The Caique

PART I

by Dr. George Smith
Broadway Veterinary Clinic
Peterborough, Great Britain

As a subject for almost any ornithological study, the caique *Pionites* seems to be ideal. It now serves to give me information on artificial incubation and some factors determining the growth rate of chicks. Another interest it has for me is to use it to demonstrate the genetics of its particular pattern of feather color. The caique shows considerable geographical variation in appearance.

Unfortunately, these genetic studies have yet to involve those wonderful, even if they are abnormal, color mutations that so intrigue those who take an interest in such avicultural oddities. Shortly after World War II, a lutino was introduced to the United Kingdom by Miss Maud Knobel. As she kept it as a pet, it died without being given any opportunity to breed. Yet, inevitably, whether we do it wittingly or unwittingly, by inbreeding caiques, some mutations of color will be revealed.

As with other parrots, the caique, when given the opportunity, proves ready to go to nest. Mine have always bred in small flights and cages. During this time, it has become apparent that, although the caique has a pronounced territorial behaviour concerning its nesting area, it is highly sociable. Like the budgerigar, it seems to breed best when several pairs are kept in close proximity.

There are snags to keeping caiques. They cannot withstand continual exposure to the very low temperatures of a prolonged northern winter. Another is that they bawl fairly loudly, gesticulate with wing, head and tail, and call to each other. The impression then might be that this noisy posturing is because all are handicapped by partial deafness. This is not so. They have evolved their clatter and semaphore to communicate information through the dense canopy of a tropical forest. To my ears, the din is nowhere near as unpleasant as the squawks and shrieks made by the *Aratinga* conures. But it still can carry some distance. So, unless you live in warmer climates and well away from others, your caiques may have to be kept in an indoor bird room, rather than outside, in an attempt to muffle their sounds and stop them from getting their feet frosted in mid-winter.

With their brash, extrovert, swaggering ways, it might easily be imagined that caiques could be difficult to pair. Although they are hooligans and bullies in established pairs and family parties, they are usually well behaved when alone with a strange caique in strange surroundings. (It might be unnecessary to point out that when forming fresh pairs of parrots, or any other birds, the two should be put into a completely neutral "introductory" cage or aviary.)

When a single caique is placed with another bird, it may seem indifferent at first. In fact, there is less squabbling between two strange birds than will normally be present between most established pairs. There is an exception: the hand-reared pet is not always as cowed and well-mannered, for it is not solitary. It has an ally — the owner. Therefore, tame birds may first persecute and bully another bird.

The re-caging of "divorcee" caiques, again as with other parrots, should be arranged so that they cannot see and, preferably, not hear their former partner. When they are paired, caiques frequently bicker and quarrel. They happen to be that sort of bird. They have repeated arguments over perching, food, preening, and nest boxes. This strong individuality is part of their charm. When studying these birds, one will notice that females are less aggressive towards others than their mates. This somewhat more passive, less belliger-

Photo by George D. Dodge and Dale R. Thompson

Black-headed Caiques (Pionites m. melanocephala)

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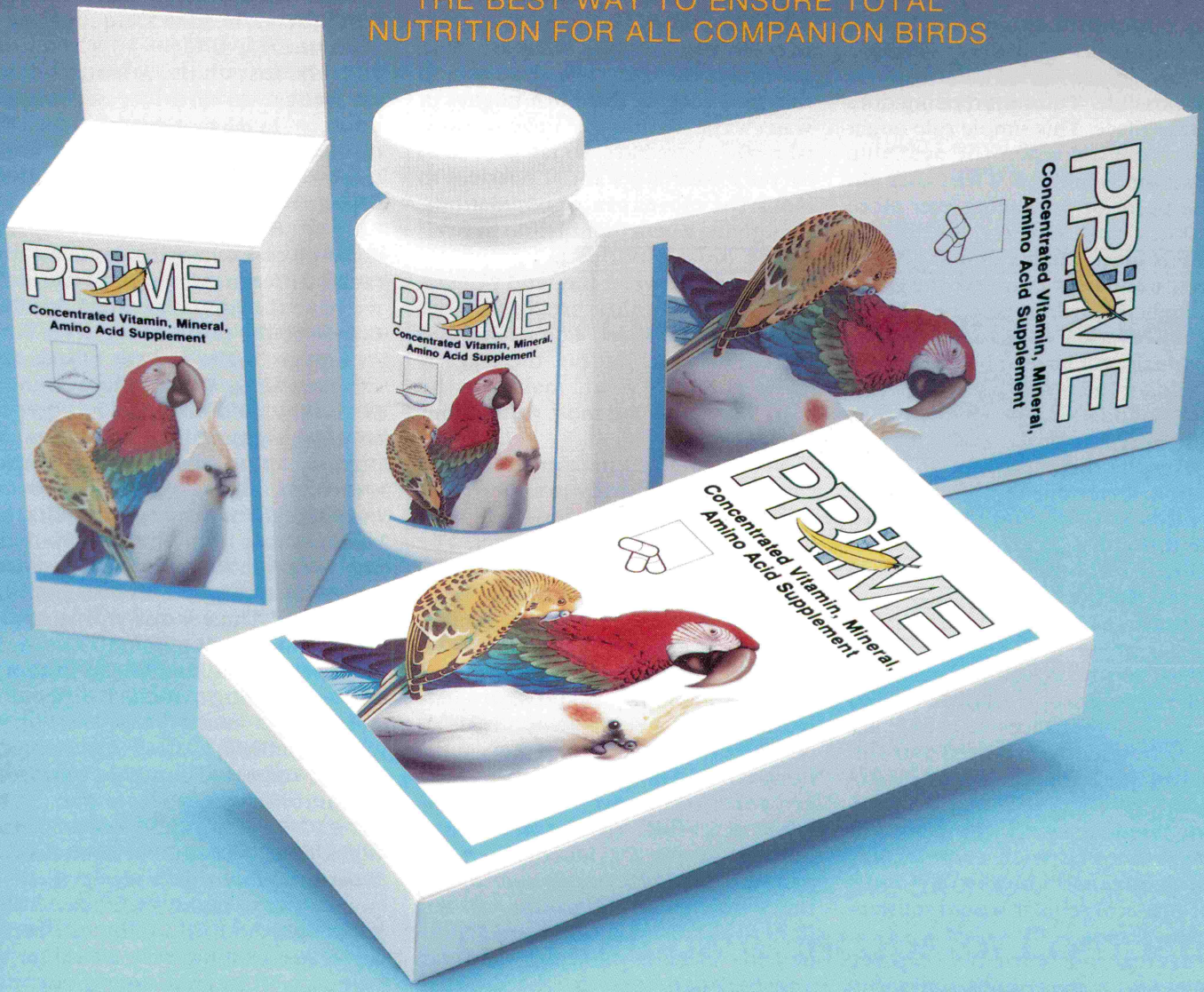

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ent attitude can cause them to suffer more readily from stress when crowded together. For example, in a mob of imported, wild-caught caiques, it will be found that there are usually more cock than hen birds.

Once they settle down to a captive life, caiques can be very long-lived (several of my breeding birds are known to be more than 30 years old). During this time, each would have been given many different partners. Indeed, all established breeding pairs of any of my parrots will be split up after they have produced a certain number of offspring. The amount of chicks that cause me to "divorce" successful parents always depends on the size of my initial stock.

Some breeders will object to disturbing stable breeding unions. Yet it is essential if we want to avoid future inbreeding. By attempting to continually out-cross with unrelated birds, and ultimately use every available bird, a high number of outcrosses are then possible. Thus, inbreeding does not take place. This simple rule ought to be observed when the available population is limited. What, after all, is the point of producing ever more brothers and sisters? Switching partners gives the maximum genetic diversity and must conserve the greatest number of wild-type genes. If you are conservation minded, no further individuals will have to be taken from the wild for "new blood."

My "foundation" stock of caiques was acquired more than fifteen years ago. Despite the then freedom from import restrictions and quarantine, the birds still were acquired with some difficulty. There were then so few birds to obtain. This has since changed. In the past five years, the nominate Black-headed Caique *Pionites m. melanocephala,* from Guyana, has been shipped in many hundreds to Europe and the United States. The other races of caique are far less frequently exported and still remain rather uncommon in collections.

The caique is a stocky bird (according to Arthur Prestwich, *Pionites,* like *Pionus,* means "chunky"). I wish some classical scholar would substantiate this for me.

I have never known a captive caique that, when given the opportunity, would fly any further than a few hundred yards without dropping, exhausted, to the ground. The average weight of an unstarved bird would be somewhere around 155 grams. For its small size, this is rather a heavy mass for such short wings and tail to support. It is no wonder that when it flies, as with all similarly shaped, heavily-proportioned parrots, the caique has a rapid, direct and short trajectory.

The caique is a bird of tropical, somewhat open, well-drained forest. The thicker, lush, almost impenetrable the forest, the better. The thinner, very open woodlands, including savannah, are frequented only when adjacent to this. This seemingly dependence on a particular vegetation type, the physical inability to fly any great distance, and the avoidance of flooded rain forest, has given the caique a chance to split into distinctive geographical races.

As a parrot of the neotropics, its range circles around the Amazon River. It extends west from the Atlantic Ocean, and the Guyanas, over the continent, to the foothills of the Andes and then back again over to the other side of this most mighty of waterways. Within this huge territorial range, there have, so far, proved to be only four substantial barriers to block the movement of populations, thus giving a genetic isolation to five.

The most obvious geographical separation between the wild populations is the mighty breadth of the Amazon River itself. The length and incredible width of this, the biggest, often sluggish river, makes it the world's longest and most voluminous freshwater "lake."

North of the Amazon River, the caique is quite swarthy in appearance. It is dark, and gypsy-handsome, with its black cap, black legs and feet. The two northern races have been given specific status as the Black-headed Caique *P.m. melanocephala* and its Pallid subspecies *P.m. pallida.* South of the Amazon, the caique has less melanin in the head and skin. This reduction in black pigment reveals an orange cap, flesh-colored feet, and a horn-colored bill. Usually this southern form (there are three races) is taken as a "full" species: the White-bellied Caique *P.l. leucogaster,* the Yellow-thighed *P.l. zanthomeria,* and the Yellow-tailed *P.l. xanthurus.* Yet, in both the Black-headed and White-bellied "species," the wings, neck, tail and belly are exactly alike. These form the greater part of the bird.

The five differently colored geographical races are all available for psittacultural purposes. Ornithologically there is no reason to separate the Black-headed from the White-bellied Caique. Which is why I have entitled this article "The Caique." In voice, behavior, and in the areas given to color, the races are identical. The differences (in color of thighs, cap, bill, legs and feet) are not absolute enough to have any substance. For example, the majority of fledgling White-bellied Caiques will have variable amounts of black pigment in its toes, nails, and legs. They also have black feathers that heavily smudge the central apricot on their heads. Likewise, old Black-headed Caiques sometimes acquire a few orange feathers on their caps. The thigh color, which is green in the nominate White-bellied Caique and the Yellow-tailed form, is as yellow in the Yellow-thighed as it is in the Pallid Black-headed Caique. Nestling Pallid Caiques have the horn-colored bill of White-bellied Caiques while Black-headed Caiques have a black one.

To the east on the Atlantic side of the range, an absolute separation between the races is found. Here, two thousand miles of impossibly wide freshwater keeps the White-bellied separated from the Black-headed Caique. Because of this complete embargo on exchanging members, the racial difference is highest here. So we have the nominate Black-headed Caique to the north of the river with its orange thighs and the blackest of exposed skin. South, the nominate White-bellied Caique has green thighs, pigmentless skin, and an orange cap on its head. The further westward, inland, the rivers become increasingly narrow and the ostacles to movement from one population to another get easier. They make contact and where they do, hybrid populations exist. There is no surprise in this for the races of Caique do not identify themselves, as did the museum worker, as being that much different.

I have a male Yellow-thighed White-bellied Caique *P.l. xanthomeria,* imported as a wild bird from Colombia twenty hears ago, that, instead of being flesh-colored, has black feet, legs and periorbital skin. Most probably this bird represents a population of highly melanized birds. Although the Pallid Caiques I breed also came from Colombia (and for all I know, in the same consignment as the Yellow-thighed), it is doubtful that this particular Yellow-thighed White-bellied Caique represents a "natural" hybrid. Experimental pairings between this and the Pallid,

as well as to "orthodox" Yellow-thighed, have demonstrated its genetic "purity."

All five races are now available for psittacultural purposes. It is my hope that most of these will be kept "pure." However, I do admit to hybridising some to satisfy my curiosity concerning their genetics of color. We have, for this purpose, three thigh colors to study (green, yellow, and orange); two of tail (yellow and green) and the feet, toes, nail and bill are either black or flesh colored. The cap on the head, the pileum, can be black or apricot.

These experiments have involved "primary crosses" (pairing one race with another); "back-crosses" (hyrid offspring back to one of the parent races); and pairing different racial crosses.

The results of these very many pairings will, after they are completed, ultimately be submitted for publication. My original aim was to show how many "color" genes separate the five races. Knowing this, we might then be able to estimate when the populations separated to become of different appearance. My conclusion, at present, based partly on this and relative size, is that it could be less than fifteen thousand years or since the end of the last ice age.

What is particularly interesting to me is that the caiques I possess are not particularly homogenous within their particular race. They could only be recognized as belonging to one particular race; yet their fledgling young, whether bred "pure" or hybridized with a different race, show that there are similarities to other races. An inkling of this inherent variation is seen on examining a consignment of Black-headed Caiques from Guyana. They vary in the intensity of orange on the thigh. Some will be almost orange-red with little or no yellow, while others are more yellow than orange. Pallid Caiques *(pallida)* several thousands of miles to the west, which are supposed to have pure yellow thighs, can, when pure-bred, produce youngesters that sport a hint of green, and sometimes orange, to their lemon trousers.

In a nest of "pure" Green-thighed or Yellow-thighed Caiques, each nestling will have different quality and quantity of black on its orange head. It is even likely that some will have no black feathering, even though this has never been my experience. With the Yellow-tailed *xanthurus,* less captive

breeding has taken place. But preliminary studies show that the young vary in the amount of yellow to the tail. In some of the adults of the four other races, the "green-tailed" Caiques have yellow tips to their tail feathers.

It appears, therefore, that the races differ by the disproportion in their color genes. This is not remarkable as we have the same racial variation in genes for hair, skin and eye color in human populations. A glance at a crowd of people from one particular area will show this difference. Such variations for any particular gene are known as alleles. It is the mix of alleles that give us our individual differences.

For some reason, selection has favored apricot heads in caiques south of the Amazon River and black heads to the north. But it is not absolute. You may, by careful, selective breeding and *utilizing alleles of genes already present,* be able to "turn" one race into another within a handful of generations.

As anyone who has seen a mule knows, hybrids between species tend to be intermediate between the parents. In birds of different hues, there is an intermingling of color. It is almost as if each color is "equal" in genetic dominance. The manner whereby colors are merged, in hybrids between species, seems to be at odds to our general understanding of genetics for we are taught, and come to know from experience with color mutations, that it is usual for one allele to be "dominant" to another. For example, if you cross a blue budgerigar with a normal green, all the offspring are green. No chicks will be of the intermediate shade of sea-green.

Color mutations, when pronounced in their effect (the ones aviculturists pursue), are generally lethal in the wild. They make the bird too obtrusively noticeable to predators. On the other hand, the mutations that give rise to racial differences, such as has happened in the caique, cause a far less severe effect. As they are slight, they then require more alleles of other genes to intensify them further. The combinations of several different alleles create the differences between geographical races.

The genes responsible for subspecific (racial) differences will have been accumulated over a great many generations under natural selection. There are many, many genes involved in patterning and coloring, as well as creating differences in size, in behavior, and growth in wild populations. These complex genetics are much more difficult to understand than those aberrant few we utilize when breeding aviary mutations. "Dominance" and "recessivity" still applies between natural alleles. In hybrids, dominance and recessivity will be haphazardly divided amongst the many genes involved with plumage. It is this which gives a "blending" appearance to hybrids.

In reality, the colors that separate the different races of the caiques are dependent on a handful of genes. Most involve the localized production of black melanin. If we understand this, it can be seen that a Green-thighed White-bellied Caique differs from the nominate Black-headed only in that melanin is not deposited in the feathers of the head, or in the bill, legs, feet and nails. And it also differs because it has melanin present in the feathers on the thighs which causes them to be green. Perhaps, therefore, if we were to hybridize the various races of the caique, instead of a "blending" inheritance we might get to show that certain colors were inherited in a wholly dominant manner. In other words, could not the black cap on the head, or green on the tail and thighs, show a complete dominance?

This is not so. For the hybrid young prove to be intermediate in coloring between the parent races, and each chick varies from another in the amount of black to the head, beak and skin, and the green on the thighs, thus confirming that several genes are involved. It also shows, because the hybrid chicks are not uniform, that the differences between the races are not absolute. Most share some genes with geographically adjacent races and the populations of each race do not have the same assortment of alleles for color.

The differences between the five geographical races (subspecies) of the caique seem to be, therefore, partly selective (it must offer some biological advantage to be a particular color in a certain area); but also result from a "founder effect." That is, when the populations became separated, the adjacent populations did not inherit exactly the same mix of alleles for color. The founder effect is the (inevitable) result of stopping gene flow between genetically diverse populations. ●

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