRICA.

* * *

THE "NEAR MISS"—WHICH LATER BECAME A SUCCESS—
IN REARING HUMMINGBIRDS

I hope you will allow me to comment on the "Notes" in the May-June number in which Mr. P. H. Hastings had so much to say about my article on "Near Miss" in rearing Hummingbirds.

First, I would mention that Mr. Hastings recently made similar statements on the use of sugar and protein foods in *Cage and Aviary Birds* in regard to an article by Mr. Fell, of Lincoln, on his experiences in keeping hummingbirds and feeding them on these foods. In the considerable correspondence which followed and which was published in that paper Mr. Fell and others made it quite clear to Mr. Hastings that the protein foods contained all the necessary vitamins.

However, to return to the "Notes", I would mention that this year the same pair of Violet-eared Hummingbirds produced two eggs, hatched one chick and reared it to independence. It is now three months old and is as fit and as powerful on the wing as any hummer I have seen. It was reared on Geval-Protein-Vitamin-Mineral Food, sugar and water to the formula which Mr. Hastings takes so much exception to, plus, of course, plenty of fruit flies. I have a complete daily record of the intake of nectar by mother and chick as compared to the intake by the cock, from the day it was hatched until it reached independence and the quantity of "dangerous" nectar consumed was quite substantial. The information is available to anyone interested.

The protein food I use contains Vitamins A, D (as yeast), B₁, B₂, B₆, B₁₂, C, E as well as many minerals and, of course, proteins which are digested perfectly well by the birds. In fact this particular protein food is, I have been told by doctors, produced mainly for invalids and geriatrics who sometimes have difficulty in digesting proteins in other forms. I hasten to add that I have no financial interest in this, or any other, bird food and I don't suppose the manufacturer would really notice if I ceased to use my daily one-third of an ounce which, with sugar, feeds my forty nectar drinkers!

Finally, if hummingbirds and sunbirds are so easy to breed and rear on some of the foods sold specially for these birds in this country, then why is it that aviculturists have not succeeded better in keeping and breeding nectar drinkers? I venture to prophesy that perhaps the lean days are over and now that many aviculturists are keeping hummingbirds and sunbirds in planted aviaries instead of in cages, plus (dare I say it?),

feeding with protein foods and sugar, breeding successes in the future will be much more frequent. All my hummingbirds and sunbirds have access to open flights all the year round (unless there is a day frost) and are only shut in at night during the winter and early spring. I know some aviculturists who never shut their hummingbirds inside even in the winter. Surely people who keep these acclimatized birds must be credited with some common sense in the food they choose to use ! My young Violet-eared Hummingbird could possibly have been reared on other foods, I just don't know, but what I do know is that there is a great difference in the knowledge, experience, and feeding skills required by the dealer to get the birds over the first few days after importation, keep them as short a time as possible before selling them and those of the buyer who has the problems of acclimatization to overcome before there is any hope of a long life for the bird. I give Mr. Hastings full marks for his unrivalled skills as the importer and dealer, but as the buyer I do not accept his feeding suggestion.

(Mrs.) K. M. SCAMELL.

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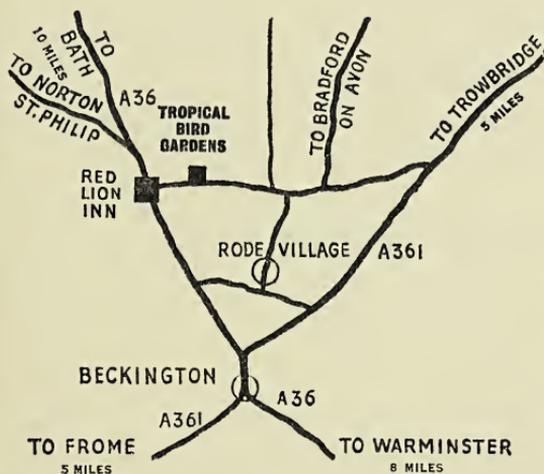
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NEW MEMBERS

The thirteen Candidates for Membership in the May-June, 1967, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

CHANGES OF ADDRESS

- ALEX J. HARRIS, Jr., to 5527 Bradley Blvd., Alexandria, Virginia 22311, U.S.A.
- H. W. HUMPHREY, to Rosebank, Beeston Hill, Tiverton, Nr. Tarporley, Cheshire.
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- F. W. SHAW MAYER, to 2 Grantham, 57 Grosvenor Crescent, Summer Hill, Sydney, N.S.W., Australia.
- A. R. G. MORRISON, to 26 Canning Street, Ainslie, Canberra, A.C.T., Australia.
- THOMAS PEARSALL, to 83 Oak Lane, West Bromwich, Staffs.
- F. H. RUDKIN, to Rudkin Aviaries, 795 Riverside Avenue, Fillmore, California 93015, U.S.A.
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- RAYMOND W. R. SMITH, to 36 Diane Road, Stubshaw Cross, Ashton-in-Makerfield, Wigan, Lancs.
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A. Schuh	1	0	0

Will Members please donate their surplus books on birds to the Society for the benefit of the Colour Plate Fund.

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Members of the Society not already members of the Club should write to the Hon. Secretary for particulars of membership.

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AVICULTURAL MAGAZINE



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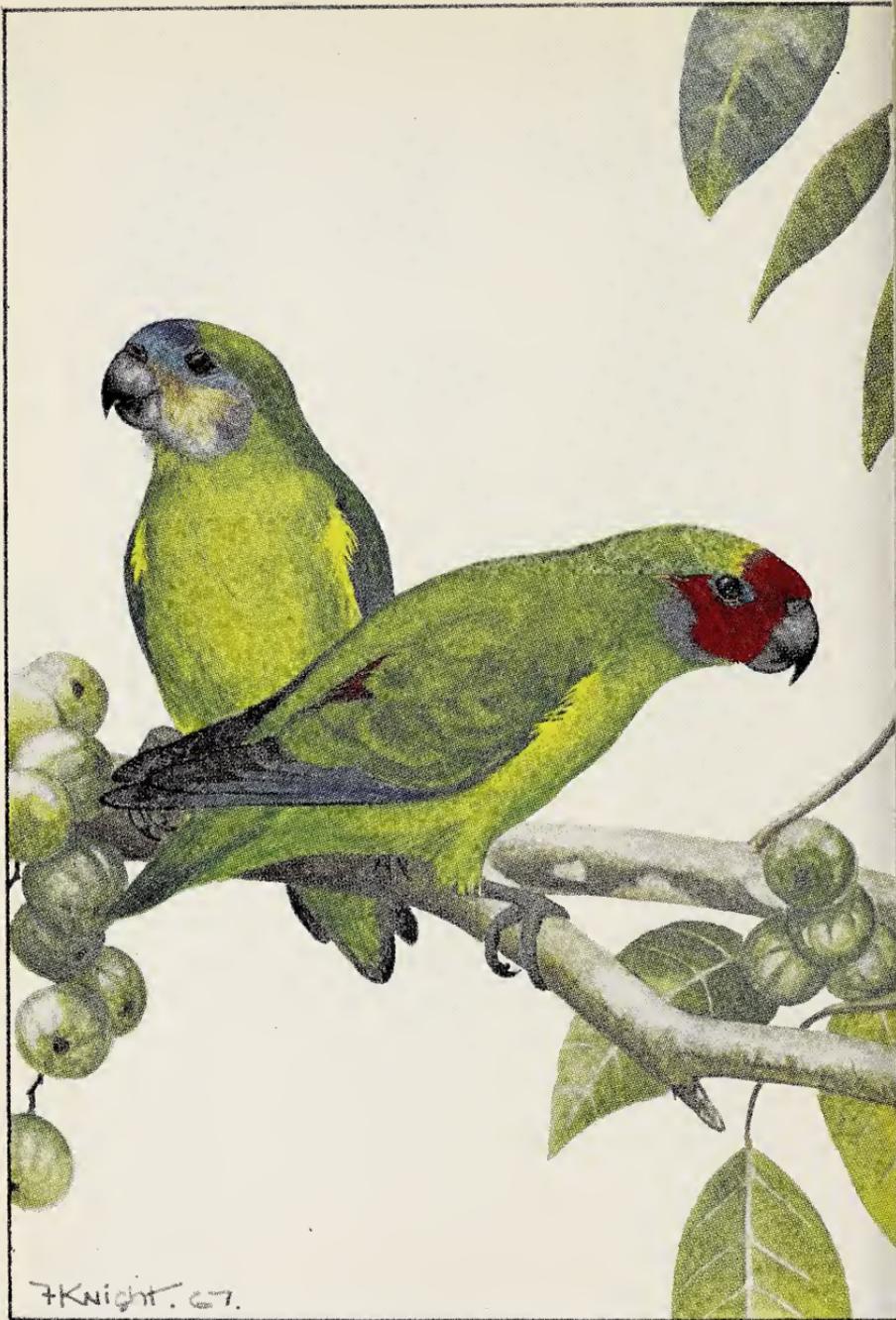
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MARSHALL'S FIG PARROT

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SEPTEMBER-OCTOBER, 1967

THE PARROTS OF AUSTRALIA

By JOSEPH M. FORSHAW (Canberra, Australia)

(Continued from Vol. 70, No. 6, p. 211)

10. THE DOUBLE-EYED FIG PARROT (*Opopsitta diophthalma*)

The Double-eyed Fig Parrot, or Lorilet as it is often called in Australia, is a polytypic species widely distributed throughout New Guinea and the adjacent islands and along the coast of north-eastern Australia as far south as northern New South Wales. It was first described in 1841 by Hombron and Jacquinot from specimens collected near what is now Triton Bay on the southern coast of West Irian. They placed it in the genus *Psittacula*. It was subsequently realized that this name had been used in 1800 by Cuvier for a group of Asiatic parrots. Therefore the name *Opopsitta*, proposed by Sclater in 1860, was accepted and *diophthalma* designated the type.

In the adult male the hind-neck, mantle, back, wings, rump, and upper side of the very short, pointed tail are rich dark green. Some of the feathers on the back and wings are faintly margined with black giving an inconspicuous scalloped effect. The underparts are bright yellowish-green becoming paler and more yellowish towards the lower abdomen and vent. The wing primaries and secondaries are rich dark blue on the outer edges and brownish-black on the inner sides. On the innermost median wing-coverts there is a bright orange-red marking. Under the wings the sides of the body are strongly washed with bright yellow. The underwing-coverts are bluish-green. Rich dark red is exhibited on the forehead, the forepart of the crown, the lores, and on the ear-coverts. This is bordered on the crown by a variable golden-yellow band and on the lower cheeks by a bright mauve-blue marking. A bright sky-blue spot above and in front of the eye is responsible for the bird's peculiar name. The bill is pale grey at the base merging into darkest grey towards the tip, the iris is dark brown, and the feet greenish-grey. Adult females and immatures have the lower cheeks buff-brown instead of red, and below the red line extending underneath the eye there are some pale blue feathers which



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Distribution of *Oropsitta diophthalma*.

become more conspicuous towards the sides of the head. The following average measurements for the adult male were given by Salvadori (1891) :—

Total length 155 mm., wing 90 mm., tail 45 mm.,
bill 16 mm., tarsus 11 mm.

SYSTEMATIC DISCUSSION

A number of sub-species of *Oropsitta diophthalma* have been described. The author (1967 *b*) has discussed the status of each of these forms and the following is a résumé of that work.

(a) *The New Guinea Sub-species.*

The nominate race, the description of which is given above, inhabits West Irian, including the western islands, and western New

Guinea as far east as Astrolabe Bay in the north and Etna Bay in the south.

In 1902 a specimen said to have come from the east coast of Bougainville in the Solomon Islands was examined by Madarász, who, because of the darker green of its body plumage, described *O. d. festetichi*. The species does not occur in the Solomon Islands and the type locality was altered to Astrolabe Bay in northern New Guinea. Peters (1937) and Mayr (1941) synonymized this race with *diophthalma*, but Gyldenstolpe (1955) advocated its acceptance and referred to it ten specimens collected by him near Nondugl in the Wahgi Valley. The author examined two males and a female from the Kubor Range and found them to be darker in colour and larger in size than the nominate race. Pending the acquisition of more specimens it seems advisable to accept *O. d. festetichi* for the birds from the Astrolabe Bay area in northern New Guinea.

The separation of *O. d. coccineifrons*, the race inhabiting south-eastern New Guinea, by Sharpe in 1882 was based on specimens collected in the Astrolabe Mountains. The original description stated that it differed from *diophthalma* by having the lores, cheeks, and front of the face dull red, not scarlet. Ogilvie-Grant (1915) said that it was easily separable as a sub-species because in the male the red on the forehead and cheeks was dull crimson-scarlet and the yellow band across the crown was distinctly wider. In nine specimens examined by the author there was considerable variation in the red of the cheeks and forehead, but the wide yellow band on the crown was a constant character. In addition the red on the innermost median wing-coverts was darker than in *diophthalma*, but paler than in *festetichi*. Although an examination of a larger series of specimens could result in the synonymizing of *festetichi* with *coccineifrons*, both races should be accepted for the present.

Southern New Guinea between the Mimika and Fly Rivers, as well as the Aru Islands, constitute the range of *O. d. aruensis*. Separated by Schlegel in 1874, this race is at once distinguished by the lighter, more yellowish, green of the upper parts and by a complete absence of red from the facial markings of females and immatures. The forehead and crown are bright blue with buff-brown bases to the feathers; the lores and cheeks are buff-brown bordered below by mauve-blue bands extending to and becoming paler on the chin. The adult male resembles the male of *coccineifrons* but has the blue patch above the eye more greenish in colour and restricted in extent.

Fergusson and Goodenough Islands, in the D'Entrecasteaux Group, New Guinea, are inhabited by *O. d. virago*, a race originally described by Hartert in 1895. The adult male differs from the male of *aruensis* by the absence of the blue patch from in front of and above the eye, by the replacement of the mauve-blue bands below the cheeks by a bright

blue spot on either side of the neck, and by the paler red on the crown and face. The adult female has the periophthalmic region green instead of blue as in *aruensis*, has a well-defined bright red spot on the middle of the forehead, has the cheeks green with a few pale blue and buff markings, and lacks the mauve-blue bands under the cheeks.

An almost complete absence of sexual dimorphism is found in *O. d. inseparabilis* from Tagula Island, in the Louisiade Archipelago, New Guinea. This distinct insular sub-species was described by Hartert in 1898. Both sexes resemble the female of *virago* and have the entire head, except the forehead and forepart of the crown, bright green as on the underparts. The forehead is bright red bordered behind on the forepart of the crown by bright blue.

(b) *The Australian Sub-species.*

Keast (1961) cited *O. diophthalma* in Australia as an example of the speciation process acting on isolated populations. The isolates are confined to the three major tracts of rain-forest occurring between the mountain range and the seaboard along the north-eastern coast. As stated by Keast, *coxeni* and *macleayana* are approaching the degree of differentiation typical of a species, whereas *marshalli* is probably a recent immigrant.

In 1911, while camped a few miles from the Jardine River on Cape York Peninsula, a prominent collector and fieldworker named McLennan noted a pair of small "lorikeets" feeding high up in a flowering bloodwood tree (*Eucalyptus* sp.). One was shot but fell into thick brush and could not be located. McLennan stated that he was sure that the birds were *Cyclopsitta maccoyi* (= *O. d. macleayana*). Nothing further was heard of the presence of fig parrots on Cape York Peninsula for more than thirty years. In the latter part of 1942, while engaged in military operations near the Lockhart River, Captain A. J. Marshall sighted fig parrots feeding in flowering trees on the fringe of the jungle. Three specimens were collected, labelled as *Opopsitta leadbeateri* (= *O. d. macleayana*), and forwarded to the Australian Museum in Sydney. They were examined three years later by Iredale and, because of their striking difference from *leadbeateri* (= *macleayana*), he described *Opopsitta marshalli* as a new species. Mayr (1947) compared Iredale's description and drawing of *marshalli* with specimens of *aruensis* and declared that he could find not a single difference. He stated that absolute identity could not be established until the Cape York specimens were compared directly with specimens of *aruensis* but, until a valid distinction was found, *marshalli* would have to be considered a synonym of *aruensis*. To date doubts have always existed concerning the status of this race and many authors have followed Mayr's recommendation.

Despite the work carried out on Cape York Peninsula by collectors and field observers, no sightings of Marshall's Fig Parrot, as *O. d. marshalli* came to be called, were reported for more than twenty years and it was presumed to be very rare. Then in 1963, during a brief visit to Iron Range on the Claudie River, the author met with this small, elusive parrot once again (see Forshaw, 1966).

Meanwhile pests had caused such severe damage to the syntypical material of *O. d. marshalli* that it was useless for determining the status of the race. The author, under a grant from the Frank M. Chapman Memorial Fund of the American Museum of Natural History, led an expedition back to Iron Range in January, 1966, for the purpose of collecting new specimens. An examination of these specimens showed that *marshalli* was indeed a valid race.

Although *O. d. marshalli* from Cape York Peninsula does resemble *aruensis* there are, nevertheless, notable differences. In the adult male the blue patch in front of and above the eye is deeper and darker than in *aruensis* and has no greenish tinge, and the blue on the outer edges of the primaries is darker. In the adult female the feathers on the forepart of the crown are tipped with bright violet-blue instead of pale sky-blue. Unfortunately, no new specimens of the immature male were collected. It is the smallest parrot inhabiting Australia; two specimens collected by the author and deposited in the C.S.I.R.O. collection gave the following measurements:—

	Total length.	Wing.	Tail.	Exp. culmen.	Tarsus.
	mm.	mm.	mm.	mm.	mm.
Adult male . . .	145	82·5	44	14	10
Adult female . . .	136	82	37	13·5	9·5

The events leading up to the describing of *O. d. macleayana* from the coastal regions of northern Queensland are most interesting. They have been presented in detail by Chisholm (1929) so we may restrict their repetition here to a brief summary. In 1874 specimens of a new fig parrot were collected by K. Broadbent in the forests near Cardwell on the north Queensland coast. He immediately contacted Dr. Ramsay in Sydney, Professor McCoy in Melbourne, and John Gould in London. All three went ahead and described the new species. Probably on account of his reputation, Gould won recognition and his *Cyclopsitta* (= *Opopsitta*) *maccoyi* was generally accepted. Unable to locate Ramsay's description, Mathews (1917) adopted McCoy's *leadbeateri* because it appeared one month earlier than Gould's description. His action was almost universally followed until 1929 when Chisholm found Ramsay's original description and showed that, because it predated the others by more than six months, the proposed specific name of *macleayana* was valid. Peters (1937) used *macleayana* thus giving a recognized taxonomist's approval to Chisholm's findings.

The adult male *macleayana* has only the centre of the forehead and

the lower cheeks red, the remainder of the facial area being blue, darker on the sides of the forehead, paler and more greenish around the eyes. The adult female and immatures have the lower cheeks buff-brown with bluish markings.

From a specimen collected on the Barron River, north Queensland, Mathews described *O. d. boweri* and stated that it differed from *leadbeateri* (= *macleayana*) by "being less conspicuously marked, the red on the face and forehead not so bright, the yellow on the sides of the body not so pronounced". The author examined the type and two other specimens from the type locality at the American Museum of Natural History in New York and found that the slight colour differences were due to nothing more than the normal individual variation that is shown in any species of bird. Therefore, *boweri* must be synonymized with *macleayana*.

In 1866 the fig parrot was added to Australia's impressive list of parrots when specimens were sent by Eli Waller, a Brisbane bird-dealer, to John Gould. The following year Gould described the new bird, calling it *Cyclopsitta* (= *Opopositta*) *coxeni* in honour of Charles Coxen, his brother-in-law. *O. d. coxeni* inhabits the coastal rain-forests of southern Queensland and northern New South Wales from Maryborough in the north to the Macleay River in the south. It is decidedly larger than either *marshalli* or *macleayana* and is the second sub-species lacking marked sexual dimorphism. Both sexes have the crown green with a few blue feathers on the centre of the forehead; the cheeks are orange-red bordered below by a variable mauve-blue band. In the specimens examined by the author adult males had some reddish feathers on the lores and surrounding the blue on the forehead; they also had slightly brighter and more extensive red cheeks and deeper blue primaries than did the females.

When he introduced *O. d. tweedi* in 1917 Mathews did not give any distinguishing features. He merely stated that it was based on the specimen described and figured in his *Birds of Australia* (1917). This specimen had been collected on the Tweed River in northern New South Wales. As well as the type another male from the type locality was examined in New York by the author, but no differences distinguishing them from *coxeni* could be found. This race must be synonymized with *coxeni*.

GENERAL DISCUSSION

From the time of its discovery in Australia *O. diophthalma* has retained the status of an unknown, talked about by many ornithologists but actually observed by very few. In 1929, sixty-two years after *coxeni* was described, Chisholm asked, "Is there any genus of Australian birds, containing more than one species, so little known as the Lorilets or Fig-Parrots?" While it is true that we have acquired much more

information on the life history of this species during the intervening years, there is no doubt that it still remains one of the least known of the Australian parrots. This lack of knowledge seems to be due not so much to the rarity of the bird, for it may not be rare at all, but to the difficulty in observing it. A small green parrot living amongst the upper branches of tall trees growing in a dense forest is of course easily overlooked.

As mentioned above, the Double-eyed Fig Parrot is restricted to the three remaining patches of rain-forest on the north-eastern coast of the continent. Observations suggest that within its range each sub-species is probably distributed throughout most of the forested areas. However, it must be pointed out that very few of these areas are extensive and nearly all are being affected by land clearance and the implementation of agricultural programmes.

Coxen's Fig Parrot, as *O. d. coxeni* is called, has been subjected to more loss of habitat than has either of the other races. It is now confined to the less accessible regions still supporting suitable forest. In 1955, while the author was spending a few days on a dairy farm at Uki near Murwillumbah, N.S.W., a cat brought in the remains of one of these parrots. Having been informed that the cat had been successful in catching Little Lorikeets (*Glossopsitta pusilla*) in a locquat tree growing near the cow bails, I decided to investigate the possibility of the fig parrot having come from the same tree. I went down and threw a large piece of wood into the foliage. A flock of lorikeets accompanied by three fig parrots flew from the tree. The fig parrots were distinguishable in flight by their noticeably heavier bodies, rounded wings and very short tails, by their direct instead of weaving flight, and by their distinct call notes. Of course it cannot be taken for granted that they were feeding in the tree, but such was probably the case.

In 1928 a few Coxen's Fig Parrots were seen feeding in fig trees at George's Creek on the Upper Macleay River, N.S.W., the southernmost locality for the species as well as for the race. The northernmost record for the sub-species is from Urangen, near Maryborough, Queensland, where a nest was found in 1934. Localities within these limits from which it has been reported include Gympie, the Blackall Ranges, the Brisbane area and Stanthorpe in Queensland, and the Tweed, Richmond and Clarence River districts in New South Wales. In 1962 it was seen in Tooloom Scrub on the Upper Clarence River, N.S.W. Here two birds were sighted on successive days and a single bird on the third day. All were found in or near fig trees and the remark was made that, once they had alighted, their small size and protective coloration, coupled with the density of the foliage, rendered observation virtually impossible.

Most of the information we have obtained on the life history of *O. diophthalma* has been the result of observations carried out on the

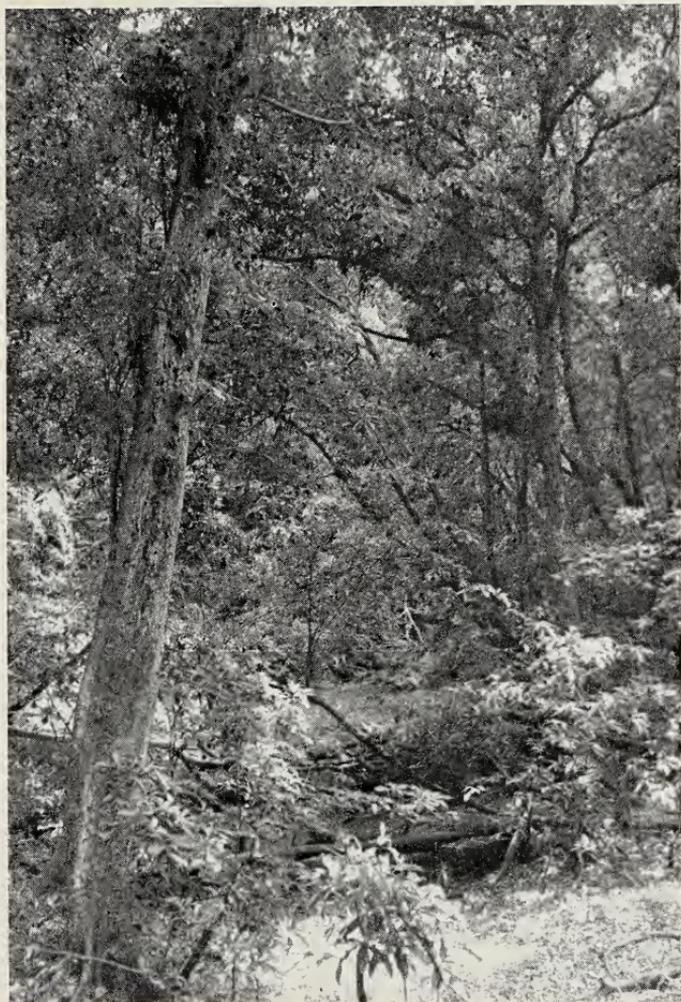
Red-browed Fig Parrot, as *O. d. macleayana* is usually called. This race inhabits the coastal rain-forest between Cooktown and Cardwell or possibly Townsville. Throughout these areas it appears to be quite numerous and pairs or small parties may be seen feeding on the fruits of native figs or flying above the treetops. Occasionally they visit the parks and gardens in Cairns and Innisfail. In 1963 the author had a fleeting glimpse of two birds flying above the forest canopy near Lake Eacham.

Bourke and Austin (1947) found that *O. d. macleayana* frequented open woodland and partly cleared country along the coast as well as the dense forests and scrubs. During the day it fed in trees growing on the edge of the primary forest or in the secondary forest and at dusk returned to the interior of the jungle to roost. One or two large trees were used by all the birds from the area in which the authors worked and at times the flock built up in numbers until it contained more than a hundred parrots. Early the next morning pairs and small parties departed from the tree in all directions on their way to the feeding grounds.

Marshall's Fig Parrot is the race which the author has studied in the field. Information gathered during a period of one week in 1963 and another of three weeks in 1966 on Cape York Peninsula is the basis of the details of ecology and habits given below. It has been supplemented by the addition of the meagre published notes concerning *macleayana* and *coxeni*.

The secretive habits of fig parrots are well demonstrated by the fact that, although they were ultimately found to be particularly abundant in the Iron Range area, only a single bird was seen during my visit in 1963 and four days had elapsed before they were sighted in 1966. As I became more familiar with their habits the task of observing them became less difficult and birds were located every day.

In the Iron Range area the predominant vegetation type is savannah woodland and only along the banks of the Claudie River and the many streams or creeks running into it from the mountain ridges and valleys are there extensive patches of rain-forest. However, *marshalli* appeared to be a true dweller of the dense forest. Early in the morning and towards dusk pairs or small parties were often seen in the open woodland making their way from one patch of forest to another. During bright and sunny weather they travelled by means of short flights from one eucalypt or melaleuca to another, pausing on the topmost branches to preen their feathers. On the other hand, if it was overcast or wet they made only one or, more frequently, no stopovers at all. Imitation of the call-notes upset this pattern and caused the birds to call loudly while repeatedly circling back to the nearest tree. Only on two occasions were parrots flushed from trees in the open woodland during the day and neither of these trees was more than 30 feet from the edge



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TROPICAL RAINFOREST NEAR THE CLAUDIE RIVER, CAPE YORK
PENINSULA : HAUNT OF *OPOSSITTA DIOPHTHALMA*.

of a patch of rain-forest. Of course it is possible that at certain times of the year they leave the forest to feed in flowering eucalypts or melaleucas, thus accounting for McLennan's observation in 1913. During my stay flocks of Rainbow Lorikeets (*Trichoglossus haematodus*) were seen feeding in flowering melaleucas but they were not accompanied by fig parrots.

Our most memorable encounter with Marshall's Fig Parrot in the wild state occurred during the 1966 visit. A member of our party located a large Black Bean tree (*Castanospermum australe*) in which a number of Eclectus Parrots (*Lorius loratus*) roosted each night. Late one afternoon I took up a position at a vantage point overlooking this tall tree towering above the rain-forest canopy at the foot of the hill. Towards dusk the Eclectus Parrots, accompanied by two Sulphur-crested Cockatoos (*Cacatua galerita*), come in to roost. As the last rays of sunshine filtered through the clouds and danced across the forested valley, the harsh, grating calls, that had been coming from the tree since the arrival of the first Eclectus Parrots, were joined by incessant, high-pitched screeches. The topmost branches became a hub of activity with small birds hurtling into the foliage from the enclosing darkness. They were fig parrots and there were hundreds of them. By nightfall eighty-four Eclectus Parrots, two Sulphur-crested Cockatoos, and a great number of fig parrots were roosting in this one tree. Early next morning a companion accompanied me back to the same position and together we awaited sunrise. The first light of the new day exposed a remarkable panorama before us. Moisture trapped in the forests of the valley rose as columns of fine mist and one would be forgiven for believing them to be jets of steam. Birds began to sing and move about in the treetops. The loud booming call of a Cassowary (*Casuarius casuarius*) echoed up from the valley. Purple-crowned (*Ptilinopus superbus*) and Wompoo Pigeons (*Megaloprepia magnifica*) flew from tree to tree, their brilliant colours flashing in the now rapidly increasing sunlight. White-tailed Kingfishers (*Tanysiptera sylvia*) darted through the scrub, their long tails streaming behind them. Nearby a Magnificent Rifle Bird (*Ptiloris magnificus*) commenced to call and the loud, clear notes carried across to the other side of the valley where another bird returned the greeting. Torres Strait Pigeons (*Ducula spilorrhoa*) and Rainbow Lorikeets were passing high overhead on their way to the feeding grounds. The large roosting tree was almost bursting at the seams with movement; Eclectus Parrots were preening their feathers and stretching their wings, and fig parrots were fluttering from branch to branch. Suddenly there was an eruption and fig parrots flew from the tree in all directions. As if this was a signal, the Eclectus Parrots rose high into the air and, calling loudly, made their way over the hilltops and then down towards the river. During the next forty minutes an estimated 200 or more fig parrots left the tree. This

number does not include the birds that were on the opposite side of the tree and hidden from view. A Great Palm Cockatoo (*Probosciger aterrimus*) raised its crest and called loudly before leaving its perch atop a leafless uppermost branch of a tall tree standing in the valley below our observation post. A pair of Red-cheeked Parrots (*Geoffroyus geoffroyi*) paused momentarily in the eucalypt under which we were standing and then continued their flight down to the valley. On the way back to camp we agreed that the sighting of hundreds of Marshall's Fig Parrots, hitherto regarded as being rare, had been the highlight of a memorable experience.

The flight is direct and rather swift. Between each series of wingbeats the wings are withdrawn in towards the body, but so rapid is the entire action that it produces no noticeable undulation in the overall flight pattern. The parrots fly in a straight line and do not indulge in twisting and turning through the trees, a feature so characteristic of the flight of many other species of parrots. Rather than move through the forest trees they prefer to fly above the canopy.

Two calls were given by *O. d. marshalli*. The one most frequently heard was a sharp, penetrative squeak uttered two or three times in succession, each note being quite distinct and not merged into the next. This call was given when the bird was alarmed, just after alighting, prior to departure, or at frequent intervals during flight. The other call, a high-pitched rolling screech, was given only when the birds were in the air, and, strangely enough, was given more regularly towards dusk than in the morning. Bourke and Austin (*loc. cit.*) report that *macleayana* often emits a soft chattering call while feeding, but this was not heard from *marshalli*.

Fig parrots feed on nectar from flowers as well as fruits and berries, particularly native figs. Bourke and Austin reported *macleayana* feeding on the fruits of *Ficus eugenioides* and *Ficus ehretii*. The parrots would bite a piece out of the fruit and gradually reduce it, discarding the unwanted portions which fell in a steady stream to the ground. I observed the same procedure being used by *marshalli* when feeding on the fruits of *Ficus* and *Croton* trees. Coxen's Fig Parrot has been seen in the company of Crimson Rosellas (*Platycercus elegans*) feeding on the fruit of the Blue Fig (*Elaeocarpus grandis*) and with Scaly-breasted (*Trichoglossus chlorolepidotus*) and Musk Lorikeets (*Glossopsitta concinna*) feeding on nectar from the flowers of the Silky Oak (*Grevillea robusta*). In 1963 I observed a male *marshalli* feeding in a small *Bletharocarya involucrigera* tree growing in forest on the banks of the Claudie River. It appeared to be eating the bark of the tree or a fungal growth which may have been on the branch. It fluttered to the upright branch and removed some of the bark or fungus, while holding on to the face of the branch and using its tail for support in the same way as does a woodpecker. A few seconds seemed to be sufficient time for the removal

of a piece of bark or fungus and then the parrot returned to a nearby horizontal twig to crush and digest what it had taken. This entire operation was repeated four or five times.

Very little information has been published concerning the nesting of *O. diophtalma*. In October, 1944, Bourke and Austin found two nests of *macleayana* in the Cairns district. Both were about 30 feet from the ground in small hollows in trees, one a *Melaleuca*, growing in open woodland on a coastal flat. Each contained two white eggs. Some doubts have been expressed concerning the two eggs of Coxen's Fig Parrot taken from a hollow in a rotting tree trunk lying on the ground in open forest near Maryborough, Queensland. The parrot using the nest was identified as *coxeni* from skins loaned to the observer. However, the unusual site of the nest led some ornithologists to believe that it was occupied by Budgerigars (*Melopsittacus undulatus*). It must be pointed out that in New Guinea some species of parrots have been recorded nesting in rotting tree trunks (see Rand, 1942 a), hence the site may not be so unusual. Furthermore, a comparison of the two white rounded eggs with three clutches of eggs of *Melopsittacus* in the H. L. White Collection shows a size difference. The eggs of *coxeni* measure 15 by 12 mm. as against an average of 17.9 by 14.4 mm. for those of *Melopsittacus*. The author is unable to find any valid reason for doubting that the eggs taken near Maryborough in 1934 are those of *coxeni*.

The nest of *marshalli* has not been described nor has the time of the year during which it breeds been determined. Marshall collected the original immature male in September and also noted that the adult female collected at the same time had developing oocytes. No males collected by the author in January were in immature plumage and in none of the adults was there any gonadal development. The Civil Aviation Officer at Iron Range informed us that in the May prior to our arrival a pair of *marshalli* were nesting in a hole in the trunk of a small tree growing on the edge of a clearing in the rain-forest near a camp being used by a geological survey party. He believed that the parrots always nested at this time of the year, that is after the wet season. He also thought that the birds themselves excavated the hollow in the soft, fibrous trunk of a particular type of tree. This immediately brings to mind Rand's (1942 a, b) report that in New Guinea pigmy parrots (*Micrositta* spp.) and *Geoffroyus* spp. excavate their own nesting hollows.

The Double-eyed Fig Parrot is a rare bird in captivity so most of the following suggestions concerning management are conjecture based on what is known of its habits in the wild state. As well as being a popular pet with the native peoples of New Guinea, the nominate race has been kept in aviaries in Europe, the U.S.A., New Guinea, and Australia. Rigid protection laws have been largely responsible for keeping the Australian sub-species out of aviculture. A spacious,

well-planted flight with full shelter against winds and draughts should prove satisfactory for the species. In cold climates the provision of some form of artificial heating would be essential. Aviculturists who have been fortunate enough to possess this charming parrot describe it as being a good aviary bird, settling down well and becoming quite tame and affectionate. However, it also has a reputation for being very delicate, having a short life-span and usually succumbing to fits after eighteen months or two years in confinement. The inclusion of sunflower seed in the diet may have been the cause of this. It seems logical that fruits such as apples, apricots, pears, grapes, and figs should be the basic ingredients of the diet. Almonds, walnut kernels, and berries like hawthorn and pyracantha could be offered as additives. Charcoal might be a valuable aid to digestion and in preventing abnormal growth of the bill. In addition a nectar mixture comprising equal parts of honey and sweetened condensed milk (or infants' food) to three parts of water should be provided at regular intervals.

Although reported to be docile in captivity *O. diophthalma* could become aggressive towards its own kind as well as towards other species if breeding were attempted. The author is not aware of any recorded breeding success in captivity, but a hollow log lined with fine grit or wood shavings should prove satisfactory. Because of their diet fig parrots excrete liquid droppings so it is recommended that the nesting sites be constructed in such a way as to allow regular cleaning.

The Double-eyed Fig Parrot is an inhabitant of Australia's tropical forests, where it frequents tall fruit-bearing trees. Even the most ardent observer may be rewarded with only a brief glimpse of pairs or small parties as they move from tree to tree. Nevertheless, only by patient and careful observation will we learn more about the life-history of this strange little parrot.

ACKNOWLEDGMENTS

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Mr. W. B. Hitchcock measured the eggs in the H. L. White Collection.

The plate accompanying this article was painted by Mr. F. Knight of Canberra.

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IN MEMORIAM

MISS E. MAUD KNOBEL

<i>Hon. Secretary</i>	1922-1948
<i>Vice-President</i>	1949-1963
<i>President</i>	1964-1967

Miss E. Maud Knobel, who died suddenly at her home in London on 9th August, 1967, a few weeks after her ninety-seventh birthday, had been associated with the Society as an officer for over forty-four years. She was the only person in the whole history of the society who successively held the three offices of Hon. Secretary, Vice-President, and President.

She was the elder daughter of Edward Ball Knobel, an astronomer and oriental scholar, who was President of the Royal Astronomical Society and a member of the Board of Visitors of the Royal Observatory, Greenwich. He wrote a number of papers on ancient and oriental astronomy, and was interested in music and photography. Maud Knobel shared her father's interests and, like him, was a member of the Royal Institution of Great Britain. She became a Fellow of the Zoological Society of London in 1920 and up to the last two years regularly attended the scientific meetings.

But it was as an aviculturist and specialist in parrots that she was internationally renowned. As the late Dr. Amsler wrote in the *MAGAZINE* on Miss Knobel's retirement as Hon. Secretary in 1948: "A gift of a pair of Doves started this little lady on the fascinating road of aviculture at the tender age of two years; then followed a Canary which lived for twenty years, a good proof of the meticulous care which she has ever since bestowed on her birds and other pets. The Canary was followed by hand-reared Blackbirds, Thrushes, a Magpie, and a Rook, but the most remarkable was most certainly a Sparrow, a species which, although cheeky and fearless in the wild, does not lend itself well to cage life. The bird learned the song of the Canary and when liberated found himself a mate and reared a family which he brought back to his old cage-home for food. Finally, in 1911, the first Parrot, a Blue-fronted Amazon, was purchased, and this started a series of birds of this tribe for which Miss Knobel has become justly famous. Of the forty-two species of Amazons she has kept twenty-seven and there have of course been many African Greys, Cockatoos, Parrakeets, Lovebirds, Budgerigars, and so forth."

During her studies of the skins and skeletons of the psitticines Miss Knobel discovered the difference in the pelvic structure of males and females, and was regarded as a great authority on sexing these birds. She contributed a large number of valuable and interesting articles to



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MISS E. MAUD KNOBEL.

the MAGAZINE and was always ready to impart her great knowledge to others.

Though of such advanced years her sight, hearing, and memory were in no way impaired and she continued to take an active part in the affairs of the Avicultural Society up to the end, fully intending to preside over the autumn Council meeting. Her last public act was in March last when she presented the President's medal to Monsieur Jean Delacour with an eloquent and well-informed speech. Miss Knobel had very wide interests ranging from music to boxing, which she followed avidly on television ; she was also no mean snooker player.

EDITOR.

“ MAUDIE ”

An Hon. Secretary's Appreciation

Forty years have passed since I first met “ Maudie ”. Having a deep interest in parrots we had something in common and our friendship endured down the years. It was, in fact, “ Maudie ” who first called me “ A. A.”.

Many tributes will be paid to “ Maudie's ” memory, so I am confining this appreciation to her services to the Society.

“ Maudie ” was asked to become Hon. Secretary on a temporary basis when illness necessitated the resignation of J. L. Bonhote, in June, 1922. At that time the Society was moribund, due mainly to the post-war slump. Membership had dropped to about 240 and the financial position was critical. But thanks to “ Maudie's ” persuasive powers it was saved from extinction by the united generosity of the then Members of Council, who subscribed liberally to put the Society on its feet again. During the following years she unremittingly nursed the fortunes of the Society and they gradually but steadily improved.

The tenure of office was stretched to five, ten, and then twenty years and, as Dr. Amsler has said, no one was “ foolish enough to suggest any substitute for her services ”. And then eventually, after twenty-six years' yeoman service, “ Maudie ” retired. She had borne the brunt of the slump after the First World War, carried on during the Second, and for the very difficult period following it. But in 1948 she decided that the time really had come when someone just a little younger in age, even if not in heart, should relieve her of what had been merely a *temporary* appointment.

During the take-over period “ Maudie ” was kindness itself and I am very grateful indeed for her guidance and advice during that time.

Since the foundation of the Society seventy-four years ago there have been, apart from “ Maudie ”, eleven Hon. Secretaries. None has or is ever likely to do as much for the Society as “ Our Maudie ”.

A. A. P.

Maud Knobel and I joined the Avicultural Society the same year, in 1916, but it was not until 1922, when she was elected our Secretary, that we became really well acquainted. As everyone knows, she was a great Parrot lover and expert, and I never could think of her except with her birds and her dogs. There were always dozens of cages in her rooms.

She rendered immense services to the Society, later on as Vice-President since 1948 and as President after 1963. She was always present and efficient, no matter how old she was, nor how much hurt in accidents. It is hard to believe that she has now left this world. Her keen mind and determined spirit never failed her and one came to think that she would always be with us.

I am perhaps the last of the older members who has taken an active part in the work of the Society since half a century, and because of our old and affectionate association Miss Knobel's departure has grieved me deeply ; we had in common so many fond memories. She will be missed by many and always be remembered as a particularly capable and devoted officer of our Society.

J. DELACOUR,
Vice-President.

It was with a sense of deep personal loss that I heard yesterday, 10th August, of the loss of our dear Miss Knobel, whom I had seen for the last time only two days earlier when she had discussed birds with her usual interest and animation. She was a lifelong friend of my father and for a great many of those years Secretary to the Avicultural Society and later its much loved President. She had great knowledge of birds, especially parrots, of which she always had at least three in her bedroom, and she was also a great dog lover and kept Pekinese.

She was a wonderful woman with her keen interest in life, people, also music, and she maintained this love until the end of her long life.

One can hardly imagine the Avicultural Society without Maud Knobel. It is indeed the end of an era and she will be sorely missed by her many friends.

RUTH EZRA.

I cannot allow the passing of our late President, Miss Maud E. Knobel, to go by without paying my personal tribute to her memory.

Although precluded from attending many gatherings of our Society, due to circumstances over which I had no control, over the years I had the pleasure of conversation with her on many occasions and this never occurred unaccompanied by a smile of welcome. If my memory serves me correctly her regular attendances at meetings and other gatherings of the Society must have amounted to a unique total. As

most members are aware, her favourite section of aviculture was that devoted to parrots, making a study particularly of the genera *Amazona*.

ALLEN SILVER,
Vice-President.
 (*Member of the Society since 1904.*)

We would like to express our sorrow at the passing of Miss Maud Knobel. She became a Fellow of the Zoological Society in 1920 and was so well known to all members of the staff as to be regarded as almost an essential part of the Zoo. Many of these staff members are now retired and we are certain that all would wish us to speak on their behalf.

Although all the staff knew her, naturally those of the bird sections, particularly the small birds and parrots, came into closer contact with her. She was always one of the first to come and view any new additions and enliven the proceedings with her friendly, cheerful ways and conversation. Her bright personality and interest continued until the last and made one often forget her advanced age. Her experience with all kinds of birds was very great indeed, while her knowledge—which she was always ready to impart—and skill with parrot-like birds was unique.

She was the possessor of a most happy and unforgettable personality and the passing of Miss Knobel will be sadly mourned by all who knew her, but we can be consoled by the fact that she enjoyed a very full life with her many friends and interests up to the last.

E. B. TANNER, *Retired Overseer of Birds.*

D. G. NEWSON, *Overseer of Birds.*

A. F. SHAMBROOK, *Head Keeper, Parrot House and Eastern Aviary.*
The Zoological Society of London.

* * *

A memorial service for Miss E. Maud Knobel, arranged by the Avicultural Society, will be held at St. James's Church, Piccadilly, London, W. 1, on Monday, 2nd October, 1967, at 12 noon.

The service will be taken by the Rector of St. James's Church, the Rev. W. P. Baddeley; the Address will be given by the Rev. Canon J. R. Lowe and the Lesson read by Dr. R. Cove-Smith.

* * *

BREEDING THE INDIAN BLACK REDSTART

(Phoenicurus ochrurus rufiventris)

By Mrs. K. M. SCAMELL (Newdigate, Surrey, England)

Black Redstarts of various races occur in Europe, N.W. Africa, and in parts of Asia. According to *Popular Handbook of Indian Birds*, by Hugh Whistler, two races are found in India, *P. o. phoenicuroides* which breeds in Persia, Turkestan, Afghanistan, and in the high mountain areas of Kashmir and western Tibet, but wintering in the plains of N.W. India, and *P. o. rufiventris* which breeds from Tibet to China and winters in S.W. China, Burma, Assam, N.E. Central and Southern India. The Indian Black Redstart has been seen on migration as high as 20,000 feet and is reported as having nests up to 17,000 feet in the Himalayas (*The Redstart*, by John Buxton).

The male Indian Black Redstart (*P. o. rufiventris*) differs in appearance from the male European Black Redstart (*P. o. gibraltariensis*) by having chestnut-red underparts and no white wing bars. Moreover the colour of the eggs is a light greeny-blue, lighter but nearer in colour to those of the Redstart (*Phoenicurus phoenicurus*), whereas the eggs of *P. o. gibraltariensis* are white. When comparing the male *P. o. rufiventris* with *P. o. phoenicuroides*, the former is black above with the wings black whereas the latter is a lighter black above with the wings shading to brown. In the hens the distinction is just as pronounced, the medium brown above and lighter brown beneath of *rufiventris* comparing with a light brown above and even lighter brown beneath of *phoenicuroides*.

Our first pair of Indian Black Redstarts were purchased late in 1962 and were separately caged in a birdroom until the middle of April, 1963, when they were released into a small brick-built and badly-lighted little aviary, if you could call it such. Two nest-boxes were placed high up—one a half-open fronted cardboard box and the other a wooden lovebird nest-box with a $2\frac{1}{2}$ inch diameter entrance hole. The hen was not seen carrying nesting material until 23rd June, 1963, and a check showed she was building a deep unlined cup of grasses in the cardboard box. On 30th June the hen was off the nest, which was again checked to reveal two eggs. A third, broken, was on the floor. On 3rd July another check still showed two eggs. A chick was hatched on 12th July. Ants' eggs, small mealworms, and gentles were fed as well as the usual insectivorous food. On 21st July a dead chick was found near the door of the aviary and at the first opportunity the nest was checked to find a second young bird within, but this time very much alive. On 28th July there was no sign of this bird leaving the nest and as live food consumption had dropped and neither parent had been seen to carry food to the nest it was examined and a dead youngster was found inside. It was fully fledged and had probably died the previous day. From the dull light reddish colour of the

feathers covering the abdomen it was thought to have been a cock. No further nesting attempt was made that year.

In 1964, after wintering in a birdroom, the pair were again placed in the same aviary. They nested in early June; there were two eggs on 7th June and on 19th June it was suspected that one or more had hatched out, and unlimited live food was given. On 21st June shell fragments were seen on the floor. When the hen was off the nest it was examined, to find three eggs only! On 2nd July the three light greeny-blue eggs, which were clear, were removed. On 7th July the hen was seen building a new nest—this time in the lovebird nest-box. On 21st July there was one egg, but it was cold and the nest had the appearance of being abandoned. This finished the breeding attempts for 1964.

After caging separately in the birdroom for the winter, they were again placed in the same brick aviary in the spring of 1965, but on 27th May the cock was picked up dead; there was no sign of illness or injury. The hen seemed quite fit but she too died in a cage the following winter.

Our second pair of Indian Black Redstarts were purchased from two dealers in November, 1965. Both dealers were importing from Calcutta and after checking skins at the Natural History Museum I have no doubt that this pair, like our first, are *P. o. rufiventris*. The pair were in very rough feather and poor condition and were caged together in the birdroom for the winter. In April, 1966, they were placed in a planted aviary to themselves as by this time we had decided to abandon the little brick aviary previously used. They quickly settled down and had, before we released them into the aviary, improved in condition to give us hopes that the pair would breed before the summer had passed. Various nest-boxes were placed in the aviary high up. However, in the far better conditions given to this second pair, no breeding attempt was made in 1966, so in October they were caged separately in the birdroom. We now felt that a planted aviary was even more unsuitable for this species than the little brick aviary mentioned earlier, so when the spring of 1967 came round we placed the birds in a third aviary measuring 6 feet by 2 ft. 6 in. by 6 ft. 6 in. high with a shelter at one end and a sandy earth floor growing the odd tuft of grass. Opposite the shelter grows a Russian Vine which spreads through the netting and over the roof and requires constant trimming. Towering over this little aviary is a 20 feet high cobnut tree and an even higher silver birch so altogether it is a very shady place. High up in the shelter were placed two nest-boxes, one half-open fronted and the other with a 2½ inch entrance hole in an otherwise closed box with sloping roofs. The pair were fed insectivorous food plus gentles and a few mealworms twice daily.

As the weeks passed there was no sign of breeding activity and we

were beginning to think that the aviary was again unsuitable, when in the afternoon of 15th June we saw eggshells and one chick dead in shell, all on the floor of the shelter. The shell fragments were a pale greeny-blue and added up to probably two or three eggs in total. The chick or chicks were either hatched that morning or late the previous day. Gentles and mealworms were now given *ad lib* and as many as possible of the latter were soft-skinned. We had no live ants' eggs. Consumption of mealworms was, however, very low and even up to the tenth day after hatching the daily requirement did not exceed thirty. On that day, when the hen was off the nest, I reached up and could just feel one or two chicks in a deep cup in the half-open-fronted box. In view of the low mealworm consumption it was a relief to know that at least one young bird was alive ! I checked again on 30th June and was now satisfied there was only one chick which seemed fully fledged and large enough to leave the nest, which it did the next morning, the seventeenth or eighteenth day after hatching. It was a large bird and kept to the floor for the next three or four days. However, just when I was beginning to wonder if there was anything wrong with its feet it started to perch high up. I felt that the parents were not feeding it sufficiently so I placed a mixed food pot on the floor. In minutes I saw it pick up and swallow a gentle and from then on it flew well and perched as high as its parents. The hen was seen to feed it on 6th July and again two days later. I removed it from the aviary on 12th July as it was now ignored by its parents and there was a risk they would go to nest again. The young bird was caged for two weeks and gradually "meated-off" on to insectivorous food with a minimum of live food before it was placed in a little aviary to itself. It is very fond of spiders and makes short work of any dropped in its flight. I am sure it is a hen. At the time it left the nest it had a short rufous tail, the flight feathers were a dark reddish-brown, and the back and head a medium brown. The chest was pale brown and the remaining underparts much paler. To-day, 2nd August, the tail has grown to about 2 inches and the chest and underparts have evened up in colour to a dull light brown. The legs and feet are black. The parents have not gone to nest again and look as if they are about to moult.

As described, Mrs. Scamell has bred the Indian Black Redstart (*Phoenicurus ochrurus rufiventris*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

BREEDING THE PINNATED GROUSE OR PRAIRIE CHICKEN

(*Tymphanuchus cupido pinnatus*)

By W. A. NEWLANDS (Eley Game Advisory Station, Fordingbridge,
Hants., England)

Among the most fascinating and well-documented of the numerous species of gamebirds in North America is the Pinnated Grouse, always referred to in its native States as the Prairie Chicken. There were formerly three sub-species, but the extinction in 1931 of the Heath Hen (*T. cupido cupido*) of the Atlantic coast barrens, left only the Greater Prairie Chicken, with which we are concerned here, and the Attwater's Prairie Chicken (*T. c. attwateri*) of south-eastern Texas. A second closely-related species is the Lesser Prairie Chicken (*Tymphanuchus pallidicinctus*) which inhabits a narrow area of north-west Texas, Oklahoma, and Western Kansas.

All these birds inhabit America's open heaths and prairies, and at one period in the late 1800s they were the most abundant upland gamebirds on the Continent. The spread of corn growing helped them greatly in the early stages of breaking-up the prairie, providing food and cover. However, when the proportion of virgin grassland fell below 40 per cent or so, the Prairie Chickens went into decline. By 1907, for example, Missouri had to close its annual shooting season on these grassland grouse and it has never been reopened. Shooting was not the cause of the trouble, as continued decreases in numbers have shown, and even the abandonment of much grain-growing land has not helped the birds. In most States throughout their former wide range, the Prairie Chickens have either disappeared or been reduced to remnants living in reserves containing some of the few remaining areas of true prairie grassland.

In 1963, a Grouse Management Symposium published by the Journal of Wildlife Management, reported: "The ranges of both Greater and Lesser Prairie Chickens have been drastically reduced, largely because the original natural grassland habitats have been eliminated. Both species now occur only locally throughout their formerly extensive ranges."

The Greater Prairie Chicken is a most interesting gamebird, with a display which has few equals among birds of this type. The cocks weigh about 1,000 g. and hens 850 g. In brief, the description of this grouse might be given as similar to the European Greyhen, but this is misleading to a certain extent because the warmth of brown colouring and intricate barring of the plumage are hardly conveyed by such an outline. However, the Prairie Chicken is a true grouse, with the stocky shape of its European relations, feathered legs, and wattles above the

eye of the male. Adult males and females are quite readily distinguished, the former having long pinnae feathers on the neck, concealing a bare patch of wrinkled orange-yellow skin on each side. In the female, the pinnae are short and comparatively inconspicuous. In young birds, the sexes can be distinguished as the adult tail feathers moult in, these being solid black in the males, barred with buff in the females.

At a distance the sexes appear similar, except during the breeding season, when the cock birds put on a spectacular performance on "booming grounds", the equivalent of our blackcock's lek. Males gather on some open area of grass, starting before sunrise, and each occupies a small territory on the booming ground. The birds go through a series of pattering dances, then inflate the neck sacs—bright orange and about the size of a tennis ball—following this with a noise resembling "ooooo-oo-oom"; rather like the sound made by blowing over the neck of a large bottle. This booming has the strange qualities associated with other low notes when uttered in very open areas: it does not seem to be very loud when heard close at hand, and yet it carries for long distances. The booming of a group of ten to fifteen Prairie Chickens can be heard for over a mile on a still morning. Sometimes the boom is followed by a wild cackle.

Each cock performs individually, usually ignoring his neighbours. The whole dance-boom-cackle process takes less than four seconds, but it is repeated without pause for several hours at a time.

The act begins with a short run forward, then the cock stops abruptly, stamps hard on the ground with a noise like fingertips drumming on a table-top, turning in a half-circle as he does so. Meanwhile, the pinnae are erected like ears, joining to form a single "crown" over the head and the clear yellow wattles become more prominent. The tail is also erect, showing white underneath, and the primary feathers are half-spread down towards the ground. The boom is uttered, the sac deflates, and the cock may leap up with a cackling "kek, kek, kek". Sham fights occur on the booming ground, but there is little real strife.

Hens join the cocks on the booming ground in late March or early April, but do not show much interest. However, they later pass through the younger, weaker cocks on the perimeter of the booming ground and mate with one of the dominant males in the centre.

The Prairie Chickens boom morning and evening in March-June and again in September-November, with lower intensity in the autumn. The birds seem to be remarkably unaffected by predators or disturbance during their displays, although they would appear to be so vulnerable. During a study in Wisconsin, a total of 4,745 morning watches was arranged at booming grounds and only three cocks were seen to be killed by predators—two by large owls and one by a harrier.

During a visit to Britain in 1964, Mr. Charles Schwartz, of the

Missouri Conservation Commission, mentioned his work with the Prairie Chicken to fellow game biologists in this country and arrangements were made for the importation of a small number of eggs in 1965. These were brought in with the co-operation of Mr. P. J. F. Enderby, of the West of England Conservation Society, Swindon, Wiltshire.

Twenty-four eggs were imported, great care being taken with their transport in several types of aircraft and even a sports car! Sixteen eggs were sent to other helpers in the project (all of which failed to produce viable young) and eight were brought to the writer at the Eley Game Advisory Station, Fordingbridge, Hampshire. All eight hatched, despite the fact that the first bantam under which they had been rather hurriedly set on 17th May, stood up at eight days. On 12th June, after twenty-five full days of incubation, the brood emerged and were transferred to a 10 by 5 feet movable pen on the lawn of my home. The pen was of the type known to game-farmers as an "Andover" pen, commonly used for rearing grey partridges. This pen has no coop, but solid sides and covered ends, only the central roof of the pen being of wire netting. One of the ends is covered with transparent plastic, allowing sunlight to reach a dusting tray which extends for the full width of the pen. Years of study with partridges have shown that the dry conditions offered by this type of pen will allow a bantam to rear, on average, fourteen out of fifteen chicks to sexable age (twelve weeks), even in wet summers when the wild parents are losing nine-tenths of their offspring.

The main colour of the Prairie Chicken chicks was bright golden yellow, with russet brown markings on the back. Their feet and legs were a particularly clear shade of what can only be described as golden pink, with a fuzz of very bright yellow down on the front of the legs. The main impression was of a big-footed, big-eyed chick, with much more golden down than any other gamebird, at least on the British list. The piping note of the chicks resembled that of a very distant oyster-catcher.

The young birds tended to look upwards for food, examining the underside of every blade of tall grass with tilted heads. All game food crumbs were ignored. Lack of keenness among the chicks prompted a hurried search for more attractive food and this was obtained by placing a white sheet under the edge of nearby beds of nettles and under hedges, knocking out live-food in variety with a big stick! This produced the desired effect, with all eight chicks feeding at once—but it was a full-time job.

Gradually, however, the young birds were persuaded to take maggots coated in a vitamin/mineral mixture and later mealworms. Water was another problem. American sources said that the chicks would ignore surface water and this proved to be the case. At first, the use of a hand-sprayer provided "dewdrops" on bunches of cut grass,

but later a jam-jar was placed on the wire roof of the pen with a strip of terry-towelling (about $\frac{3}{8}$ of an inch wide) dangling from the water in the jar down to a point about 2 inches above the ground. This provided a drip a second when the jar was full, falling off in a few hours to a drip every 15–20 seconds. The bright droplet invariably drew the eyes of the chicks and solved the difficulty very satisfactorily.

By the third day the chicks were on to their basic rearing diet : mealworms covered in "Stimulite" canary rearing food, maggots kept in the same food, and turf ants' nests (ants, pupae and all). An attempt was made to introduce wood ant pupae, but although these were quickly eaten, the few remaining ants in the debris of the nest were so alarming for the tiny chicks that they refused to go near the proffered pupae. By this stage, the chicks would eat readily from dishes on the ground, although they preferred to climb among clumps of cocksfoot, turves of which had been introduced to the pen for their amusement. They clambered up through the grass, their big feet reminding the observer of moorhens in the reeds. The brood had been confined in one end of the pen for two days, by means of a partition. This was removed on the third day and they kept close to the bantam, so it was not replaced.

On the fourth day the weather, previously dry and sunny, turned cold and wet and one chick died, apparently of chilling. Management continued as before, with the addition of "Multivitamin" to the water. The pen was moved to fresh ground for the first time on the sixth day. All food was still being shared by the broody bantam, although her taste for mealworms was becoming expensive.

By the seventh day the birds were becoming well feathered, particularly on the wings, with heavily barred juvenile secondaries and wing coverts. When they flapped in exercise, they rose off the ground. At this point, a reference was found to the U.S. practice of feeding mealworms dipped in egg yolk and "crumbed" with gamebird starter. This sounded ideal, but the source neglected to mention that mealworms die instantly—or at least become completely immobile—if dipped in egg yolk. The "crumbed" mealworms lay motionless in the pen and were ignored. If the tail end only was dipped, the larvae remained alive and were eaten. This process was elaborate and time-consuming, so it was dropped.

There were still some worries about deficiencies in the basic maggot/mealworm diet, most of the additives being rubbed off before the chicks consumed the larvae. For this reason Phillips Yeast Mixture was added to the list of proprietary products in the armoury and it was found to adhere particularly well to the maggots.

By the thirteenth day the chicks were strong on the wing. One escaped when startled by a wood ant among some pupae being placed in the pen. I was away from home at the time and my wife (only a



[W. A. Neulands

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PRAIRIE CHICKENS AT 8 DAYS—19TH JUNE, 1965. THE CHICKS GREATLY ENJOY CLAMBERING AMONG TALL GRASSES.



[W. A. Newlands

PRAIRIE CHICKENS AT 19 WEEKS. MALE ON RIGHT WITH TWO FEMALES.

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month away from giving birth to our third child herself) managed to capture the escapee in the herbaceous border after a $2\frac{1}{2}$ -hour stalk!

On the fourteenth day, the first greenstuff was being eaten—mainly chopped lettuce and dandelion, with some white clover. There was a break in available supplies of mealworms at this time, so the diet of maggots and turf ants was varied with moths caught in a light trap set overnight. Long, stringy dandelion shoots had an almost fatal fascination for the chicks and they would choke down stalks as long as their own bodies, if the greens were offered unchopped. By the sixteenth day, the broody's taste for mealworms had become prohibitive and she was confined behind 2-inch mesh wire-netting in one end of the pen, which was now being moved daily on to fresh ground. Pheasant starter was left before the foster-mother all the time so that she could encourage the Prairie Chickens to eat it. The young birds were very even in development at sixteen days, with no runts and no particularly large poults. Shortly after this, however, one chick went into a long decline, being culled at the age of three weeks and four days. A post-mortem by Mr. T. H. Blank, Biologist at the Eley Game Advisory Station, revealed traces of blackhead and the poults were put on a six-day-course of "Emtryl".

At four weeks the first signs of the booming dance behaviour were noted, with two little poults, presumably cocks, standing face to face, tails fanned erect and patches of bare skin (pink at this age) showing on the neck. Five days later a young cock was seen "dancing", following the entire pattern of the adult display—quick run, stop, patter in semi-circle, stop, "boom" (silent in the juvenile) and jump aside, lowering pinnae and tail.

At $5\frac{1}{2}$ weeks, the birds were very tame, feeding from the hand and looking very attractive with russet crowns rather reminiscent of Erckel's Francolin. They were jugging separately from the bantam by this time (six weeks) and when she laid her first post-broody egg she was removed. A week later the young cocks were displaying frequently, their pinnae feathers showing more prominently. The skin at the sides of the neck was bright purplish-red by seven weeks, but still not inflated and the display remained silent. This proved to be the case right through until the spring of 1966.

By seven weeks the brood was weaned on to game starter crumbs with generous amounts of lettuce and clover. The quality of white clover seemed to be important and it was helpful that this grew freely on the lawn—which was now looking very disreputable and overgrown! At each daily move on to fresh ground, the previous site would be found to have several juvenile flight feathers lying about and the moult was proceeding very quickly.

The number of birds was reduced from six to five when an over-helpful neighbour moved the pen in my absence, crushing one poult,

which proved on post-mortem to be a healthy male. The alarm shown by the five Prairie Chickens on 16th August when a telephone linesman was working at the top of a nearby telegraph pole was interesting. When frightened they stood very erect, remaining almost motionless for nearly an hour. This was preceded by some anxious patrolling of the pen, bodies drawn up into a tall, slim shape and tails flicking nervously downward. When the poults were merely curious, the feathers of the head and tail were erect.

On 29th August, another poult died of blackhead. Unfortunately no precautionary doses of "Emtryl" had been administered since the earlier course of treatment, the birds all appearing to be healthy. The disease struck this bird down without any warning and at first it was thought to be the victim of a night fright. Post-mortem revealed the infection and also showed the poult to be another male. At thirteen weeks the tail feathers were all shed within a few days, leaving the Prairie Chickens looking extremely "stumpy", but when the new feathers appeared they were sexable, the two males showing orange markings on the pinnae and dark outer tail feathers (no barring). By fifteen weeks all the pale shafted juvenile feathers of the dorsal area had been moulted out. Body plumage is mature by this age, although pinnae are short in males and tails are not complete.

On 20th September, at the age of fifteen weeks, the birds were moved from the small rearing pen to a permanent 30 by 10 feet pen erected on rough grassland at Fordingbridge. The birds were apparently quite tame and the risk of moving them in an unpadded wooden crate seemed acceptable. The 8-mile journey from my home at Ringwood nearly proved fatal. One cock split his scalp open, exposing a $\frac{1}{2}$ -inch wide area of skull. This wound was hurriedly stitched with black thread and the bird released (without any great hope) into the wintering pen. Primaries of both wings were clipped at this stage on all four birds. Food was now poultry growers pellets, wheat, greenfood, and "extras" such as sunflower heads, apples, or hawthorn berries.

The move made the Prairie Chickens extremely wild, so that they cowered down at the sight of any visitor, "freezing" in the long grass. The clipped primaries prevented them from taking wing when approached but they would leap up with a startling cackling and clucking. The injured cock gradually recovered and eventually his plumage was indistinguishable from that of the other male. The two hens and two cocks lived happily as a "covey", with no scrapping or fighting of any kind. This is similar to their form of existence in the wild, with amicable winter flocks which break up when the males start to display, the females becoming solitary until they bring off their own broods.

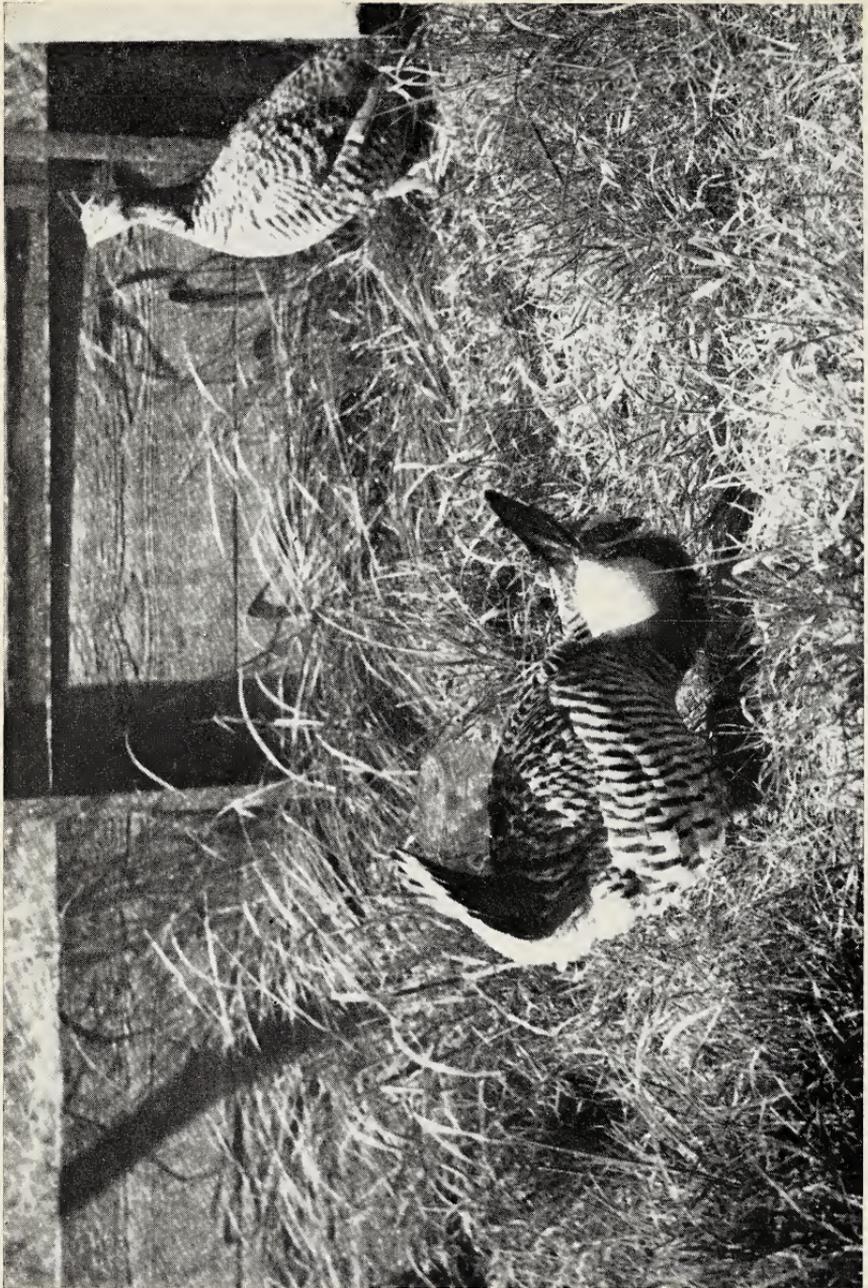
By mid-January the first signs of this spring break-up of the flock began to appear, one cock rushing at the other when he tried to display.



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[W. A. Neulands

PRAIRIE CHICKEN MALE BOOMING—MAY, 1966. THE DISTINCTIVE OUTLINE OF THE WILD BIRD IS SLIGHTLY SPOILED IN THIS CASE BY THE CLIPPED PRIMARIES.



[W. A. Neelands

PRAIRIE CHICKENS, MALE BOOMING—FEMALE IN BACKGROUND.

Copyright]

Snow made the birds uneasy, but they continued to thrive on a simple diet of growers pellets, wheat, and kale. "Multivitamin" was added to the water daily. On 20th February, the two pairs were separated, one pair remaining in the 30 by 10 feet pen in which they had all been wintered and the other two birds being run through into a 20 by 10 feet pen which had been added alongside.

One cock bird took a particular interest during any visits by my younger daughter, then aged three, and he would rush up to the wire, raising his pinnae and tail, and cackling. The neck sacs remained uninflated, however, and this display proved to be very different from the full booming performance.

Absence on holiday from 1st to 16th April prevented me from seeing the development of the booming display, but on my return both cocks were in fine fettle, performing freely in the morning and intermittently throughout the day. Gradually the birds grew used to spectators and many visitors saw both cocks in full display. On one occasion (5th May) an entire lecture course of forty-five I.C.I. agricultural representatives lined a steep bank above the breeding pens and the birds displayed for them, unabashed! The variety of noises made by the cocks was extraordinary. A ringing "kow-kow" formed part of the display and they often added the "KAA-KAA, KEK-KEK-KEK" of alarm or anger. They boomed all day throughout May and the performance tailed off in July. The hens were usually ignored, although the cocks did turn towards them when they passed close by, booming towards them. No actual treading was observed.

One hen started to lay early in May, the eggs being found under cover in various parts of the pen. The eggs are similar to those of other gamebirds in shape, khaki coloured with very slight brown spots. By 22nd May, eighteen eggs had been laid. The first clutch of nine was put under a broody hen on that date and the second clutch eight days later. The last egg was laid by the productive Prairie Chicken hen on 27th May (a total of twenty-one eggs). Throughout the laying period the birds were fed entirely on poultry breeders' pellets and greenfood.

On 17th June, after twenty-six days, five chicks emerged from the first setting of nine eggs. There were three "clear" eggs and one dead in shell, unchipped. Owing to pressure of other work, these chicks were put on a rather spartan diet—mainly of turf ants and pupae—which did not seem to agree with them very well. Two died at five days, of chilling, and this was partly blamed on a very nervous, active broody hen. She refused to settle on the chicks and on 23rd June (six days old) the remaining three were found dead.

The following day six further chicks emerged from a setting of twelve eggs. Three were dead in shell, unchipped, and three "clear". These chicks were given the elaborate treatment which had been lavished on the previous year's youngsters and did well from the start.

There were no difficulties with the broody hen, a very tight sitter and sensible mother, and the brood progressed quickly, although again one chick was lost to blackhead. The only other rearing loss came at about nine weeks, when one female poult broke a wing as a result of a night fright. The damage was severe with bones protruding, and the bird was destroyed.

The non-laying adult hen had died on 22nd June, post-mortem examination revealing avian tuberculosis and four pairs of gapeworms (*Syngamus trachea*). The bird had appeared in good condition up to the time of death, but was very light in the hand when picked up dead (post-mortem weight was 579 g.). On 4th August, the two adult cocks and one hen were run together in the combined breeding pens (50 by 10 feet). Later that month, all three birds developed symptoms of gapes and were put on pellets containing Thibenzole at 0.6 per cent, which cleared up the trouble. Gapes is a persistent problem at the Game Advisory Station, where 14 acres of ground have been used intensively for gamebird propagation work for nearly twenty years. The presence of numerous diseases is almost a help to anyone working with pheasants and partridges, but the same could not be said of the more unusual species!

The three adults and four poults were run together in the large pen on 11th September and a week later they were seen by Mr. C. W. Schwartz on a visit from Missouri, and Mr. P. J. F. Enderby. On 20th September, Mr. and Mrs. Schwartz and Mr. Enderby joined the writer in presenting two young Prairie Chicken males to London Zoo. These were accepted by Mr. J. J. Yealland, Curator of Birds.

At this time, the decision was taken to disperse the stock, owing to pressure of other work and shortage of pen accommodation urgently required for work with Japanese green pheasants (*Phasianus versicolor*) and other species. One old male and one home-bred young male were presented to Mr. F. E. B. Johnson, Stagsden, Bedford, and one adult pair (successful breeders) to Mr. Philip Wayre, Ornamental Pheasant Trust. Both of the Stagsden birds died within a fortnight and the same fate overtook the birds at London Zoo, with gapes having recurred in the latter case. The female presented to the Ornamental Pheasant Trust also succumbed to an infection (mainly of the air sacs), but the cock bird survived and is believed to be the only Prairie Chicken in Europe (or even outside America) at the time of writing (spring, 1967).

The practice of North American game biologists, who have done some work with Prairie Chickens, is to rear them on wire under brooder lamps, in some cases using a day-old chick of some other game species (e.g. Grey Partridge, *Perdix perdix*) to encourage early acceptance of crumbed foods. The adult breeders are invariably kept on wire-floors to eliminate soil-borne diseases. This is similar to the methods now used in this country and on the Continent by breeders of Grey and

Red-legged Partridges (*Alectoris rufa*). For the breeder of ornamental species, however, the artificiality of such penning is obviously undesirable and the fact that prairie chickens can be bred successfully by using modern drugs to keep disease at bay, even on very contaminated ground, is encouraging.

* * *

NOTES ON THE BREEDING OF THE LUZON BLEEDING-HEART PIGEON

(*Gallicolumba luzonica*)

By K. S. HARRAP (Bulawayo, Rhodesia)

My pair of Luzon Bleeding-heart Pigeons (*Gallicolumba luzonica*) were acquired through a dealer in November of last year, 1966. They were in poor feather but otherwise good condition, there being no visible difference between male and female.

For those who have not seen this pretty dove I should note that the combination of colours is very attractive. The forehead is whitish, passing to grey on crown; back is a purplish maroon, upper parts being grey-brown glossed with metallic green. The wing-coverts have broad reddish-brown and bluish-grey bars; the underparts are white. On the centre of the breast is a blood-red patch which gives the bird the appearance of having been shot.

In January, 1967, the male was seen displaying to the female. With quivering wings he would pursue the hen, stopping suddenly to fluff out his breast feathers and give a rather mournful "Coo". He also picked up small twigs and these were placed by the hen in typical dove fashion. A week later two white eggs were found in the seed dish. These were put under some sitting Cape Turtle Doves, and were hatched but not fed by their foster parents. A second attempt some three weeks later, using Senegal Doves as foster parents, alas, had the same result.

The hen then began to show interest in a 6 inch wooden cube box, hung about 5 feet from the ground in the aviary shelter. In this she and the cock bird placed small twigs, roots, and couch grass, and two eggs again were laid. Incubation lasted about fifteen days, as near as I could ascertain. Two young hatched, one chick unfortunately being found dead on the ground after ten days, the other leaving the nest five days later.

The youngster was well feathered except for the tail and was about half the size of the parents. Its plumage was generally dull brown with a dirty-white patch on the breast, no red being visible.

Food supplied was mixed bird-seed, crushed mealies, Sorghum and sunflower. A piece of moist white bread thrown into the aviary each

evening was taken by the old birds with obvious relish. They were also seen to eat termites and small wood lice put in for Bishop Birds ; but as this was only provided about once a fortnight I do not think live food played much part in rearing.

The young bird is now six months old and beginning to show his crimson breast. I am hoping that the advent of our rainy season will bring me more success with these lovely doves.

* * *

FISCHER'S LOVE-BIRDS

By RONALD HORSHAM (Cape Town, South Africa)

Despite all the predictions of disaster from the experts, for twenty years I have kept my Love-birds on the colony system, running as many as 100 together in one aviary, but providing them with an adequate number of nest-boxes. The species treated in this way have been Peach-faced Love-birds, Masked Love-birds, and Fischer's Love-birds ; after all these species live in colonies in the wilds and it seems logical to so keep them in aviaries, providing the aviary is big enough for them. One of the most exciting things on my recent safari to Angola was to see and hear the great flocks of Peach-faced Love-birds in Southern Angola and in the northern part of South-West Africa in Ovamboland.

A certain amount of bickering takes place among my birds, but this seems to stimulate their breeding and in my experience very rarely results in bloodshed, and any accidents that may have taken place have not resulted from the colony system. You can hear these same minor squabbles among these birds in the wild. Since it is not practical to put in single nest-boxes for so many birds, mine live in " blocks of flats " with perhaps six nest-boxes side by side in a several storey block. The size of this " block-of-flats nest-box " is 3 feet wide and 6 feet deep, but with the openings on alternate sides from two separate but adjacent aviaries : that is, the birds in the first aviary will live on the ground, second, and fourth floors, while in the next door aviary they will live on the first, third, and fifth floors. As with humans, the flats at the top of the building are preferred to the ones lower down, but there is never any serious fighting over this positioning.

The next point, which is the subject of this report, is that ten years ago I noticed that some of my Fischer's Love-birds had slightly more orange on the breast than the others and I set my target to breed out an orange or red Fischer's. For some years I selected these orange birds and caged them up separately, having about eight or ten birds in a small colony system aviary. I do not believe in interfering with the birds unduly and only periodically do I look in the nest-boxes to check whether mice have become lodgers at the expense of the birds. So several weeks had elapsed between inspections and when I looked in the

box I was utterly astonished to find one normal green and three *blue* chicks: the orange birds had thrown *blue* youngsters and since that time I have bred them continuously, to establish what I believe is one of the only colonies of Blue Fischer's in existence.

The blue birds are very distinct from the Masked Love-birds, being slightly smaller in build, but having a very pale grey head instead of a black one, as in the Masked. The shade of blue is slightly different and can easily be distinguished when a Masked and a Fischer's are compared side by side. They are throwing a high percentage of blues but I am continuing to breed with the greens as well, for some years ago I tried the experiment of separating out all the blues and the result was disastrous, and breeding virtually stopped. My present policy is to remove a few green Fischer's from the aviaries and to cage them up separately so that the proportion of blues is constantly increasing. So far as I know these birds arose from the slightly orange flecked birds which were direct descendants of wild stock and so far as I know the blue factor was not introduced through Masked Love-birds or in any other way.

* * *

NEW PENGUIN POOL AT CHESTER ZOO

By M. F. COUPE

During April, 1967, six Rockhopper (*Eudyptes crestatus*) and six Jackass (*Spheniscus demersus*) Penguins arrived at the Zoo. The original Penguin Island at the Zoo is so large that when these small species were introduced they could not be seen properly by members of the public. It was decided to construct a small pool especially to accommodate these twelve new arrivals.

The new pool has been constructed opposite the Bird House Entrance on part of the old Waterfowl enclosure; the rest of the area has been used to construct new accommodation for our Giant Anteaters. The position of the new pool is of particular importance as Penguins do not like to be exposed to the full glare of the sun. They are not quite so vulnerable to heat as many people make out and as long as they have plenty of fresh, preferably running water, normal British temperatures are quite acceptable. The new pool faces north, being shaded from the south by tall trees and receives sunshine only in the early morning and late evening. A waterfall has been incorporated into the design and natural sandstone rockwork has been used extensively. The pool is not large as it was only designed for twelve small Penguins but the whole effect is very attractive and is very popular with visitors. It has been designed for ease of maintenance, the pool being drained and cleaned each morning and refilled with fresh water each day.

The Rockhopper Penguins must be one of the most attractive species

of Penguin, with their long pendulous yellow ear tufts. They always seem very tame and trusting and our new arrivals are no exception to the rule. The Jackass Penguins are also attractive but always seem more nervous than Rockhoppers. Rockhopper Penguins have to be fed by hand and normally will not pick up fish from the floor or out of the water. The Jackass prefer to take their fish from the water but when they have settled down in captivity, will snatch fish from the keeper.

* * *

AGGRESSIVE BEHAVIOUR IN WREATHED HORNBILLS AT CHESTER ZOO

By M. F. COUPE

During March, 1966, three Wreathed Hornbills (*Rhyticeros dampieri*) arrived at the Zoo in a large consignment from New Britain. Unfortunately one of these was in poor condition and finally died after about a month in the Zoo. The remaining two birds were very strong and fit and have gradually improved in condition until they are now first-rate specimens.

The Wreathed Hornbills are housed in the first aviary on the right in the Temperate Bird House where they make a marvellous show and are very popular. They are very noisy birds giving vent to loud raucous grunts and love to shake their natural branch perches. This makes them very popular with parties of school children who group around the aviary shouting at the birds who reciprocate with even louder shouts, much to the delight of both Hornbills and humans.

When the Hornbills first arrived they were very tame and trusting but as they became more robust their friendliness turned to aggression. During late summer and autumn, 1966, this became particularly noticeable and keepers were unable to enter the aviary without being attacked. A special trap door was then constructed between the Hornbills aviary and an outside flight in the original Bird House. The Hornbills were enticed into the outside flight, the sliding door closed and the keepers were then able to enter. Frequently of course we have to take this type of precaution when dealing with dangerous animals, but this is the first time that birds have had to be dealt with in this manner.

When the Hornbills started this aggressive behaviour, notices were put in position warning members of the public not to get too near the wire mesh. Strangely enough the Hornbills showed no desire to attack strangers but a trainee keeper who stood too close to the wire received rather a nasty black eye.



[Mr. and Mrs. E. Sorby

WREATHED HORNBILLS.

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At the time of writing, the Wreathed Hornbills have settled down and the trap door is not required—at least for the time being. Members of the staff are keeping a watchful eye on these birds in case they become aggressive again this summer. Recently when I stood close to the wire mesh one of the Hornbills would have attacked me through the wire had I not moved away quickly—this is definitely a case where familiarity breeds contempt.

* * *

NEW ARRIVALS AT THE “WINGED WORLD”

By C. G. Roots (Heysham, Morecambe, Lancs., England)

We are at last beginning to obtain in quantity the seldom exhibited species of Softbills upon which we intend to concentrate our efforts over the next few years. The following species have been added to the collection recently, the first ten named species being in pairs : Little Bee-eaters, Cinnamon-chested Bee-eaters, Paradise Flycatchers, Abyssinian Ground Thrushes, Yellow-throated Longclaws, Delegorgues Pigeons, Grey-crowned Shrikes, White-collared Kingfishers, Senegal Kingfishers, Grey-hooded Kingfishers, Black-fronted Bush Shrike, White-browed Robin Chat, Snowy-headed Robin Chat, Indian Blue Chat, Black-chinned Apalis, White-headed Wood Hoopoe.

The Bee-eaters and Paradise Flycatchers show every sign of thriving in our conditions. So they should, as we are able to supply ample live food in the form of crickets, blowflies, and locusts and only occasionally do we need to rely upon mealworms. We have other species of Bee-eaters on order and intend to concentrate upon the large-scale production of blowflies in future using artificial feeding mixtures. Eventually it is our desire to feed flies in place of maggots throughout the collection, at least on alternate days.

Although few Kingfishers are to be seen in public collections we have found them ideal birds for planted compartments. Their feeding presents no problems as we are fortunate in being able to obtain supplies of fresh shrimps, small crabs, and whitebait from Morecambe Bay. In fact we consider Kingfishers such good exhibits that we have ordered pairs of three other species.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

The early stages of the nesting of a pair of Princess Stephanie's Birds of Paradise were described in the AVICULTURAL MAGAZINE (vol. 73, 3, pp. 97-8). Early in May an egg was laid and on 28th May a chick hatched. This bird survived and grew well until 18th June when it died. I was away in South Africa from 27th April until 23rd June, so have no first-hand knowledge of the events, though I did see the chick and noticed how strong and well formed the leg bones were. The male was removed when incubation started, for he drove the female about whenever she came off the nest and he appeared to take no part in feeding either her or the chick. In addition to "insectile" mixture, mealworms rubbed in Scott's emulsion, maggots, locusts, and flies were supplied.

At the beginning of July the female began building again just above the first nest but, owing to disturbance, this was abandoned and another single egg was laid in the old nest on 9th July, incubation beginning at once, so perhaps the normal clutch is only one egg. The reunited male had just begun to moult at this time and had shed his long tail feathers. On 29th July the egg hatched; the skin of the young one appears quite blackish. The foods as before are being offered and in addition some fresh ant cocoons. Abedec is being given in place of the emulsion and, as before, some bone meal is mixed with the food. I wish that wasp larvae were obtainable, for this must be a good and easily-digested food, but my impression is that wasps are scarce this summer.

The eggs were thickly covered with pale pinkish-buff blotches; neither egg was measured. The incubation periods were twenty-one and nineteen to twenty days respectively.

Among birds bred in the Gardens are two Night Herons, four Herring Gulls, two Great Black-backed Gulls, four Black Ducks (*rubripes*), one Laysan Duck, one Barnacle Goose, Silver and Golden Pheasants, one Tonkinese Junglefowl, three Great, three Spotted and three Kenya Eagle-Owls, two Crested Pigeons, two Princess of Wales's Parrakeets, and four Cockatiels. A Javan Fish-Owl has been bred and this appears to be the first occasion on which this has happened in captivity, certainly in this country.

Chicks hatched and so far thriving are Sacred Ibises, Cattle Egrets, a Grey-headed Gallinule, Red-legged Partridges, Common Peafowl, and a Cloncurry Parrakeet; chicks hatched but which did not survive are Black-headed Gulls, Sarus Crane, and Blacksmith Plover. A pair of Mongolian Larks nested, but hatched nothing. Baillon's Aracaris nested again in a hollow log and five white eggs were laid, disappearing as before. Five seems a large clutch, but the birds do appear to be

a pair and not two females, for there is quite a difference in the length of the bills.

Among the presentations during the period April to August are seven forms new to the collection, and these are a Chinese Serpent Eagle (*Spilornis cheela ricketti*) and two White-breasted Kingfishers of the race *H. s. fusca* from Dr. K. C. Scarle, who also sent a Green Peafowl, a pair of Palawan Peacock Pheasants, a Grey-backed Thrush, two Javan Pied Mynas, and four Black-winged Grackles; an Emerald Toucanet (*Aulacorhynchus prasinus caeruleogularis*) from Lady Baillie, who also gave a Yellow-billed Aaracari, two White-cheeked Turacos, a Swainson's Lorikeet, and a pair of Indian Ring-necked Parrakeets; two Blyth's Lesser Whitethroats (*Sylvia curruca blythi*) from Mr. A. Graystone and two Sardinian Warblers (*Sylvia melanocephala*), an Olivaceous Warbler (*Hippolais pallida*), and three of the Moroccan race of *Parus caeruleus*, the Ultramarine Tit (*ultramarinus*) from the brothers G. H. and J. R. Newmark. Two North American Ruddy Ducks have been presented by Mr. E. O. Squire who bred them; a Black Francolin (*Francolinus francolinus*) by Miss E. Locker Lampson, a Rough-legged Buzzard and a Sacred Ibis by Major Aubrey Buxton.

Other arrivals include two young Ostriches, a Gannet and four Puffins that had been contaminated with oil from the wreck of the *Torrey Canyon*, three young Scarlet Ibises, four Lesser Flamingos, a Sclater's Curassow (*Crax fasciolata sclateri*), a Venezuelan Wood Rail, a Sulphur-breasted Toucan, four Purple Honeycreepers, two Crested Buntings, two Red-billed Oxpeckers, and a Splendid Starling.

A Long-tailed Parrakeet (*Psittacula longicauda*) presented in September, 1964, has died. It had been in the previous owner's possession for two years and, in spite of its comparatively brief life, I believe that it is a record of longevity for this parrakeet in this country.

As a result of long-needed alterations in the Parrot House by which all the small cages have been done away with and replaced by flights, a good deal of mixing has perforce taken place and with very little in the way of strife so far but, of course, it would be very different if anything in the way of nesting accommodation was put into the flights. Some of the birds from this house have been put into recently vacated outdoor cages at the former Central Mammal House, so the parrot-like birds are now rather scattered.

* * *

NEWS AND VIEWS

James Fisher in his *Zoos of the World*, a remarkable blend of narrative and fact, stresses that parrot-aviculturists, or psittacologists, have adopted the parrots into captivity more sensibly than most zoos.

* * *

In the July–August, 1966, number of the *MAGAZINE*, I mentioned a painting by Bogdani in the Royal Collection. On 16th June, at Christie's, a painting of a macaw, parrots, ducks, and other birds in a landscape, catalogued as a Bogdani, realized 4,600 guineas.

* * *

It has been estimated that the Red-fronted or Puerto Rico Amazona Parrot *Amazona vittata* is now reduced to about 150. Its breeding range is restricted to the Lunquillo Forest. It is pleasing to learn that at the request of the U.S. Forest Service the United States Special Forces and Navy have agreed not to carry out operations in the area until after the end of the breeding season.

* * *

Towards the end of June, John Yealland returned from South Africa with a collection of mammals for the London Zoo. The collection included a pair of White Rhinos, six Impala, and six Brindled Gnu: and, at the other end of the scale, eight Striped Mice, presented by one of our members in Cape Town, Ronald Horsham.

* * *

Fred Shaw Mayer has not been well of late and has recently returned to Sydney. He writes: "Sir Edward Hallstrom is keeping well and his interests are as wide as ever. At the moment he is materially helping a new Government Park near Mt. Hagen, to be called Hallstrom Park.

It is an area of 60–100 acres of rain forest at a little below 4,000 feet altitude. Aviaries are dispersed in openings in the forest.

A number of birds from Nondugl have already been taken to their new home and more will follow."

* * *

Mrs. K. M. Scamell sends the following progress report: "One young Black Indian Redstart is now independent.

The Ruby-throated Bulbuls hatched out two youngsters which left the nest at eleven or twelve days and were really lovely birds, with creamy white underparts, black caps, and dull greenish upperparts. Then came a very heavy thunderstorm two days later. After crawling about on our hands and knees we found one bird beaten down in the grass—it died next day. The other had sheltered and seemed all right

but it must have been chilled and died two days later. However, the hen has laid another egg and I am hopeful we shall have another chance! ”.

* * *

We have all seen Budgerigar cages cluttered up with “ playthings ”—mirrors, bells, climbing-poles, ladders, etc. Sometime ago I saw a display card of miniature weighing machines, marked “ Is your Budgie the correct weight ? ”. The wholesaler informed me that sales were very good !

In America a “ Hop-a-tune ” music-box is at present enjoying considerable success. It consists of a small, plastic bird-house with a mirror in front and with a perch projecting from it. The bird’s weight is sufficient to operate the mechanism and, it is claimed, the bird soon learns to enjoy and accompany the nursery rhyme tunes, such as “ Rock-a-bye baby ”, “ Mary had a little lamb ”, and so forth.

* * *

A famous Sunday newspaper conducts a weekly feature “ Your Pet ”. It is almost invariably of considerable interest. A number of readers report that when they move into new council properties they find that keeping cats and dogs is not permitted. They enquire what birds can be recommended as pets. Part of a recent answer is : “ Canaries, Cockatiels, Mynahs, Parrots, and Quaker Parrakeets can be allowed to fly loose in the room and the last four can be taught to talk.” It is true that some Quaker Parrakeets do learn to speak a little, but their cries, in which they very frequently indulge, can be almost unendurable. I am unable to think of any parrakeet I would rather not have caged in a room.

* * *

The so-called Parrot Ban has, of course, been lifted in Great Britain but not, as yet, in the U.S.A. Ralf H. Masure, writing in the June, 1967, number of *American Cage-bird Magazine*, asks why the ban has not been removed there, too. He gives some of the present regulations in respect of the importation of all psittacine birds into the United States.

Perhaps the one most difficult to understand, especially by anyone living on this side of the Atlantic, is that relating to quarantine. It seems that whereas zoological gardens are allowed to quarantine imported birds on their own premises for thirty days, the private person must have the single pair of birds permitted quarantined for four months. Ralf Masure says : “ It doesn’t seem logical to require a four months’ quarantine for two birds that will come into contact with a limited number of other birds, and a very few people, as compared with the zoological park where there would be many birds and a great number of people in contact with the new arrival.”

Over 160 members and guests attended the Eleventh Annual Lunch, at the invitation of the Chairman and Council of the North of England Zoological Society, at the Zoological Gardens, Chester, on 28th June, 1967. In the unavoidable absence of Miss Russell Allen, Chairman of the North of England Zoological Society, Mr. G. S. Mottershead, Director-Secretary, presided over the lunch. In his speech of welcome he mentioned that the very large proportion of guests present must be evidence of the great interest in the Avicultural Society, and he hoped they would all join as members, for it was to forward the interests of the Avicultural Society that the lunch was held. In replying, Monsieur Jean Delacour, Vice-President, expressed his sincere regret at the absence of Miss Russell Allen and the great gratitude of the Avicultural Society for the continued and generous hospitality of the North of England Zoological Society, the only Zoological Society in the United Kingdom that entertained the Society in this way. He voiced the great admiration of all members for the ever-increasing development and improvement of the Chester Zoo.

A. A. P.

* * *

CORRESPONDENCE

THE INTERNATIONAL BIRD PELLETT STUDY GROUP

I believe that some twenty years ago, the late B. W. Tucker approached the Avicultural Society with a view to your publishing a request for co-operation in the formation of a reference collection of bird pellets in the Oxford University Museum.

Whilst the pellets ejected by captive birds can obviously provide only a limited amount of information, it is our experience that some useful characters appear, given a sufficiently large selection of pellets from a number of birds of the same species.

This Group has been formed with the object of furthering knowledge of this interesting and complex habit.

Some of your members may be sufficiently interested to wish to join the group, whilst others may be prepared to parcel up and send to us pellets ejected by their birds, or send short notes or observations for inclusion in our "Bulletin".

Further information may be obtained from, and pellets should be sent to me.

DAVID E. HANSON.

ABERLOUR HOUSE,
ABERLOUR,
BANFFSHIRE,
AB3 9LJ.

BREEDING ABILITY OF JAVA SPARROWS

The letter by John S. Nero, AVICULTURAL MAGAZINE, May-June, 1967, was of great interest to me. However, the trouble of creating monsoon conditions in an aviary could only be justified if there was a serious conservation problem. Java Sparrows are being bred from wild-caught stock and far better concentrate in establishing strains bred in normal aviary conditions.

At present research is being conducted on the reproduction capabilities of British birds under various conditions. While the provision of a natural environment is an important factor, the psychological effects of captive conditions may be a far greater

influence in retarding the breeding cycle. Breeding results from wild-caught Java Sparrows confined to an aviary situated in their natural domain, may be negative. With aviary-bred British birds there is ample evidence that a change in environment during the breeding season has an adverse effect on the results, even when the change is for the better. Changes encountered during the evolution of a species may be reflected in their ability to more readily reproduce under variable conditions.

Research with wild-caught British birds indicates that over a short period of a decade the environmental factor declines in its influence as a stimulant to reproduction. The Japanese breeding stocks of Javans, mostly mutations, are domesticated and probably are mostly bred indoors?

Early this year a pair of Mandarin Ducks which had bred the past two seasons, was moved to a larger enclosure, about 100 feet from their old place. No attempt at breeding was made and this was attributed to the reproduction mechanism being "blocked" by the psychological barrier created by the change in environment.

Some species are classed as "easy to breed". Here the barrier may have been broken down by domestication. With some "domesticated" species the barrier is not only reduced but totally removed with the result that over-breeding takes place.

No doubt the abundance of natural food, together with the photoperiodicity factor stimulate the breeding cycle, but the change in environment associated with captive conditions may retard their effect to the extent that no breeding takes place.

T. S. THOMSON.

16 LONG LANE,
HOOLE,
CHESTER.

* * *

PROTECTION OF BIRDS BILL

The Protection of Birds Bill, 1967, which amends the principal Act of 1954, was given the Royal assent on 14th July, 1967, and the Act will become effective on the expiry of six months from that date, on 14th January, 1968.

In a Bill of this nature many interested bodies are consulted and asked for their recommendations, objections, and criticisms. Foremost in this connection were the Royal Society for the Protection of Birds (whose President, Col. Sir Tufton Beamish, introduced the Bill into the House of Commons), the International Council for Bird Preservation (British Section), the Avicultural Society, and the National Council of Aviculture.

The Avicultural Society was particularly active in obtaining the amendment by which licences may be granted for the purpose of taking wild birds for aviculture. The thanks, not only of the Members of the Society but of *all* aviculturists, are due to the Sub-Committee appointed by the Council of the Avicultural Society—Colin Harrison, Claude Payne, and Philip Wayre, and to the Rt. Hon. the Earl of Cranbrook for moving, and securing the adoption of, the amendment.

Special commendation should be given to W. J. Page, Editor, *Cage and Aviary Birds*, who in his pages gave full coverage of every stage of the Bill, together with explanatory notes.

Definition of the word " aviculture ".

The word " aviculture " was created by the Avicultural Society when it was first formed, and it is therefore appropriate that we should define what we mean by this word. The need for such a definition arose recently when mentioned in the amendment of the new Protection of Birds Bill, 1967. During discussions of the amendment with various people the Sub-Committee appointed by the Council of the Avicultural Society were asked what they meant by the word. Colin Harrison drew up the following definitions which were approved and agreed by the Council of the Society, and they are now given for future guidance.

Aviculture is the keeping and breeding of birds for aesthetic pleasure and for study under controlled conditions which usually involve keeping such birds in an enclosure or aviary or cage. The person who does so is an *Aviculturist*.

Aviculture does not include the buying and selling of live birds, this being known as *bird-dealing*. The person who does so is a *bird-dealer*. (*N.B.* Most aviculturists who breed birds find it necessary from time to time to dispose of additional young birds which they cannot accommodate, and such minor transactions are not usually regarded as bird-dealing in the sense in which the term is used here.)

Aviculture does not include the exhibiting of birds for competitive purposes in shows or exhibitions, this being known as *bird-fancying*. The person who does so is a *bird-fancier*.

ARTHUR A. PRESTWICH,
Hon. Secretary.

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The annual dues of the Society are \$4.00 per year, payable in advance. The Society year begins 1st January, but new members may be admitted at any time. Members receive the *Avicultural Bulletin* monthly.

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- ADRIAN V. JONES, 1 Brynyffynnon Road, Penycae, Wrexham, North Wales. Proposed by Michael W. Clifford.
- RODERICK E. PILKINGTON, 1 Wilmot Drive, Smalley, Derbyshire. Proposed by Miss K. Bonner.

NEW MEMBERS

The eighteen Candidates for Membership in the July-August, 1967, number of the AVICULTURAL MAGAZINE were duly elected members of the Society.

RE-ADMITTED TO MEMBERSHIP

- D. KENNEDY, Route 2, Quitman, Georgia, U.S.A.

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- BRIAN BONING, to Fairland, Wayford, Stalham, Norwich, Norfolk.
- DR. DAVID W. DUNHAM, to Department of Zoology, University of Toronto, Toronto 5, Canada.
- M. D. ENGLAND, to London Foot Hospital, 33 Fitzroy Square, London, W. 1.
- G. J. IRVING, to 23 The Lilacs, Baybarrow Road, Egremont, Cumberland.
- FERENCE KISS, to 4621 North Ave. Apt. 10, San Diego, California 92116, U.S.A.
- ROBERT A. LEARNARD, to P.O. Box 56, Point Clear, Alabama 36564, U.S.A.
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Members of the Society not already members of the Club should write to the Hon. Secretary for particulars of membership.

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The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to:—

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SIERRA PARRAKEET

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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NOVEMBER-DECEMBER, 1967

THE SIERRA PARRAKEET

(*Amoropsittaca aymara*)

By A. A. PRESTWICH (Edenbridge, Kent, England)

Alcide Dessalines d'Orbigny, who travelled so extensively in South America, 1826–33, and who was the first scientific explorer of Bolivia, included this species in the valuable collection of about 800 bird-skins that he brought back for the Muséum d'Histoire Naturelle, Paris. He described it as *Arara aymara*. Since then it has been variously included in the genera *Myiopsitta*, *Bolborhynchus* and *Conurus*. Dr. Charles Richmond, dealing with a number of preoccupied generic names, decided that this parrakeet could not be included in *Bolborhynchus* and proposed a new genus *Amoropsittaca*. But lately, R. M. de Schauensee has relegated it to *Bolborhynchus*.

This parrakeet is named for the Aymaras, the chief indigenous race of Peru and Bolivia. The alternative English names Sierra and Andean refer to its terrain—sierra being the name used in Spain and Spanish America for a range of mountains and, in this case, specifically the Andes of Bolivia, Argentina, and Chile. Peters gives the range as "Highlands of Bolivia south through the mountains of Argentina in provinces of Salta, Catamarca, Tucumán, La Rioja, Mendoza and Córdoba; casual (?) in northern Chile".

All too little has been written about South American parrots and parrakeets in general, and the present species is no exception. We do, perhaps, expect too much of mere collectors, as opposed to field-workers. And really there is very little that even the latter can record apart from the very trite.

Alexander Wetmore had the good fortune to see these parrakeets in the wild, and writes: "These little mountain parakeets were recorded first on March 13, 1921, on the slopes above the city of Mendoza, when by following back on the line of flight of a small flock we found a water-hole, perhaps the only one in an otherwise wholly arid tract. On March 19, near El Salto, at an altitude of nearly 2,000 metres above Potrerillos, Mendoza, these parakeets were common. Here they ranged over the hills in small bands that fed in berry-bearing bushes, or descended to search for fallen fruit in the grass below. The birds were

highly social and were found always in parties. Their flight was swift and direct. Their chattering notes were high-pitched and, at times, suggested the excited calls of barn swallows. Three were taken. On March 21, a flock was recorded at an altitude of 1,800 metres near the hotel at Potrerillos."

But it is to the aviculturist that one must turn for observations, even if they are made under controlled conditions.

This small parrakeet, scarcely larger than a robust Budgerigar, in colour strongly resembles the Quaker Parrakeet, but very fortunately it does not possess its ear-piercing shriek, the call being merely a soft twitter. Alexander Wetmore has likened it to that of a Barn Swallow and in this Jørgensen concurs. Dr. Einar Lönnberg has, however, stated "Occurred at San Luis [near Tarija, in Bolivia] in large flocks, screaming loudly when flying round".

The Sierra Parrakeet was first brought alive to England by Gerald Durrell, in 1959. Durrell writes of the event: "The ones I obtained (eight in all) were purchased in the bird-market at Mendoza (Argentina), in the foothills of the Andes. There was such a vast quantity on sale that I thought, in my ignorance, that they must surely have been exported to Europe, and so I only purchased the eight. If I had realized they were something unusual, I would have brought back many more. They are apparently a fairly popular pet in that part of the Argentine and, judging by the quantity on sale, I would say a reasonably common species."

One of Durrell's original birds went to the London Zoo where it is still to be seen in the Parrot House (April, 1967). It soon became tame and is of a quiet and gentle demeanour. It must surely be the sole survivor.

During the winter of 1961-62 quite a large number were available in the Continental markets. It was only natural that a few pairs should eventually arrive in England.

During the 1962 breeding season A. V. Marques successfully reared one young one; and in mid-September K. Russell reported three young in the nest, but very unfortunately they were not reared, due to rain penetrating the nest-box. Russell was, however, fully successful in 1963, writing: "A pair laid eight eggs in a clutch, and hatched and reared six youngsters, all of which are good birds. They are quite hardy, and the adults have wintered out, using the nest-box as a dormitory."

Complete success was obtained at the Keston Foreign Bird Farm in 1964. W. D. Cummings, writes: "We reared a brood of five little Andean (Aymara) Parrakeets and are building up a nice breeding stock of these delightful birds. They are easier to sex as they come out of the nest because the cocks have distinctive silver breasts and darker caps. They come out of the nest in adult plumage and only differ in

size from the adults. We had a spare hen of this species, which we successfully paired to a green Budgerigar cock ; they mated and laid but, as expected, the eggs were all infertile." Russell confirms the sexing of the young, writing that the cocks have "darker heads and more silver throats than the hens".

C. D. Beckett was also successful in 1964. Seven eggs were laid and as there was no result after twenty-four days incubation they were removed for testing in warm water. There being no sign of movement one of the eggs was broken open when it was found to contain a three-parts formed chick. Beckett writes : " I hastily returned the remaining six eggs to the nest and the hen took possession of them at once. On 12th July—28 days after the first egg was laid—to my great delight a chick appeared, followed at two-day intervals by three more." The young ones were ten weeks old at the time of the account.

Denmark. Sv. E. Jørgensen, Maribo, was successful in 1964. In the autumn 1963, he obtained a pair that had already hatched two young ones, which died after a couple of days. During the winter and spring Jørgensen conditioned them to their future surroundings and during the second week of May seven eggs were laid. Six young were hatched and fully reared, leaving the nest-box 16th to 20th July. The seventh egg proved to be infertile.

U.S.A. Kenton C. Lint, Curator of Birds, Zoological Society of San Diego, California, lists this species amongst those bred there.

Food. This parrakeet seems to be extraordinarily fond of sunflower seed and, in fact, is quite prepared to subsist on this seed alone—it certainly appears to do it no harm. Some prefer the black to the white variety. Canary and millet should also be provided, as well as a very limited quantity of hemp. Millet spray is a welcome addition. All the usual green foods—lettuce, groundsel, dandelion—should be offered, some show a particular liking for the large, fleshy stems of spinach-beet, carrot and, of course, soft, sweet apple.

Nest-boxes. A nest-box of a somewhat similar size to that usually supplied to lovebirds is suitable, approximately 8 by 8 inches and 9 inches deep, internal measurements. The bottom should have about two inches of peat, leaf mould, decaying wood, etc.

For their amusement a supply of non-poisonous twigs or branches should be provided ; favourites are willow, hazel, ash, poplar, fruit trees, etc. Pieces of the bark are certain to be carried into the nest-box.

Sexing. Sexing these parrakeets may present some difficulty to the novice as the colouring of the two sexes is almost identical. The experienced aviculturist should, however, be able to recognize a male by its slightly finer and flatter head ; in addition, the whitish-grey colour of the throat and breast appears to be rather lighter and brighter.

There seems to be much to recommend this newcomer to the avicultural scene. While it is somewhat soberly coloured it is, nevertheless,

of pleasing appearance. It is active, quiet, and quite willing to nest, in which event it is apparently large brooded.

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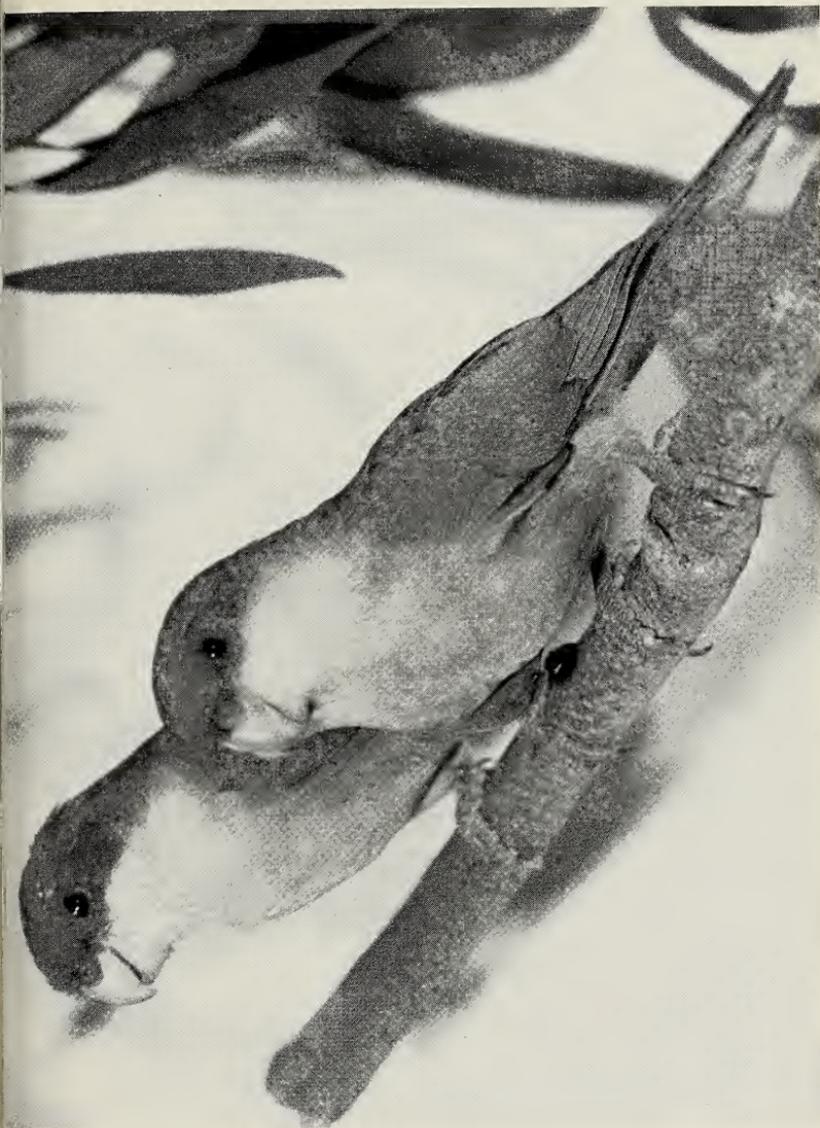
SIERRA PARAKEETS—A NEW CHALLENGE

By KENTON C. LINT (Curator of Birds, San Diego Zoo)

San Diego's breeding pair of Sierra Parakeets was received from Antwerp, Belgium, on 29th April, 1964, and the birds were exhibited in several zoo locations during 1965. In the effort to keep abreast of a progressive established breeding programme, we encourage new species to propagate each year. Early in 1966, these parakeets were moved to one of the regular breeding aviaries where they would not be disturbed.

The breeding aviaries, all located outdoors, measure 10 feet long, 6 feet wide, and 7 feet high. At one end of this flight area, a wooden nesting-box (10 inches deep by 7 inches wide, with a 4 inch opening at the front) was hung under cover about 5 feet from the ground. It was filled to a depth of 3 to 4 inches with finely shredded wood shavings.

The birds took possession of the box almost immediately and slept in it every night. We believe the first egg was laid on 10th April, and the fourth egg on 16th April, with two-day intervals between each egg. On the latter day, incubation evidently commenced as the hen remained in the nest all day, leaving it late in the evening to visit the feeding tray and the water container. The male took no part in the incubation but guarded the hen by roosting on top of the nest-box.

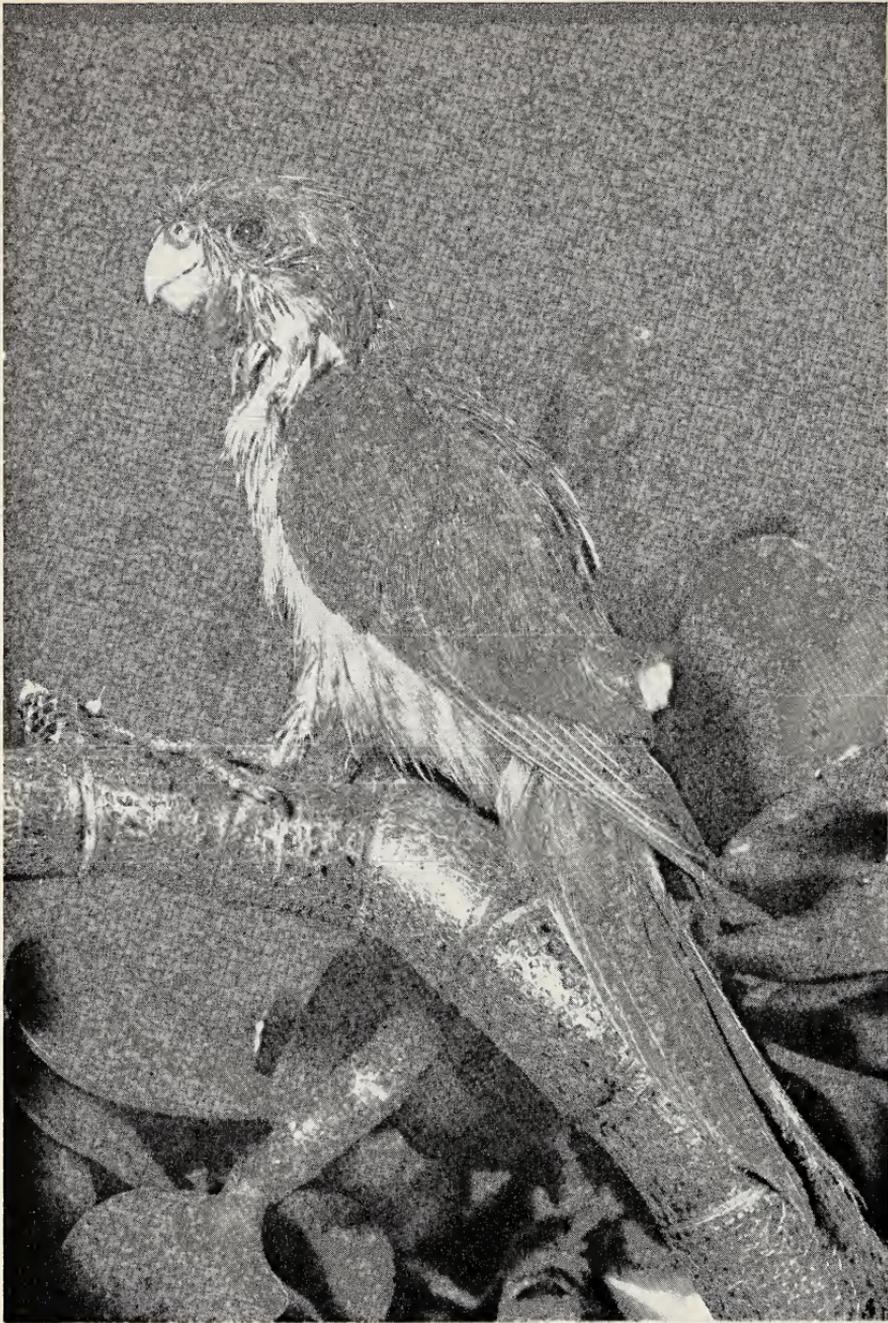


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SIERRA PARAKEETS ARE IMMACULATE IN APPEARANCE

Sexes are almost identical in coloration, with dull green on the upper parts and pale grey below. The crown of the head is a dark greyish-brown on both birds. The cock (*left*) has a finer and flatter head than the hen (*right*). The male's bill is white, the female's has a tinge of blue.



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THE SIERRA PARAKEET CHICK FORTY-NINE DAYS OLD, IS A SMALL
REPLICA OF THE PARENT BIRDS.

It was hatched 14th May, 1966, after an incubation period of
twenty-eight days.

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Most parrots and parakeets produce mouse-like squeaks soon after emerging from the shell, calling for food from the parents. We waited for a vocal indication from the expected hatchlings, as we did not wish to disturb nesting activities. No information is available about the true incubation period of this species as breeding records have not been published in the Western Hemisphere. After waiting thirty days, I decided to take a peek into the nest-box. When the hinged top was opened quietly, the hen continued to sit tightly. Then she raised her body slightly and I saw a small white head under the breast. In correspondence with Mr. Russell, I learned that the chicks are covered with cotton-white down for a period of four days. Then the down gradually turns to grey. We believe the single chick was hatched on 14th May, 1966. The three remaining eggs were infertile.

The growth and development of our prize seemed extremely slow compared to grass parakeets of similar size. For three weeks, the downy feathers showed little change, only becoming darker in colour. The fourth week, pin feathers appeared in the occipital regions. When five weeks old, the ventral, femoral, and humeral tracts had begun to feather out. The tail pin feathers, encased in their sheaths, measured four inches in length when the chick was six weeks old. Patches of grey downy feathers were still conspicuous on the neck, back, and rump.

When the bird was seven weeks old, we decided to remove it from the parents and rear it by hand on our regular psittacine chick formula. (By removing the chick at this age, we hoped the pair would re-nest and probably hatch a larger brood in the second breeding cycle.) The chick was carefully transferred into a small brooder and placed on a regular feeding schedule—8 a.m., 12 noon, and 5 p.m. daily. The nestling was an exact replica of the parent birds in plumage except for a shorter tail at the time it was moved.

At eight weeks of age, the bird would eat a small amount of mixed formula from the container placed in the brooder. This was supplemented by hand feeding, until ten weeks of age, when normal feeding by itself was observed on schedule.

It has been a pleasure to work with this attractive member of the parrot family and have it reproduce in captivity. These parakeets are very easy to care for as they seem to live well on little else than sunflower seed, although canary seed and millet are also taken, as well as most of the usual greens in small amounts, such as lettuce and celery tips. They show a particular liking for small pieces of fresh apple. It is hoped that our notes will stimulate further interest in this species and will also serve as an introduction to a lovely, unusual South American parakeet.

(Reproduced by kind permission from San Diego *Zoonooz*, October, 1966.)

BREEDING A HEMIPODE

(Turnix suscitator)

By JEFFREY TROLLOPE (Hounslow, Middlesex, England)

INTRODUCTION

This species is also known as the Barred Button Quail and Bustard Quail. Ali (1955) gives the distribution for seven of the geographical races as the entire Indian Union up to 8,000 feet in the Himalayas ; Ceylon, Eastern Pakistan, and Burma. Importations are erratic and seem to be confined to the period of February–May.

DESCRIPTION

Cock

4½ to 5 inches. Rufous brown above marked with light buff and dark brown. The cream-coloured throat and breast are barred with black, the abdomen is buff. Legs, feet, and bill are grey, the iris is yellow.

Hen.

Larger than cock, with the throat and middle of breast black, the barring is heavier and more widely spaced, the buff area more extensive. The hen's bill is thicker and less attenuated, the forehead, crown, and cheeks are spotted with light grey. Colour of bill, legs, feet, and iris, as for cock. This species lacks a hind toe, a characteristic of Hemipodes or Button Quails (*Turnicidae*).

DETAILS OF INDIVIDUALS AND BREEDING

A cock *T. suscitator* was purchased in May, 1966. Attempts to obtain further specimens resulted in the reception of several pairs of *Coturnix* advertised as "Button Quail". Finally an advertisement offering Button Quail within the London area seemed to be the answer. On arriving at the vendor's premises on 23rd May, 1967, I saw to my great relief about twenty-five *T. suscitator* among a mixed group of *Coturnix* and *Perdicula*. The proprietor was most helpful, allowing me to enter the aviary containing this "flock", with the intention of securing a cock and two hens. This was not easy, as the plumage of most of the birds was in poor condition and the size factor can be unreliable as a method of determining sex. After comparison of size in the hand I left with two hens and a "cock", although somewhat concerned that the much smaller "cock" had a very strongly made bill for "his" sex. These birds proved to be three hens, which will be referred to as "A", "B", and "C".

The cock bird received in May, 1966, was released into a 12 by 8 by 10 feet aviary on 20th May, 1967. What appeared to be the fittest hen "A" was selected from the three recently obtained and released in

the aviary with the cock on 31st May. They immediately began to mutual preen and clump together. On 10th June an egg was laid in a cave-like nest at the base of a thick pile of dead weeds. Both birds kept returning to this site, first the cock would enter, sit in the nest and pull stems around him with a sharp backward jerk, the hen standing a few inches away making similar movements with imaginary stems, sometimes pulling real stems to the nest. This situation was then reversed, with the hen in the nest and the cock standing near the site. It was noticeable that the cock was stem pulling more frequently with real stems. A second egg was laid on the 11th, a third on the 12th, and a fourth on the 13th. The cock began incubation and some stems were pulled out from the pile just above the nest, jutting out like a canopy. Later these stems were pulled down, until the sitting bird was almost obscured.

During incubation the hen sometimes stood near the nest in an aimless manner. Assumedly in the wild she would have courted another cock by this time and laid a second clutch. When the cock left the nest to feed, she would sometimes follow him for a while, but did not join him when he had a quick dust bath. The eggs hatched at about 4 p.m. on the 26th, the hen stood near the site. She made a half-hearted forward threat at a Quail Finch who was pecking at a portion of eggshell which appeared at the end of the "canopy". The cock was still brooding the chicks in the nest on the morning of the 27th. They left the nest at about 8 a.m. leaving one unhatched egg which proved to be clear. When I entered the aviary the cock made a forward threat in my direction. The chicks were about the size of *Excalfactoria* chicks, brown above with darker streaks, underparts light brown. They were very light, almost cream colour in the facial area, with a single dark "stripe" from crown to bill, their bill was dark horn in colour, the legs and feet were a light fleshy colour, the iris brown.

The hen "A" took no part in the rearing of the chicks, even moving away from the cock when he attempted to clump with her. I had a feeling that she could no longer be trusted, so she was removed from the aviary on 2nd July. The following list gives some idea of the chicks' development :

26th June.—Hatched, p.m.

27th June.—Left nest a.m., cock feeding them on small insects, spiders, and pieces of green leaf. Chicks preening their breasts and giving single leg-wing back stretch.

30th June.—Chicks bill-wiping on ground.

1st July.—Eating maggots, pupae, flies.

2nd July.—Primaries well developed, preening their wings, wing-flapping with jumps into air. Very little down left. Hen "A" removed from aviary.

- 9th July.—Chicks fly well, eating seed and chick-crumbs, dust-bathing with cock. Buff showing on their underparts, spotted where adults are barred. One chick looking a little weak, although its locomotion seems "normal".
- 11th July.—Weak chick giving poor response to cock when called for food.
- 14th July.—Weak chick dead; remaining two seem very fit, now showing buff area on chest. (A non-buff area in adults).
- 15th July.—Chicks seem to be independent of cock, who has stopped calling them for food. He was not seen to brood chicks after this date.
- 22nd July.—Chicks almost as large as cock, iris yellow, legs, feet, and bill now grey as adults.
- 27th July.—Beginning to give adult vocalization. Separated from cock.
- 30th July.—Hen "B" released into aviary with cock.
- 3rd August.—One chick now showing black on throat.
- 17th August.—Both "chicks" in full adult plumage. A hen and a cock. Hen larger with thicker bill, black throat and chest.

The eggs were short ovates of a light stone ground colour, blotched and spotted with dark brown and a few spots of purplish-red. The only egg measured was 23.5 by 18.5 mm. During the breeding they shared the aviary with Quail Finches (*Ortygospiza articolis*), Red-crested Finches (*Coryphospingus cristatus*), Pin-tailed Nonpareils (*Erthyura prasina*), and Crested Black Buntings (*Melophus lathami*), one pair of each species.

A second clutch of four eggs was laid by hen "B". These were found scattered and broken after the cock had incubated them for five days. At the time of writing (22nd August), the cock is sitting on a third clutch of four eggs. Both these clutches were approximately the same size and shape as those laid by hen "A". These eggs, unlike those of hen "A", were a fawn ground colour, heavily marked with dark brown blotches, mostly at the larger end.

FOOD

Mostly millet and a little maw is taken, sometimes chick-crumbs, all live food is taken with relish. When the adult birds were first received, they were protein starved and emptied maggot trays at an alarming rate. For the first ten days the chicks seemed to take only live food and tiny pieces of green food. Three large maggot trays were kept full and privet bushes were shaken vigorously into a tin. This produced a good "crop" of small spiders, etc., which were tipped into the aviary. The cock was surprisingly adept at catching sluggish, and sometimes not so sluggish, flies. This food source was a result of the considerable maggot "spillage" from the trays.

VOICE

During locomotion the adults give a low-pitched "Chee-tuk-chee, Chee-chee-tuk-chee". There is a repeated double note "Queek-queek", given from cover and when the pair is clumped for roosting. When the chicks were young and I entered the aviary, the cock gave a harsh "Chook-chook". This vocalization was accompanied by a forward threat. When hen "B" was released into the aviary, she wandered around exploring the enclosure. Suddenly she "froze" in an upright posture, stretched her neck, then slowly lowered her head, so that the bill was nearly touching the ground. As the head was lowered she gave the "purring" call, written as "Krrrrrrrr", by Henry (1955). Just before the chicks hatched, hen "A" developed a large pendulous swelling from the throat. This must be due to the inflatable bulb of the oesophagus and tracheal enlargement, which enables the hen to give a "booming call", Sutter (1964), but so far I have not heard this vocalization.

GENERAL CHARACTERISTICS AND BEHAVIOUR

Normal locomotion is a brisk rather "pigeon-like" walk with the head nodding forward in rhythm. They pause at frequent intervals to give a vigorous "left-right" bill wipe on the ground, with the lateral surfaces of the bill. On one occasion the cock found food for the chicks by disturbing loose soil with a bill wipe, instead of the usual "peck-dig". They seek hard ground for dust bathing and scuffle in a hurried manner, with feathers fluffed out. This scuffling is interspersed with rubbing movements of alternate sides of the head and body.

When drinking they gently dip the bill just below the water surface, the head is then raised to the "normal" position, drinking by "sucking". Once hen "A" was seen to dip very quickly and raise the head above the normal position, drinking by "scooping", Goodwin (1965).

During sun-bathing the pair would sit in close proximity, sometimes fully opening both wings simultaneously, so that the dorsal surfaces were exposed to the sun. Until the cock began incubation the pair bond seemed strong, mutual preening and clumping frequently during the day. Dust and sun-bathing were "social" and the pair roosted in the clumped position.

I was perhaps too hasty in removing hen "A" on 2nd July, but the strongly made bill of the hen looked a formidable weapon. The expected amazonian behaviour occurred when hen "B" scalped and killed hen "C" on 9th July. They were housed together in a box cage 40 by 20 by 15 inches, all was well at approximately 12 noon, at 12.45 p.m. hen "C" was dead. Prior to this time, all had seemed well, they had roosted together in the clumped position and enjoyed

“social” dust-bathing. Hen “A” was housed in a cage on the opposite side of the bird room when she was removed from the aviary. I suppose the theory that some vocal or visual “stimulus” from her triggered off this killing, could be considered.

On several occasions hen “B” was seen to tit-bit the cock, Harrison (1965). When she found an insect, she would “freeze” with the head lowered and the bill near the ground. The offering would be presented to the cock on the bill-tip, in the same manner as he presented food to the chicks. She would stay in this posture with her insignificant tail quivering rapidly up and down, until the cock took the offering. This posture was accompanied by a barely audible vocalization.

Egg-rolling behaviour has been observed, hen “B”. During the laying of the third clutch, an egg was deposited about 14 inches from the nest. I picked it up and placed it in the nest, then watched through the window of a shed which is very conveniently placed for observations on this aviary. Within five minutes the hen walked to the nest and rolled out the egg, using the underside of the bill but not tucking the egg between the thighs. She then rolled the egg rapidly to approximately the same place as it was when I picked it up. The hen moving backwards and rolling the egg with bill strokes, the motive power being the head and neck. The only bird-egg contact was the bill, which provided both “drive” and “guide”. This differs in one physical aspect from the egg-rolling behaviour of *Excalfactoria chinensis*, which “controls” or “guides” the egg with the thighs, Harrison *et. al.* (1965). This “procedure” was then repeated, the egg being replaced in the nest and the hen rolling it to approximately the same place as before and about the same distance. It would be interesting to know if tit-biting or egg-rolling behaviour has been previously observed in *T. suscitator* or its congenics.

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As described, J. Trollope has bred the Barred Button Quail (*Turnix suscitator*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

HYBRID BREEDING : A BRIEF REVIEW AND DISCUSSION

By J. ALAN BURDICK (Research Associate, Bureau of Research in
Neurology and Psychiatry, Princeton, New Jersey, U.S.A.)

The breeding of hybrids is an interesting hobby and there are few of us who have not attempted "crosses" at one time or another. Lately I decided that I wanted to do a "new" hybrid and went to the literature to find out what has been done. Two major facts became apparent : (1) The "news" of hybridization is not easily available ; (2) There is a gap between the zoologist and the general bird breeder which could be bridged by a more systematic report on the part of the breeder. The aim of this paper is to present some information of what has been done, to outline a method of literature search, and to discuss the scientific importance of breeding hybrids.

Let us take the last point—what is the scientific importance of hybrid breeding? As breeders we have been interested in immediate results, such as the red orange canary from the siskin hybrid, or the development of a sweet singer. This is important, but there is useful data on evolutionary relationships which can also be gained from systematic breeding. One of the best examples of this type of research is represented by W. Frank Blair's article in *Evolution* (1963), "Evolutionary Relationships of North American Toads of the Genus *Bufo* : A Progress Report." In this publication Dr. Blair reports a systematic breeding of experimental hybridization. His explanation was, "The basic assumption underlying our use of hybridization data is that hybrid performance is a crude reflection of total genetic difference and hence of evolutionary affinity." In other words, the fact that two birds mate to produce a fertile hybrid means that they are more closely related than another pairing producing a mule. While this has been explored in other fields (as the toad), it still remains to be carried out with most of the Aves group.

Where can we find out which hybrids have been bred? Certainly *Zoological Record* is one of the first places to look. The section on "Aves" (Birds) is one of interest ; the information is listed a number of ways and there is a small section in each year's summary which is titled "Hybrids". Another source is *Biological Abstracts*, which also gives an annual summary. *Bioresearch Index* and *Bioresearch Titles* are both published monthly by the Biosciences Information Service ; some additional data may be found there. A review of North American humming bird hybrids was published in *Condor* (1961) by R. C. Banks and N. K. Johnson. Other books on the subject are *Mule and Hybrid Birds* by V. A. V. Carr, and *Bird Hybrids* by A. P. Gray, Tech. Commun. 13, Commonwealth Bur. Animal Breeding and Genetics

(1958). The *Zoological Record*, *Biological Abstracts* and *Bioresearch Titles* do not include the more popular pet and hobby publications like *All Pets* (out of print), *American Cage Bird*, *Cage Birds*, etc., and these must be looked at separately. All publications have a bias and it should be noted that I have "loaded" the "Finch" data, paying less attention to the Psittacidae and Columbiformes and not reporting the often reported Gallinaceous bird, duck, etc., hybrids.

A list of hybrids which have been bred in captivity is found in Hopkinson's "Breeding records: Summary i-viii" (*Avicult. Mag.*, 1938, vol. 39). This data is not included in this paper but is of great importance.

The following is a list of hybrids reported in various publications which may be of interest to the breeder of hybrids.

PSITTACIDAE

- (1) *Agapornis personata* and *Agapornis fischer* (a cross between the Masked Lovebird and Fischer's Lovebird): reported to be fertile when bred back with *A. fischer* (J. R. H. Evans, *J. East Afr. Natur. Hist. Soc., Coryndon Mus.*, 1964).
- (2) Hyacinthine Macaw and Blue and Blue and Yellow Macaw (J. Delacour, *Avicult. Mag.*, 1966).
- (3) *Cacatua roseicapilla* and *Cacatua gymnopsis* (Lukaszewicz, *Przegl. Zool.*, 1957).
- (4) Pileated Parrakeet and Crimson Rosella Parrakeet (H. P. Van Heyst, *Avicult. Mag.*, vol. 64).
- (5) *Agapornis personata* and *Agapornis roseicollis* (Fischer's Lovebird and the Peach-faced Lovebird) (Kuroda, *Annot. Zool. jap.*, vol. 33).
- (6) Red and Yellow Macaw and Blue and Yellow Macaw (R. C. Small, *Avicult. Mag.*, 1966).
- (7) (a) Leadbeater's and Greater Sulphur-crested Cockatoo.
(b) Festive and Jamaican Amazon Parrots.
(W. D. Cummings, *Avicult. Mag.*, 1966).
- (8) Nanday and Jendaya Conure (note in *Avicult. Mag.*, 1966).
- (9) *Kakatoe tenuirostris* and *K. roseicapilla* (Ben Heddle, *Avicult. Mag.*, 1966).
- (10) (a) Forsten and Scaly-breasted Lorikeet.
(b) Black-capped and Purple-capped Lory.
(C. H. Collard, *Avicult. Mag.*, 1966).
- (11) Red Rosella and Port Lincoln Parrakeet (D. D. Whitsett, *Avicult. Mag.*, 1966).
- (12) Ring-necked and Moustache Parrakeet (B. V. Ramanjulu, *Avicult. Mag.*, 1965).
- (13) Barraband and Crimson-winged Parrakeet (A. W. E. Fletcher, *Avicult. Mag.*, 1965).
- (14) (a) Swainson's and Red-collared Lorikeet.
(b) Splendid and Turquoise Parrakeet.
(c) Peach-faced and Masked Lovebirds.
(Reported by S. M. Anderson, *Avicult. Mag.*, 1963).
- (15) Leadbeater's and Citron-crested Cockatoo (S. B. Kendall, *Avicult. Mag.*, 1963).
- (16) Swainson's and Scaly-breasted Lorikeet (N. Burnett, *Avicult. Mag.*, 1963).
- (17) Roseate and Bare-eyed Cockatoo (Wroclaw Zoo, *Avicult. Mag.*, 1960).
- (18) Solitary Lory and White-rumped Lory (Dr. A. Lendon, *Avicult. Mag.*, 1960).
- (19) Swainson and Scaly-breasted Lorikeet (W. Hicks, *Avicult. Mag.*, 1959).
- (20) Queen Alexandra's and Rock Pebbler (Dr. A. Lendon, *Avicult. Mag.*, 1959).
- (21) Solitary and White-rumped Lory (Taronga Park Zoo, *Avicult. Mag.*, 1959).
- (22) Greater Sulphur-crested and Blood-stained Cockatoo (E. Boosey, *Avicult. Mag.*, 1959).
- (23) Barraband's and Princess of Wales's Parrakeet (Risdon, *Avicult. Mag.*, 1958).
- (24) Black-headed and White-bellied Caique (Lady Poltimore, *Avicult. Mag.*, 1958).
- (25) Stanley and Red-rumped Parrakeet (L. A. Hadlow, *Avicult. Mag.*, 1958).

- (26) Mealy and Rosella Parrakeet (S. Porter, *Avicult. Mag.*, 1958).
 (27) Pileated Parrakeet and Rosella Parrakeet (H. P. Van Heyst, *Avicult. Mag.*, 1958).
 (28) Turquoise Parrakeet and Elegant Parrakeet (S. Porter, *Avicult. Mag.*, 1958).
 (29) Brown and Yellow Rosella (D. M. West, *Avicult. Mag.*, 1957).
 (30) Roseate and Bare-eyed Cockatoo (K. Lukaszewicz, *Avicult. Mag.*, 1957).
 (31) Timneh and African Grey Parrot (K. W. Dalton, *Avicult. Mag.*, 1957).
 (32) Yellow-cheeked and Cactus Conure (*Avicult. Mag.*, 1957).
 (33) *Melopsittacus* and *Agapornis* (Gray) ; Notes on interfamily crosses and hybrids.
 The paper is "Physical and Behavioral factors in sociality and evolution of certain Parrots", and the breeding notes are secondary to behaviour (Hardy, *Auk*, 1966).
 (34) King Parrakeet and Crimson-winged Parrakeet (Marquis of Tavistock, *Bull. Brit. Orn. Club*, 1930).
 (35) *Platyercus elegans* and *Platyercus eximus* (A. Keast, *Bull. Mus. Comp. Zool.*, 1961).
 (36) Tasmanian Rosella and Pileated Parrakeet (I. Gould, *Avicult. Mag.*, 1967).

FINCHES

- (1) Blue-winged Warbler and Golden-winged Warbler (M. S. Ficken, *Amer. Zool.*, 1965).
 (2) Grenadier Waxbill and Violet-eared Waxbill (Lowe, *Avicult. Mag.*, 1965).
 (3) Indigo Bunting and Lazuli Bunting (B. W. Anderson, *The Loon*, 1965).
 (4) Spanish Sparrow and House Sparrow (Golovanova and Popov, in Russian).
 (5) Silverbill and Bengalese (C. J. O. Harrison, *Avicult. Mag.*, 1962).
 (6) White-crowned Sparrow and White-throated Sparrow (J. M. Abbott, *Wilson Bull.*, 1962).
 (7) Clay-coloured Sparrow and Chipping Sparrow (Mrs. M. McIlroy, *Kingbird*, vol. II).
 (8) Chaffinch and Brambling (C. Orlando, in Italian).
 (9) Tree Sparrow and House Sparrow (R. A. Richardson, *Brit. Birds*, vol 50).
 (10) *Fringilla coelebs* and *Fringilla montifringilla* (E. Moltoni, *Riv. Ital. orn.*, vol. 26).
 (11) Black-head Nun and Bengalese (J. A. Burdick, *All Pets*, 1963).
 (12) Combassou and Pin-tailed Whydah (C. S. D. Harrison, *Avicult. Mag.*, 1963).
 (13) (a) Goldfinch and Canary.
 (b) Goldfinch and Bullfinch.
 (H. Hundrieser, *Amer. Cage Bird*, 1967).
 (14) Black-hooded Red Siskins and Canary (G. Abbate, *Amer. Cage Bird*, 1967).
 (15) (a) Green Singing Finch and Canary.
 (b) Siskin (*Carduelis spinus*) and Canary.
 (J. A. Burdick, *Amer. Cage. Bird*, 1967).
 (16) Mealy and Lesser Redpolls (F. C. Astles, *Avicult. Mag.*, 1965).
 (17) White-headed Nun and Chestnut-breasted Finch (J. D. Money, *Avicult. Mag.*, 1965).
 (18) *Turdus cordis* and *Turdus gray* (A. H. Isenberg, *Avicult. Mag.*, 1962).
 (19) (a) Alario and Canary.
 (b) Avadavat and Firefinch.
 (c) Hodgson's Rosefinch and Red Factor Canary.
 (d) Red Avadavat and Goldbreast—also F. hybrid.
 (Reported by S. M. Anderson, *Avicult. Mag.*, 1963).
 (20) Blackbird (*Turdus merula*) and American Robin (*Turdus migratorius*). (W. C. Dilger, *Avicult. Mag.*, 1959).
 (21) Bengalese (*Lonchura striata*) and Silverbill (*Lonchura malabarica*) hybrids. A most interesting article reporting information that these hybrids are sterile. (*Avicult. Mag.*, 1958).
 (22) Grey Singing Finch and Green Singing Finch (D. F. Castle, *Avicult. Mag.*, 1958).
 (23) (a) Bicheno's Finch and Zebra Finch.
 (b) Grey Singing Finch and Zebra Finch.
 (G. Anderson, *Avicult. Mag.*, 1957).
 (24) Spice Finch and Magpie Mannikin (H. B Finch, *Avicult. Mag.*, 1957).
 (25) Ring Ouzel and Mistle Thrush (Comte Leon Lippens, *Avicult. Mag.*, 1957).
 (26) Scarlet and Maroon Tanagers (hybrids are fertile) (R. E. B. Brown, *Avicult. Mag.*, 1957).

- (27) Wren Hybrids (R. K. Selander, *Auk*, 1966).
 (28) Hybrid Sparrow-Junco (M. Warburton, *Eastern Bird Banding Assoc. News*, 1959).
 (29) Hybrids of Slate-colored Junco and White-throated sparrow. A very good paper in which Lester L. Short and Stephen W. Simon suggest that the genera *Passerella*, *Melospiza* and *Junco* be merged into *Zonotrichia* or a broadened genus of *Junco*. (*The Condor*, 1965, pp. 438-442).
 (30) European Red Crossbill and hen Canary (G. Abbate, *Amer. Cage Bird*, 1967).
 (31) Linnet and hen Canary (H. Hundrieser, *Amer. Cage Bird*, 1967).
 (32) Green Finch and Brown Linnet (*Fringilla chloris* and *F. cannabina*) (A. Trevor-Battye, *Lord Lilford on Birds*, 1903).
 (33) Red Poll Hybrids in New Zealand (D. Stenhouse, *Nature*, 1960).
 (34) Red-eyed Towhee hybrids of Mexico (C. G. Sibley, *Evolution*, 1945).
 (35) *Motacilla flava* and *M. thunbergi* (Yellow Wagtail) (L. Sammalisto, *Ann. Acad. Sci. Fenn.*, 1958).

COLUMBIFORMES

- (1) Dove hybrids (W. D. Cummings, *Avicult. Mag.*, 1966).
 (2) Columba hybrid (C. Naether, *Avicult. Mag.*, 1965).
 (3) Turtle Dove and Collared Turtle Dove (K. H. Voous, *Limosa*, 1963).
 (4) Stock Dove and Pigeon (*Columba oenas* and *Columba livia* (W. Tomek).
 (5) Turtle Dove and Barbary Dove, reported fertile hybrid. (J. R. Lowe, *Avicult. Mag.*, vol. 62).
 (6) (a) Snow Pigeon and Strasser Pigeon.
 (b) Ringneck Dove and Tumbler Pigeon.
 (C. Naether, *Avicult. Mag.*, 1966).

Two productive examples of future work in the breeding of hybrids could be the following :—

(a) In W. R. Eastman and A. Hunt's book *The Parrots of Australia*, there is a listing of "individuals, parrots of questionable taxonomic placement". These parrots include the Quarrion (*Leptolophus hollandicus*) and the Budgerigar (*Melopsittacus undulatus*). Cross breeding these two common birds with other parrots would be of aid in taxonomy.

(b) In *A New Dictionary of Birds* (L. Thomson) the grass finches are listed as a tribe (*Estrildini*) of the "Weaver-Finch" (*Passeriformes*, sub-order *Oscines*, *Estrildidae*.) There seems to be a great deal of confusion as to the exact relationship of *Poephila*, *Zonaginthus* and *Erythura*, and a list of fertile and sterile hybrids would be useful for taxonomy.

It should be noted that notes of behaviour, such as given by Hardy (*Auk*, 1966), are of great importance and should be reported, as well as the fact of the genetic cross. Given unusual conditions it may be possible to breed hybrids which never would occur in the natural environment. The value to give to "crosses" and/or the amount to give "behaviour" in the definition of species is still a much discussed problem.

NOTES FROM LITCHFIELD (especially Eyton's Tree Duck)

By DILLON RIPLEY (Litchfield, Connecticut, U.S.A.)

This has been what I would term an "Atlantic Summer" in New England, a great deal of rain, and, along the coast frequent fog, all through June and July. The rain has continued in a way which is reminiscent of the bad storms of 1938 and 1955 which saturated the land so that autumn rains associated with hurricanes created havoc-making floods. We can hope that this pattern will not be repeated.

After a cold, miserable spring, we were surprised to find most waterfowl breeding well, even though later than usual. Some of the geese were affected by the late season and simply passed up nesting, but the ducks managed well. We were pleased to rear Siberian Red-breasts again, American Eider, Hawaiian Ducks, and Canvasback among the waterfowl, as well as the Gough Island Moorhen among the rails.

Our most interesting pair of nesting birds this year were the Eyton's Tree Ducks. I had secured a supposed pair in 1963 from P. Kooy, who is recorded in Vol. IV of Delacour's *Waterfowl of the World* (1964, p. 329) as having bred them for the first time in Europe in 1961. One of our birds, which we suspected were two males, totally uninterested in each other, was killed by a mink in 1965, and at last, in the summer of 1966, I managed to get a female through a dealer. These birds immediately paired up and became inseparable, and this spring of 1967, showed continual interest in each other, calling continually if separated by any distance. The calls were loud and distinctive, the usual two-syllable, burbling note which I might render—"tch-wee." The nearest that I could rationalize a display call by the male, was a longer version of this—"tch-wee-tcha," or "tch-wee-tchee," usually delivered in the water, after the male bird, flank feathers fully erect on either side, had approached the female, head lowered as if to dip his bill in the water, and then drawn backwards a bit in the water as a goose will do. In the case of a displaying gander the tail is noticeably lifted, but I do not notice this with our male Eyton's Tree Duck. It was simply that the slight swimming backward motion of the drake, and the stiff posture was reminiscent of a gander. As Delacour had noted (tom. cit., Vol. I, 1954, p. 38), this species is very goose-like, the most so perhaps of all the tree duck.

In early July we noticed the pair standing near a box on the shore of the lower of our Canal Ponds. Soon the box began to show the tell-tale signs of a scrape of Tree Duck with the presence of blades of fresh green grass, fresh willow leaves, and small pieces of green weeds. The first two eggs were noted 4th July. Subsequently a total of sixteen

were laid in two clutches of ten and six. The eggs were small and white, bantam chicken-like, and ranged from 44–48 by 33–40 mm. in size, smaller than those listed in Delacour (op. cit., p. 36).

Hatching was irregular, and the last six hatched finally on 1st September, under a hen. The ducklings are paler than indicated in Plate IV by Peter Scott, in Delacour's Vol. I (op. cit., p. 88). The back colour of our birds is a dark sandy-buff rather than black as indicated. In addition the streak of down on the back is long, running well up the back to between the wings. The head pattern is more elaborate, the superciliary streaks are continuous across the forehead and going well back to above the ears. At about five weeks feathers begin to appear, first on the flanks in two distinct patches, the anterior, warm brick-buff colour, the posterior pale sandy-coloured with dark brown edges, a miniature replica of the striking adult pattern. As feathers continue to replace the down, an interesting feature of the juvenal or immature plumage is the pale cream-coloured forehead and superciliary bands which reproduce the prominent downy streaks mentioned above. The rest of the face and hind neck becomes uniformly coloured, so that the paler forehead-superciliary pattern is emphasized in contrast. At this time the bill also begins to colour, glaucous along the culmen ridge, shading to pinkish near the base of the bill and the edges of the mandibles, which become finally fleshy-white. The nail is dark brown.

The young flock closely together, tending to fuss and bother ducklings of other species, kept by chance in the same run. I finally separated them, as they bullied even much older ducklings, plucking down in patches from their backs and rumps. A goose-like posture of a resting duckling is lying with one leg stretched completely backward, webs and toes upside down like a goose or swan.

Our Tree Ducks in general seem to be somewhat aggressive if there are small flocks of one species on the ponds. Our Cuban Tree Ducks attempt to mob a pair of young Black-neck Swans whose efforts to rebuff them are half-hearted at best. Red-billed Whistling Ducks sometimes "gang up" on a particular duck at another time, and mob it, setting up their shrill and rather tedious whistling at a level which becomes irritating to the human if nearby, and must be overpowering to the object of their temporary hysteria. As we have only a pair of Eyton's at present, I have no experience with the species in a flock. But if the juveniles are any indication, they too must flock together and show common mobbing behaviour with other species.

Eyton's Tree Duck have been reared once before in North America, by Paul A. Shaw, of Marston's Mills, Massachusetts, who reared two out of four young from one pair in 1966.

BREEDING MEYER'S PARROT

(Poicephalus meyeri)

By KENNETH W. GREENWAY (Bladon, Oxford, England)

One of my most interesting breedings this season has been the rearing of a young Meyer's Parrot (*Poicephalus meyeri*).

I obtained the adult pair at the end of 1964, and housed them inside until the following spring. They were then transferred into a small aviary 12 by 3 feet and provided with a nest-box 18 inches deep and 9 inches square with a 3 in. entrance hole. An upturned turf was then placed in the bottom covered with a 3 in. layer of rotten wood.

Both birds seemed very interested in this, and after seeing them pairing on several occasions I had high hopes of them getting down to serious nesting activities. Evidently the birds had very different ideas, for they began to lose interest and did not make any further attempt to breed, but I had at least established they were a true pair, something I was not at all sure about at the beginning of the season.

1966 proved to be more or less a repetition of the previous year, with plenty of interest again shown at the beginning by both birds. The cock was seen feeding the hen frequently, and pairing again took place, but still no eggs appeared. Towards the end of the summer I again put them inside for the winter months.

By the beginning of April, 1967, I had completed a small range of aviaries with individual flights 9 by 6 feet, into one of which I again transferred the parrots. I also supplied them with another nest-box constructed from an old hollow apple log, some 18 inches deep, with the turf and rotten wood as before. To this they seemed to take an immediate liking, and by the end of the month the hen was remaining in the box for much longer periods than before. On 5th May I had reason to believe she might have laid and a quick peep into the box at an opportune moment confirmed this. A few days later two more eggs had been added, making the total clutch of three. Naturally, at this particular time I was anxious not to disturb them any more than was absolutely necessary, and it was not until 3rd June that I had a further opportunity to take another look into the box and was delighted to see two youngsters had hatched. A few days later, however, I was grieved to find one of these had died, but the remaining chick looked strong and well fed; the odd egg had still not hatched and was subsequently found to contain a dead chick.

I now decided to curb my curiosity and try to judge progress by the general behaviour of the parents. In the early stages I saw little of the hen, the cock paying frequent visits to the nest-box. At such times I could hear the faint squeak of the chick, which became louder as the days progressed. By the middle of the month the hen was staying off

for quite long periods, probably prompted by the warm weather at this time. She did, however, still appear to be distinctly moody, on several occasions sitting practically motionless outside the nest-box entrance hole for long intervals before retiring into the box, sometimes late in the evening. It was this kind of behaviour that deterred me from looking as often as I would have wished.

On 13th July I decided to take a chance and coax the birds into the shelter, to enable me to have a photograph taken of the young bird now about six weeks old.

On 26th July I noticed the young bird being fed from the entrance hole for the first time. It finally came out of the box on the 30th, well over eight weeks after hatching. It looked strong and well-feathered. The general body colour was of a greenish-brown, with yellow shoulder patches, but minus the yellow head band of the adults; the thighs and rump blue, the underparts being of a pale grass green.

Their diet consisted of sunflower, canary, millet, hemp soaked millet sprays, peanuts, boiled carrot, apple, and green food in variety, particularly sowthistle of which they were very fond.

The young bird is now fully independent and, although it began by sleeping with its parents in the hut, with the advent of cooler nights it now returns each evening to the nest-box.

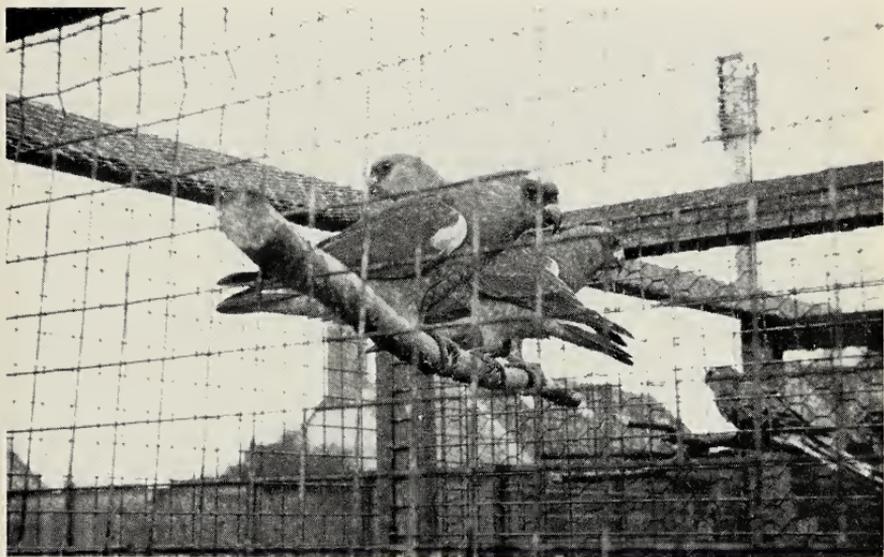
As described, Kenneth W. Greenway has bred Meyer's Parrot (*Poicephalus meyeri*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *



YOUNG MEYER'S PARROT IN NEST-BOX, 6 WEEKS OLD—13TH JULY, 1967.



Copyright]

[R. J. Read

MEYER'S PARROT, ADULTS WITH YOUNG—23RD SEPTEMBER, 1967.

[To face p. 196



A MALE COMB DUCK.



Copyright]

[J. O. D'cath

THREE-WEEK-OLD COMB DUCKLINGS WITH BANTAM FOSTER PARENT.

[To face p. 197

THE COMB DUCK (*Sarkidiornis melanotos melanotos*) IN CAPTIVITY

By J. O. D'EATH (Hadley, Herts, England)

There are two forms of the above-named species, the subject of these notes being an inhabitant of the Old World and *S. sylvatica* that of the New World. The main plumage distinction between the two forms is quite pronounced inasmuch as *S. melanotos* has pale grey flanks whereas *S. sylvatica* has black.

The male Comb Duck or Knobnose, as it is sometimes called, is a striking looking bird with brilliant blue-green upper parts and pale grey flanks. The neck is white with predominant black speckling. During the breeding season a suffusion of orange-yellow appears on the nape of the male, whose distinguishing feature is a large fleshy knob at the base of the beak which becomes considerably enlarged during the breeding season. The female is less than half the size of the male. On first sight these birds look far more goose-like.

The distribution of this species is a very wide one. It is found in Africa south of the Sahara and then ranges eastward to India, Ceylon, Burma, and Siam (Delacour, *Waterfowl of the World*, Vol. III, p. 123). I have only personally observed the Comb Duck in East Africa and it was in January, 1962, when returning from a safari to the Murchison Falls Park, Uganda, that I saw the species in the wild for the first time and was able to film it. On two subsequent visits to East Africa in 1964 and 1965 I recorded these birds at various places in Kenya, Tanzania, and Uganda. I expected, but did not see it on a safari to Lake Rudolf in the Northern Frontier territory of Kenya where most other species of duck were present. I was there in February and it may be that its absence was due to some seasonal influence. From my own observations I would say that this species is by no means common in East Africa, certainly not as plentiful as the Egyptian Goose. The largest number I have recorded at any one time was a party of nine, whereas I have seen a flock of one hundred Egyptian Geese in the N'Gorongoro Crater (7,500 feet), Tanzania. The Comb Duck seems to show a preference for small ponds rather than large sheets of water and is usually encountered in parties averaging four or five. I have only seen it perching on one occasion. It is not at all wary and is quite approachable, being completely silent on taking wing. The flight is leisurely and gives no impression of speed.

I will now turn to my brief and limited experience of this species in captivity. Through the generosity of the Wildfowl Trust, I acquired a pair of hand-reared Comb Ducks in 1964. I recall that my first impression was that the male looked an aggressive type of bird and I

had some qualms about introducing it to my general collection. However, I saw no signs of anti-social behaviour even when breeding subsequently took place three years later. In *Waterfowl of the World*, Delacour states that males should be kept in the ratio of one to three females or more. This has not been my experience, but it may well be an isolated one. In the collection here the male Comb Duck was seldom seen in company with the female. On 20th May this year an egg was found in a hollow tree-trunk set vertically in the ground. A 4 inch access hole 3 feet above water with a ladder leading to it was the source of entry. The egg was creamy white and very highly polished. At that time, a pair of Moluccan Radjah Shelduck had been frequenting the area and my thoughts were focused on their breeding, the egg description of these two species in literature somewhat approximating.

However, nine eggs were laid at daily intervals (not on alternate days as with most ducks). It was not until the eighth egg was laid and brooding was about to commence that the species laying was definitely established. It is interesting to record the small quantity of down as compared with other hole-nesting species such as Carolina or Mandarin. On 11th June the clutch of nine eggs was set under a Bantam. Incubation proceeded and on 8th and 9th July six ducklings had hatched, the remaining three eggs being clear. The incubation period therefore being twenty-eight days. I noted that the ducklings in the sitting-box after the Bantam was lifted displayed a definite defensive aggressive attitude which I think sufficiently unusual to record here for any students of behaviour.

Rearing was carried out in the conventional manner with a diet of Turkey Starter Crumbs supplemented with duck-weed and would appear to present no difficulty. The ducklings are yellow with buffy-brown markings and a line running through the eye. On 2nd July, a second clutch was commenced in the same site and this amounted to thirteen eggs. This is the largest clutch of eggs I have ever had from any species in my thirty-five years of experience with water-fowl.

On 15th July sitting was commenced and nine eggs were transferred to a Bantam leaving four under the female Comb Duck. She deserted these forty-eight hours later. Out of this second clutch eight ducklings were hatched and reared making a total of fourteen successfully reared in all from the two clutches.

The Comb Duck seems to be very poorly represented in private collections in this country, in fact I cannot recall seeing it at all. In view of my experience recorded in these notes I hope that any doubts as to this species suitability for private collections will be removed. The Comb Duck appears to be completely hardy in our climate and to my way of thinking is an exceedingly attractive bird and well able to take its place in any waterfowl collection.

BREEDING THE YELLOW-FRONTED AMAZON

(*Amazona ochrocephala ochrocephala*)

By CLIFFORD SMITH (Denholme, Yorks, England)

This pair of South American parrots were purchased from two separate sources in 1961. They were both large, beautifully feathered birds, identical even to the size of the yellow patch on the forehead and the red feathers on the bend of the wings. To make matters worse each of the birds "displayed", walking quickly along the perches with head thrust forward and wings partly opened and lowered, showing the large variety of colours which are not normally seen when the birds are perching.

The first indication that I had a true pair came when I noticed that one particular bird, only recognized by a missing claw, always positioned itself between me and the other bird when feeding, and had no hesitation in having a bite if my hands came too near.

The birds were housed in a 10 by 5 by 6 ft. high flight with feeding quarters in the birdhouse at the rear. Two nest-boxes were introduced, one being a grandfather clock type, 5 feet high and 10 by 10 inches inside. This had a 4 inch entrance hole 6 inches from the top, a wire ladder down to the peat and turf filling about 12 inches below the entrance. The nest-box was in the outside flight, but the top was covered by a piece of $\frac{1}{4}$ inch cast glass in a wood frame and firmly screwed to the top of the aviary. The other nest-box was a natural hollow log 15 inches in diameter with 2 inches of timber and the bark still left on the log. As this was only about 2 feet long I stood the hollow log on top of a solid natural log 4 feet long. This log was placed in the flight with no overhead cover.

In the spring of 1966 mating was observed and in June the hen was seen entering the natural log and eventually disappeared for long periods. I was able to see into the log through the top of the aviary with the help of a pair of stand steps, and while the hen was in the shelter feeding, I saw two eggs lying on the peat. The hen sat very tight for at least five weeks, but eventually left the nest and appeared to have no further interest in it. I could not see anything from the top of the aviary so I entered the flight. The nest was empty with no sign of either eggs or young. This was very disappointing as I now had no means of knowing if the eggs had been fertile or not. Both birds then dropped into a moult so that was the finish for 1966.

In 1967 the same nest-boxes were cleaned out and given a fresh layer of peat. I decided to give some protection to the top of the log they had used in 1966 so I covered it in the same way as the "grandfather" nest-box. The Amazons obliged by ignoring the log they had used before and using the grandfather clock. The same display by both birds, the mating and the disappearance of the hen were identical

to that of 1966 but on 11th July the cries of young birds were heard. The nest-box was not disturbed until 7th September, when a quick look revealed two young birds, well feathered on the wings and head and the yellow forehead was very distinct at that age. The first young bird left the nest on 23rd September to be followed a week later by the other bird. If the young were heard as soon as they hatched this means a period of seventy-four days in the nest.

Both the young left the nest fully feathered and in perfect condition. They are a slighter duller green than the adults but the black edging to the feathers on the mantle and back is very clearly defined, I should say more so than the adults.

The beaks of the young are all dull black and do not show any of the horn colouring seen on top of the beaks of the adults. Whereas the eyes of the adults show vivid reddish-brown irides, the young have all-black eyes with just a faint suggestion of dark grey irides. This has already become more pronounced after three weeks out of the nest. The red shoulders to the wings are present but some of the wing-tip feathers are black in the young whereas the adults are very dark blue. The young are both as big as their parents and at the time of writing are cracking their own seed, which I have put in the outside flight under cover, but they still beg for food from the adults, who are still willing.

While the young were being fed, both adults visited the nest and the hen brooded the young to within three weeks of leaving the nest. While feeding the young the adults had canary, millet, hemp, safflower, wheat, and sunflower, both dry and soaked, but it was not until the last week of rearing that the dry seed was eaten, preference being shown for the soaked seed.

Although apples, grapes, and occasionally a slice of orange were taken by the birds through the year, they had not the least interest in fruit while feeding young. The same applied to peanuts for a period. Greenfood was supplied every day consisting of chick-weed and groundsel, which I believe are essential for rearing the larger parrots. Dandelion leaves and roots were also given twice weekly.

There were some very anxious moments during the rearing period, particularly after a violent thunderstorm, when the hen did not go in to feed the young from noon until dusk, but the results have been well worth the worry and time spent in breeding these beautiful parrots.

As described, Clifford Smith has bred the Yellow-fronted Amazon (*Amazona ochrocephala ochrocephala*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

TAPEWORM IN THE ABYSSINIAN LOVEBIRD

By M. A. MOGG (Louth, Lincs., England)

On 2nd September, 1967, I acquired a pair of Abyssinian Lovebirds (*Agapornis taranta taranta*); on arrival both birds were in good condition and remarkably steady. They were offered a good seed mixture together with sweet apple. Both birds were feeding well, preferring sunflower to the other seeds offered. It was noticed that the hen was eating more than the cock. The birds were isolated on arrival and after a few days, on 5th September the hen appeared to be off-colour, she was placed in a hospital cage at a constant temperature of 90° F. The following notes were taken over the ensuing days:—

5th September.—Hen feeding, droppings liquid green, thought to be suffering from enteritis, Treatment: syrup of buckthorn added to drinking water.

6th September.—Condition deteriorating, off food, droppings brownish green, continue treatment for enteritis.

7th September.—07.00. Hen very weak, vomiting brown mucous overnight, droppings tinged with blood, having difficulty in passing droppings, not feeding at all.

10.00. Bird on floor of cage, very weak, unable to fly or bite. Force-feed hourly with mixture of Glucodin and water (2 heaped teaspoons to $\frac{1}{4}$ pint of water). Treat for coccidiosis.

12.00. First dose sulphamezathine ($\frac{1}{4}$ fl. oz. to pint of water), dose given with eye-dropper every 2 hours, 5 drops at a time. Continuing glucose every hour.

14.30. Signs of worm at vent, bird breaking it off as it is passed. (At one point there was some $1\frac{1}{2}$ inches of worm protruding).

17.00. Head of worm clear, bird exhausted, in corner of cage, glucose feeding continued.

18.30. Bird starting to feed on seed, unable to crack many seeds, eating only small sunflower.

8th September.—Although still very weak eating more seed, cage temperature at 90° F.

The high cage temperature was maintained for a further two days then gradually reduced to normal room temperature, approximately 60° F.

The worm was unfortunately broken up by the bird as it was passed; however, having watched the whole operation I would estimate the size to be $3\frac{1}{2}$ to 4 inches in length and varying in diameter between $\frac{1}{8}$ and $\frac{1}{4}$ inch. What parts that could be retrieved have been preserved. These portions make up approximately 3 inches in length. The head is intact and is dark red and black. The body is tapered, white in colour, similar to the human tapeworm.

No doubt the force-feeding of glucose is a little unorthodox, but it worked, without it I feel sure the bird would not have come through the ordeal.

Although it was not possible to take the weight of the bird the loss in weight was visible and of course handling the bird confirms this, the breast bone became very sharp by the third day.

* * *

NEWS FROM CHESTER ZOO

By M. F. COUPE

A number of interesting additions to the Bird Collection have been received during recent weeks. One of the most spectacular is a South American Spectacled Owl (*Pulsatrix perspicillata*), which was sent to us by our good friends Lieut.-Colonel and Mrs. Rubenstein, who also sent us a Grey-winged Trumpeter. The Spectacled Owl has been accommodated in one of our Owl Aviaries and its unique markings make it most popular with members of the public. From the colouration it is obviously a first-year bird but very little is known about these Owls except that they take five years to attain adult plumage and live in thickly forested areas. Also to arrive recently were a pair of Secretary Birds which have been housed in one of our Stork enclosures at the rear of the Monkey House. Unfortunately both these birds are of rather a nervous disposition but are gradually settling down. A collection of weavers and whydahs have been introduced into one of the Rainbow Flight Aviaries, including the following species: Red Bishops, Baya Weaver, Yellow-shouldered, Red-collared, and Fischer's Whydahs. Also liberated in the same aviary was a South American Yellow-headed Marsh Bird.

With regard to the waterfowl, a pair of Egyptian Geese have arrived; Barnacle and Emperor Geese have been hatched at the Zoo.

The Sclater's Crested Curassows have again hatched two young which are just over a month old at the time of writing. This is a happy sequel to their last breeding attempt when the eggs were stolen the day before they were due to hatch. Unfortunately both birds appear to be cocks as were last year's birds. Another unusual hatching was of two Indian Hill Mynas. Although these birds are commonly kept in captivity they have rarely been recorded as breeding, in fact, Keston Foreign Bird Farm received a Medal for breeding this species during 1957. The only difficulties we experienced with breeding these Mynas was their aggressive behaviour when feeding young, towards other birds in a mixed collection. This problem was obviated by feeding large quantities of chopped, day-old chicks which seemed to satisfy the Mynas' voracious, carnivorous appetites.

The Great Eagle-Owls have again reared four fine youngsters which are now almost as large as the parents. In the near future the young will be separated from the parents and accommodated in a large flight aviary with a number of other Eagle-Owls.

Parrakeet breeding has not been up to our usual standard this year but three very healthy Barrabands have just left the nest-box.

* * *

NEWS FROM WINGED WORLD

Several rare species have been added to the collection recently; the most exciting being pairs of Stork-billed Kingfishers and Green Wood Hoopoes, a Narcissus Flycatcher, and a White-browed Blue Flycatcher. In the same shipment as the Kingfishers from Bangkok were pairs of Nicobar Pigeons, Andaman Starlings, and White-breasted Kingfishers, and a fine group of Scarlet-backed Flowerpeckers.

Other additions of note were Bearded Reedlings, Double Striped Thicknees, Blue-headed and Black-headed Wagtails, and Little Minivets.

Our hen Red-billed Hornbill emerged recently after spending seventeen weeks completely sealed inside a nest-box, apart from a small vertical hole approximately $1\frac{1}{2}$ inches high by $\frac{1}{2}$ -inch wide through which the cock bird fed her untiringly throughout. Unfortunately the six intact eggs were clear, but the surprising feature of the nest cavity was that it was filled up to the level of the hole with palm fronds, leaves, grass, and feathers. This left only a space of 4 inches between the eggs, which were in a depression, and the top of the box. The nest was completely unsoiled and the hen appeared none the worse for her confinement in a space measuring no more than 8 by 7 by 4 inches.

C. G. ROOTS.

5th September, 1967.

* * *

LONDON ZOO NOTES

By J. J. Yealland

As already reported, a second chick of Princess Stephanie's Bird of Paradise hatched on 29th July. It thrived and grew rapidly until 8th August when it was found to be dead in the morning. I suspect that the mother left the nest during the night and that the cause of death of the chick was exposure to the cold. There was some nephritis, which is consistent with this course of events, and the report also spoke

of bone deficiency which was certainly not apparent, for, as with the first chick, the legs were strong and well formed. The foods provided were as before and, after all, we continued with the mealworms treated with Scott's emulsion, but if there should be another nestling we might try supplying mealworms that have been fed on bread treated with the Abedec vitamin compound. At no little trouble, due to the hostility of the owners, we got some wood-ant cocoons, but so far as we could tell, the mother did not take any of them; we also offered fresh wasp larvae and these were also refused, which was surprising, for there can be few insectivorous birds that would decline such a delicacy. The food given by the mother to the chick was regurgitated at the nest and, so far as we could tell, mealworms and cleaned maggots were the main items. The mother searched for something in the grass and so we sprinkled down some limestone grit and oyster shell, though whether she took any is not known. The chick, though only ten days old, was more advanced in plumage growth than the first and, we thought, proportionately more advanced in bodily growth. The father and all other insectivorous birds were removed from the aviary, so there was little or no competition for the live food.

A Black-bellied Bustard (*Lissotis m. melanogaster*), a genus new to the collection, and three Woodchat Shrikes (*Lanius s. senator*), a new species, have been presented by Messrs. G. H. and J. R. Newmark. Another new species is a Least Bittern (*Ixobrychus exilis*), which appears to be an immature male, and which flew on to a ship some 400 miles eastward of New York. Another is *Anas punctata*, the Hottentot Teal, of which a pair has been received from Tanzania. Two new sub-species are a pair of the Cyprus Rock Partridge (*Alectoris graeca cypriotes*) and the East African White-winged Whydah (*Euplectes albonotatus eques*).

A second Chinese Serpent-Eagle from Dr. K. C. Searle, a Swainson's Lorikeet from Lady Baillie, a Curlew from Master Guy Harrison, a Green Wood-Hoopoe from Mr. L. W. Hill, four Oystercatchers, an Aubry's Parrot, a Yellow-cheeked Parrot, a Heuglin's Robin-Chat, two Western Yellow-collared Iridophanes, and four Amethyst Starlings are other notable arrivals.

Three Sacred Ibises, three Cattle Egrets, two Peafowl, a Silver Gull, five Grey-headed Gallinules, a Barn Owl, and a Purple Honeycreeper have been bred in the Gardens, the last being, I believe, the first breeding in this country, as is the Cloncurry Parrakeet now independent of its parents.

Ten Quaker Parrakeets to augment our small flock have been obtained in order to try them next spring on the "homing" system as has been so successfully done in Bologna by Conte Massetti, and in Faenza by Dr. Bucci.

BRITISH AVICULTURISTS' CLUB

The ninety-fifth meeting of the Club was held at the Hotel Cavendish, Lancaster Gate, London, W.2, on Monday, 11th September, 1967, following a dinner at 7 p.m.

Chairman : Mr. K. Norris.

Members of the Club present : S. J. Allum, Miss P. Barclay-Smith, A. W. Bolton, Miss K. Bonner, R. A. Chester, J. O. D'eath, C. W. Desmond, Mrs. W. Duggans, Miss R. Ezra, H. J. Harman, Dr. E. Hindle, Dr. J. R. Hodges, Dr. S. B. Kendall, G. B. Lane, R. F. Marshall, P. H. Maxwell, A. A. Prestwich, J. H. Reay, R. C. J. Sawyer, K. M. Scamell, Mrs. K. M. Scamell, Mrs. H. Seth-Smith.

Members of the Club present, twenty-three : guests, three.

Members stood in silence in memory of Miss E. Maud Knobel.

There was a conversazione.

ARTHUR A. PRESTWICH,
Hon Secretary.

* * *

NEWS AND VIEWS

“Golden Cherry Lovebirds, fixed mutation of the Red-faced Lovebird, heredity fixed, the rarest mutations of all birds, first-time offered at £350 pair, due to arrive mid-September.”

So reads a recent advertisement. Surely Peach-faced must be intended. I cannot imagine that even the Japanese have succeeded in breeding *pullaria* to this extent.

* * *

Darwin's Rhea. Many readers must surely have been puzzled by the sub-title to Ralph Small's paper in the July-August number of the MAGAZINE. This strange combination of five words was, of course, due to a typographical misconstruction. The sub-title should have read “Avestruz de Magallanes”, which Arthur Douglas kindly informs me is a Spanish vernacular name for this species, meaning “Straits of Magellan Ostrich”, presumably the name used in Argentina.

* * *

J. H. Reay reports the breeding of one of the most charming doves, the Green-winged *Chalcophaps indica*. In May, two young were reared, and a further pair left the nest on 21st August and are doing well. This dove is a little unpredictable where breeding is concerned. Some pairs nest readily, rearing several broods in a short time, and then having a lengthy rest. Reay's result is the more pleasing in that his pair have been with him since 1963.

* * *

In the July–August number of the *MAGAZINE* I mentioned Popinjay as being an archaic name for a parrot. Many and ingenious are some of the suggested derivations of this name, but none is really very convincing. There is a somewhat similar word in most languages. Its use does not appear to be confined to parrots, and in all probability it has at some time been applied to almost any brightly-plumaged bird. In England the name was, and is perhaps still, used provincially for the Green Woodpecker.

* * *

A note in *Bokmakierie*, June, 1967, quotes a report that nearly 95 million *Quelea* Finches, weighing a total of 6,000 tons, were killed last year by night-flying pilots in poison-spraying operations. The highest number of *Queleas* killed in one year was 142 million, in the season before last. The not unattractive Red-billed Weaver was formerly imported from time to time. There are several British breeding records, most of which are not very convincing. It may, of course, be that with so common a bird success was not considered worth recording.

* * *

Mrs. K. M. Scamell sends further news of her Ruby-throated Bulbuls: "They threw out their chick at four days. I removed an unhatched egg which was addled. We put up two more nest-boxes to encourage them, but they laid again in the old box. Last Sunday (10th September) there were two eggs in it and this morning (Tuesday) there was some excitement in the flight, and I have seen egg shells, so it is likely that one young one has hatched anyway. I daren't go very near them except to feed, so will have to wait and see. The Humming Bird is again on eggs, after moulting!"

* * *

When a species is threatened to an extent when only a few dozen individuals are known to survive in the wild any expedient to save it from extinction is justified.

The wild population of the Whooping Crane is believed to be only forty-three. The birds' only known breeding ground is in the Sass River area of Wood Buffalo National Park, in northern Canada.

The Canadian Wildlife Service and the Bureau of Sport Fisheries, and Wildlife have co-operated in a special operation. Six eggs were collected and sent to the Bureau's rearing station at Patuxent, Maryland. Five were successfully hatched and all the young, including one that has a weak leg-joint, are reported to be doing well.

* * *

A Lyre-bird chick has been hatched in the Healesville Wild Life Sanctuary, near Melbourne. It is said to be only the second chick hatched in captivity this century.

There is an extraordinary letter concerning Lyre-bird hybrids in the *MAGAZINE*, 1905, 46. A. W. Milligan, said to be a well-known Australian ornithologist and field-naturalist, writes: "I was never able to rear *Menura superba*, although I made many attempts to do so. I had, however, hybrids between the Lyre-bird and the common fowl, and exhibited them at the Victoria Poultry Show many years ago."

The Editor, D. Seth-Smith, comments: "The production of such a hybrid is most extraordinary. We hope to hear more on the subject." We did not, as was but to be expected, and can only consider the Editorial "most extraordinary" too mild.

* * *

The Snowy Owl (*Nyctea scandiaca*) is regarded almost as a regular winter-visitor to the Shetlands. In years gone by there have been reports of the breeding of this species, but none has been substantiated. Now the Royal Society for the Protection of Birds has been able to announce the first authentic breeding for at least a century. A pair nested on the smallest of the main islands Fetlar—sometimes called the "Green island" because of its fields—during the past summer. A clutch of seven eggs was laid; six young ones were hatched and successfully reared. One of the young ones might have been lost but for the fact that Dr. Jeffery Harrison was holidaying on the island. It had the misfortune to fly into barbed wire. Dr. Harrison inserted three stitches in a wing muscle and twenty in the skin of the wing. Within two or three days it was flying again.

* * *

Dr. R. E. B. Brown, Newcastle, N.S.W., writes: "My old cock Red Tanager died recently. He was the first one I ever reared—hatched 12th November, 1938; died 30th June, 1967. He reared one young one during his last summer. The other day I was out driving in the foothills of the Mount Royal Mountain range and I came to a place where pomegranates had gone wild and formed a dense scrub. The bushes were about twenty feet high and were laden with the large, ripe fruit. The scrub was fairly extensive as I drove through it on a winding track. It was thirty-seven miles in width, by my speedometer. In this scrub there was the largest concentration of King Parrots I have ever seen. There must be many thousands there. There were also many Pennants, and I also saw a few Wonga Wonga Pigeons. The Kings were mostly in immature plumage. The King in the bush is extremely active. One large flock were doing evolutions around the tops of the hills exactly as one sees domestic pigeons doing round their lofts.

I had some success with Crested Cardinals last summer, rearing ten from one pair. They are quite rare here as none has been imported since before the war. In fact, all foreign birds are rare here except Waxbills, Asiatic Munia, and Cut-throats, and a few other birds that

will rear their young on white ants and have really become quite domesticated."

* * *

"Cora," one of the Tower of London's Ravens, died during the first week of September, aged twenty-one. She has been replaced by "Merry", six months old. About twelve years ago four young Ravens that had fallen from a dislodged nest were taken to Stanley Latchford, of Old Colwyn, North Wales. They were about a month old; one had a broken wing that Latchford successfully set, two were sound birds, but the fourth died after about a week, probably as a result of internal injuries. The three that were successfully reared proved to be two males and one female. One, "Grog," was presented to the Tower of London, the two others being retained by Latchford. At the sixth attempt this pair has recently reared three young ones, of which one is "Merry".

In the early part of the century Lord Lilford and W. H. St. Quintin bred Ravens quite freely.

I like the letter signed Ellis S. Harris in *Notes on Cage Birds*, First series, p. 163 (1882), where he says: "I have a fine young pair which were hatched in March, 1881, from a pair of old birds in possession of a gipsy, who has bred them from domesticated birds for the last ten years. They reared six young this season. He tells me that the hen makes her nest in an old box, and that the cock bird takes his turn on the nest. He lets the birds out in his yard at breeding time."

But in more recent years, apart from the present case, there appear to have been few, if any, Ravens bred in captivity.

A. A. P.

* * *

REVIEW

THE WATCHER AT THE NEST. By M. M. NICE, Constable and Co., London, 1967. Price 12s.

Mrs. Nice is, as I hope readers of the *AVICULTURAL MAGAZINE* already know, one of the world's most eminent ornithologists. She is also a bird lover in all the best meanings of the term.

In this book, which is a re-publication of one first published in 1939, she has written a popular account of her observations at the nest sites of many species, of some of her hand-reared pet birds and, most important, interesting and moving of all, a popular précis of her well-known study of the behaviour of the Song Sparrow. I need hardly say I here use the word "popular" *without* any detracting implication. Certainly much "popular" natural history writing is mendacious and misleading but at its best, as in Mrs. Nice's book, popular writing is at least as important, possibly *more* important, than "scientific" writing aimed only at the experts.

Those who know North America—on my only visit there I was impressed by the great abundance of brilliantly-coloured passerine species and the paucity of pigeons—will find a memory recalled on every page ; for those who have not, Mrs. Nice's text, aided by Roger Tory Peterson's sketches, brings Cowbirds, Bobwhites, Yellow-crowned Night Herons, and other transatlantic species vividly to life. This is above all true of those little brown buntings, the Song Sparrows, whose saga occupies most of the first half of the book. Indeed I found the disappearance (and almost certain death) of the longest-lived male, 4M, almost as saddening as the death of the dog Argos in the Odyssey.

I think that everyone fond of birds will enjoy and profit from this book.

D. G.

* * *

CORRESPONDENCE

REPLIES TO MR. BARNICOAT

Other contributors to our MAGAZINE will, I think, appreciate the glow of long-hungry, but at-last-fed vanity, with which I read Mr. F. C. Barnicoat's statement that he has long been an admirer of my articles. I have, of course, always hoped, and in my vainer moments assumed, that our readers like them, but those who actually admit the fact in word or print are few ; discounting my friends whose (expressed) views on the subject must, of course, be suspect as they are at least potentially capable of being swayed by partiality or kindness. I am, therefore, sorry that on re-reading my remarks about the National Show which Mr. Barnicoat has read with such evidently pained surprise, I find that what I wrote then I think still.

I should, however, like the opportunity to reply here to the points raised by Mr. Barnicoat in his letter of such kindly criticism, and write this in the hope that if, as is all too often the case, our fair Editor is a bit short of copy I shall be allowed space to do so:—

In the matter of publicising the fact that show birds are only kept for short periods in show cages South Africa is ahead of Britain. I hope our shows, if they continue, will follow this good example. I suppose it would be too much also to hope that each cage should be clearly labelled with the English and the scientific name of the bird inside it? If that were done shows would have much more educational value.

I am glad Mr. Barnicoat and I think alike about Scots Fancy Canaries and like monsters. I agree with him that the Lizard Canary is beautiful, at least when it is not "broken-capped". I think anyone reading my article would understand that the statement about "mere travesties" was a generalization. I had in mind more particularly the Budgerigar fancy, where the standard of size and shape is, at present, uniform for all breeds. This, of course, is not the case with Canaries and Domestic Pigeons, although even in these a majority of the more popularly shown breeds *are*, in my opinion, mere travesties of the beautiful original. One sees more Norwich and Yorkshire Canaries than Lizards at most shows, more Fantail and Carrier Pigeons than clean-legged Ices or Archangels.

The mutant forms of the Zebra Finch may be remarkable, although it might be mentioned that nothing really new has been *produced*, all the "new" colours and patterns have been produced by the *loss* of some pigment and/or marking possessed by the wild form. Without knowing how interesting and elevated the wildest visions of an earlier generation of Zebra Finch breeders were I cannot, of course, express a valid opinion as to whether our present-day assortment of unnaturally-coloured Zebra Finches surpass them in these respects or not. I do know, however, that in my opinion, they most certainly do not surpass the wild Zebra Finches that I saw in Australia for interest and quality, or incidently, for beauty.

I will concede that some of the colours of Budgerigars "like violet and sky-blue" are of great beauty although none *more* beautiful than the natural green in my eyes, but I think the Budgerigar was well on the way to being "illustrious the world over" before they were produced in any number if at all. The Budgerigar, I would suggest, became "illustrious the world over" because it was a *very small* and beautiful parakeet that proved extremely easy to keep and breed in captivity. The fancy by "the development of other features" in the form of larger size, shorter wings, proportionately larger and more bulging heads, and so on, seems bent on destroying some of the original Budgerigar's chief charms—its small and dainty form, its liveliness, and its hardiness. Perhaps this is one reason why a certain organization now seems to think it necessary to run a publicity campaign to try to restore the species to its former popularity. The values of the fancy may not be *always* perverse but if, as I deem to be the case, distorting originally beautiful birds ranks as perversity, they seem to be more often than not.

I have no wish to deprecate "the valuable efforts" of fellow aviculturists but I do not think that fanciers (in the showman's meaning of the term) are aviculturists, and I think their efforts to produce birds that differ in size, shape and proportions from the original wild forms are the very antithesis of aviculture. Such efforts, if successful, do in fact ensure that *natural* beauty does, indeed, end in the wild state! Blue and lutino Ringneck Parrakeets may indeed be beautiful. I think they are, but it is certainly not a *natural* beauty since these forms do not occur, except as occasional freaks, in the wild state.

I am not against the production and breeding of "new" colours in our aviary stocks of any species, provided that this does not result in the neglect (with danger of permanent loss) of the wild or natural colour-pattern. But although I am prepared to swallow the gnat of new colour I most certainly baulk at the ungainly camels of larger size, changed proportions, crests, frills, feathered legs, multiple toes, and the rest. When I visit a bird show, or see the showman's cast-offs in the pet shops (some of them superannuated breeding birds now cruelly condemned to pass their final years in solitary confinement as "pet budgies", a role for which they are quite unsuitable), I am afraid I do wistfully long for the original wild Budgerigar. If it were possible to obtain some I should be very tempted to take up Budgie breeding.

If Beauty is in the eye of the beholder, Wisdom is in the mind of its definer. Taking an objective view of mankind I am less hopeful than Mr. Barnicoat that wisdom of any kind is likely to prevail.

In conclusion, might I suggest that a more laudable effort than trying to change the size, shape, and colour of birds would be to try, without sacrificing *natural* beauty, to breed for tameness. How delightful it would be, for example, to have all our Diamond Doves, or even all our Canaries and Budgerigars, as tame as Barbary Doves!

DEREK GOODWIN.

40 FRANKFURT ROAD,
HERNE HILL,
LONDON, S.E.24.

* * *

I can well understand why Mr. F. C. Barnicoat should defend the causes of "the Fancy" against the views expressed by Mr. Derek Goodwin (a critic at the show), for he apparently believes that the many-hued Gouldian Finch needs whitewashing to improve its attractiveness.

Man has, through the centuries, manipulated many wild species to his own great advantage, but the view that man's alterations have improved the species involved is questionable.

The wild budgerigar might not win on the showbench but would the exhibition "thing" survive in the wild? Surely this is the only criterion to establish if man's improvements on nature were justified.

I, like Mr. Goodwin, feel that "the Fancy" produces travesties of the original, and I lament the fact that some of the most skilled bird breeders should devote their time to this almost worthless side of aviculture.

D. T. SPILSBURY.

5 LAMBOURNE AVENUE,
MALVERN LINK, WORCS.

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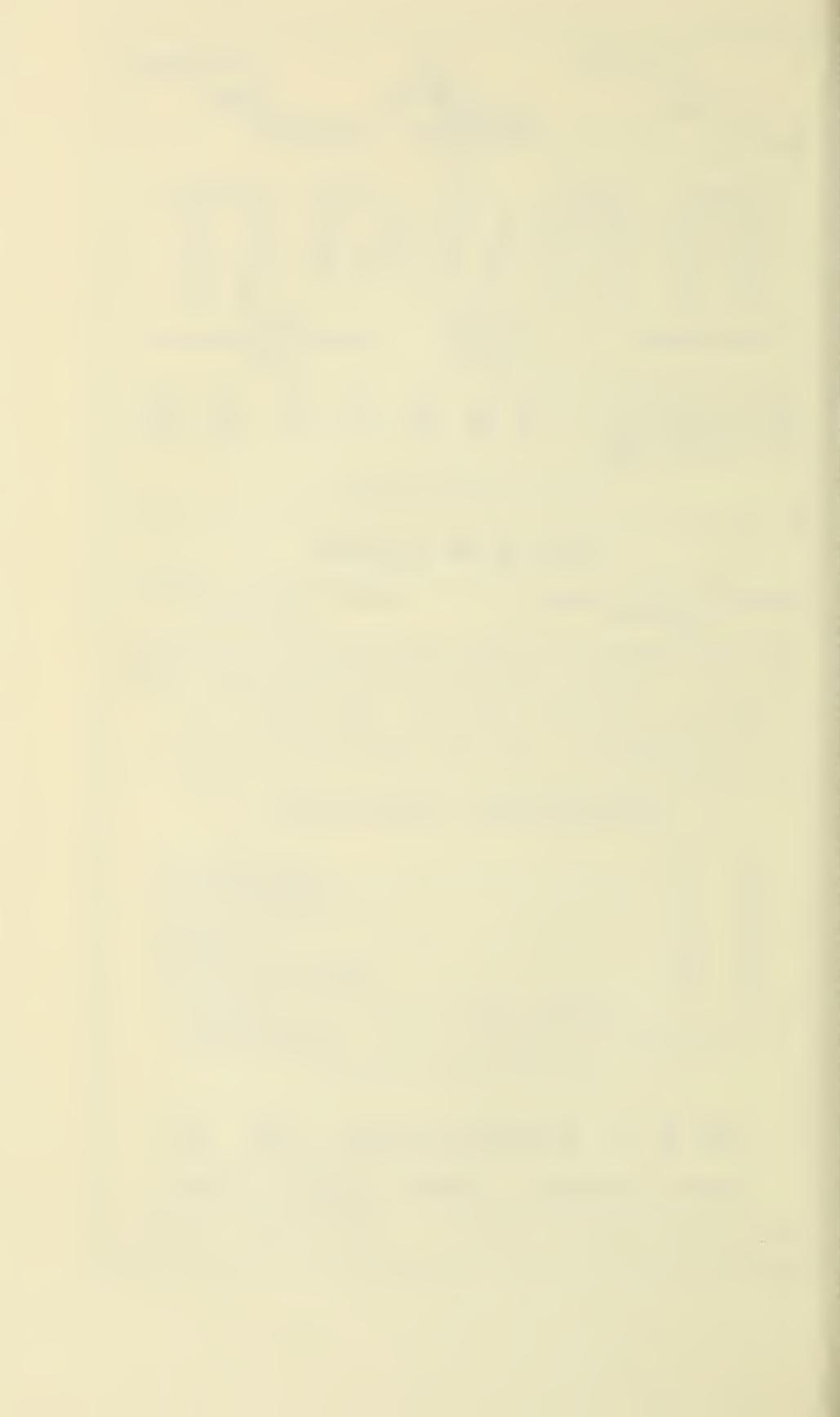
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- D. W. MUIRHEAD, to 3 Aerodrome Crescent, Thorpe St. Andrew, Norwich, Norfolk.
- J. H. NOON, to 40 Randolph Street, Woolston, Christchurch, New Zealand.
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