**BLACK EYED SELF INDEX**

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# BLACK-EYED YELLOW

by Ken Yorke

(This article first appeared in the Newcastle Budgerigar Club Bulletin in 1986. It looks at this variety from an Australian point of view. Since it was written, the BSA standard has been discarded and replaced with a new Australian standard which no longer recognises shades of yellow. Changes in standard aside, the balance of the article is still relevant. The importation of English stock has meant the re-emergence of some true non-cinnamon Yellows on the show bench.)

The term "Black-eyed Yellow" taken literally could mean any bird which is yellow in colour and has a blackeye. There are however three completely different varieties of Budgerigar which fit this loose description. They are the Double Factor Spangles, the Dark-eyed Clear (a rare type of compound Pied) and the Yellow (the subject of this article). The term "Black-eyed Yellow" should be reserved only for the latter of these three.

If you read the NSW BSA standard for the Black-eyed Yellow you could be excused for thinking that there is only one type of Black-eyed Yellow. This is not so. Just as there are different shades of Green (Light, Dark, Olive, Grey etc.) there are corresponding shades of Yellow, ie. Light Yellow, Dark Yellow, Olive Yellow, Grey Yellow etc. After all, a Light Yellow is only a Normal Light Green which has lost most of its ability to produce black pigment and also has a slightly different feather construction. For this and other reasons geneticists often prefer to call the variety by another name - Dilute.

While these differences in shade of colour may be only slight, they do nevertheless exist. The BSA standard combines all these different shades into one standard and simply states that the colour must be yellow. The National Standard on the other hand recognises the Light, Dark and Olive Yellows separately as does the English Standard.

So remember that when comparing colour between two Black-eyed Yellows, if one appears paler than the other, it may be that one has poor colour and one good colour, or you may in fact be comparing a good coloured Light Yellow with a good coloured Dark Yellow. Very few breeders and/or judges would have the expertise to go through a class of Black-eyed Yellows and grade them into their correct shades and be certain of it. (The exact same situation occurs with Lutinos.)

A very large proportion of Black-eyed Yellows in Australia are either Light Yellow or Light Grey Yellow. An even larger proportion (almost all) Black-eyed Yellows are "masking" Cinnamonwing. In fact some people call the modern Black-eyed Yellow a Cinnamon Yellow or a Cinnamonwing Yellow. This is not to be confused with the bird in the standard called a Cinnamonwing Yellow which is a totally different variety again, even though the names are the same.

This means that the modern BEY in Australia is no longer a true variety but is in fact a compound variety of Cinnamonwing and the original BEY mutation. While the original true BEY may be rare in Australia it is by no means at risk of extinction since it can be re-established at any time by removing the Cinnamonwing factor from the modern BEY. However there is little to be gained in doing this since the Cinnamonwing factor is beneficial as far as the show bird is concerned and judges are accustomed to it.

BEY's are prone to get very pale grey markings on the wings, saddle and neck. The addition of the cinnamonwing factor turns this pale grey into very pale brown which doesn't stand out as much on the yellow background, which in turn makes the bird closer to the desired standard.

As mentioned earlier there are two other different varieties of Budgerigar which have black eyes and are yellow in colour. How then do you tell the difference between these imposters and the BEY. The following are the major differences.

BEY - Tend to have pale grey markings on head, neck and wings and an even greenish tinge in body colour. Possess a white iris in the eye. Grey to Grey-pink feet. Cocks have a blue cere.

Double-factor Spangle - Rarely show any markings and are spangle markings, not Normal markings when present. Very prone to an uneven and patchy suffusion, often showing a ring around the neck. Possess a white iris in the eye. Grey feet. Cocks have blue cere.

Dark-eyed Clear - Extremely pure colour (better than Lutinos), no suffusion, no markings. No white iris. Pink feet. Cocks have flesh coloured ceres, not blue.

## HISTORY

The Light Yellow was the first mutation of the wild normal Light Green. It has been seen in extremely small numbers in wild flocks. The Light Yellow was established in captivity in the 1870's in Belgium in an aviary which contained light suffused Yellows (the forerunner of the exhibition Yellow), heavy suffusion Yellows and what may have been some Lutino hens (which died out). Yellows reached England during the 1880's but did not reach Australia until 1900 when Mr C. H. A. Lienau, of Adelaide, South Australia imported some from England.

In early times the Light Suffusion and Dark Suffusion Yellows were shown separately.

## STANDARD - YELLOW (BLACK EYED):

MASK: Clear ground colour, ornamented on each side by a well-defined suffused white cheek patch.

BODY COLOUR: Black, rump, breast, flanks, wings and underparts to be a solid and even yellow throughout.

MARKINGS: Clear ground colour is the optimum. Faint neutral markings may be found on cheeks, back of head, neck and wings.

EYES: Black with white iris ring.

PRIMARY FLIGHTS AND TAIL: Paler yellow.

NOTE: Visible opaline characteristics not permissible.

## GENETICS

The Black-eyed Yellow factor is recessive to Normal, Greywing and Clearwing, ie. a Normal, Greywing or Clearwing can be split for Yellow (or White). A Yellow cannot be split for Greywing or Clearwing. These three varieties are genetically very closely related. They are known as multiple allelomorphs. Put simply, that means that the same gene has mutated several times and resulted in several different varieties. Since genes occur in pairs, a budgerigar can only carry the factor for two of these varieties at one time.

Therefore a Normal can only be split for ONE of the following group of varieties at one time:- Greywing, Clearwing and Yellow. Similarly a Greywing can only be split for ONE of the following group of varieites at one time:= Clearwing and Yellow.

Genetic scientists have another name for the Black-eyed Yellow - Dilute - which is a less confusing term when talking genetics. Using this term a Light Yellow becomes a Light Green Dilute, Dark Yellow becomes a Dark Green Dilute etc. since the Black-eyed Yellow is the green series Dilute then the blue series Dilute is the Black-eyed White. Below are two tables for the matings of Black-eyed Yellows (and Whites). The first table relates to the original true Black-eyed Yellow or White. This table may still be valid for some Black-eyed Yellows and probably valid for a lot of Black-eyed Whites but the second table is more likely to be valid for the modern Cinnamonised Black-eyed Yellow and White.

| Table 1 - TRUE YELLOW or WHITE (DILUTE) | |
|---|---|
| Normal x Dilute | 100% Normal/Dilute |
| Normal x Normal/Dilute | 50% Normal |
| | 50% Normal/Dilute |
| Normal/Dilute x Normal/Dilute | 25% Normal |
| | 50% Normal/Dilute |

| | |
|---|---|
| | 25% Dilute |
| Normal/Dilute x Dilute | 50% Normal/Dilute |
| | 50% Dilute |
| Dilute x Dilute | 100% Dilute |

Table 2 - MODERN YELLOW or WHITE (CINNAMON DILUTE*)

| | |
|---|---|
| Normal Cock x Cinnamon Dilute* Hen | 50% Normal/Cinnamon-Dilute Cocks |
| | 50% Normal/Dilute Hens |
| Normal Hen x Cinnamon Dilute* Cock | 50% Normal/Cinnamon-Dilute Cocks |
| | 50% Cinnamon/Dilute Hens |
| Normal/Cinnamon - Dilute Cock x Cinnamon Dilute* Hen | 12.5% Normal/Cinnamon-Dilute Cocks |
| | 12.5% Dilute/Cinnamon Cocks |

| | |
|---|---|
| | 12.5% Cinnamon/Dilute Cocks |
| | 12.5% Cinnamon Dilute* Cocks |
| | 12.5% Normal/Dilute Hens |
| | 12.5% Dilute Hens |
| | 12.5% Cinnamon/Dilute Hens |
| | 12.5% Cinnamon Dilute* Hens |
| Cinnamon Dilute* Cock x Cinnamon Dilute* Hen | 50% Cinnamon Dilute* Cocks |
| | 50% Cinnamon Dilute* Hens |

Note that a true Black-Eyed Yellow (Dilute) can be spotted instantly in a nest of modern BEY's (Cinnamon Dilute) during the first few days of life because the Dilute always has a black eye, but the Cinnamon Dilute has a brown eye which gradually turns black after about seven days. So unless you use some identification system (eg ring no., coloured split rings etc) you will not be able to tell the two types apart after this age.

The true Dilute will probably be dirtier in colour and markings but this is not foolproof and test mating is the only sure way to check.

# Breeding Good Coloured Olive Yellows

By Cyril Rogers 1984

***Whilst visiting a friend's aviaries I saw amongst their many coloured budgerigars in residence several olive yellows carrying that beautiful soft orange yellow shade which reminded me how scarce these attractive birds have become. Although a sprinkling of the various olive forms are mostly to be found in mixed colony breeding aviaries very few specimens seem to find their way on to our show benches nowadays. There seems to be two main reasons for the decline in popularity of all the olive coloured varieties, one being the ease in which the somewhat similar grey green coloured forms can be produced and the second is the difficulty in getting substance in these dark coloured kinds. Olive yellows and the two associated varieties, the greywing olive greens and the yellow wing olive greens are extremely interesting birds to breed, improve and exhibit and offer great scope to breeders who like an all round challenge.***

Before I proceed to give some suggestions for breeding good coloured olive yellows I feel I must explain just how they reproduce and their hereditary characters. They belong to the recessive dilute green (yellow) family and their attractive rich colour is due to the fact that they have a double quantity of the darkening character 'D' in their genetic make-up. Olive yellows are in fact light yellows to which a full quantity of the dark character has been added and this can change the light yellow colour into a rich orange shade. It should be noted that the dominant dark character is not a colour in its own right but a character that in conjunction with another colour alters the depth and shade of that colour. The dark character can be had in either a single quantity which gives the dark colours, i.e. the dark greens and the cobalts or a double quantity producing the olive greens and the mauves.

## Two Grades of Yellow

Now for a more detailed description of the colouring of olive yellows so that breeders can recognise specimens when seen. The Budgerigar Society's Colour Standards gives two grades of yellows - the clear and the suffused.

From the descriptions it will be seen how the grey yellows can, and often are, mistaken for the more rare olive yellows. Like all yellows the olive yellows can be had in the clear and the suffused kinds. In overall colouring the olive yellows are much deeper and decidedly richer in colour than the light yellows (buttercups) with the body colour a warm orange yellow and the rump a golden olive tinted shade. With the suffused kind the body shade is more of a golden olive tone with the rump showing a much deeper colour and the tail more heavily tinted. The grey yellows are much more of a dull mustard colour and quite distinct from the lovely warm shade of the olive yellows.

Olive yellows inheritance is quite straightforward when only yellow series birds are being used and follows the general Mendelian rules of inheritance. There are of course a great many mating of other colours that will give varying percentages of olive yellows when the parent birds possess the necessary colour characters needed. The following rules will show the manner in which olive yellows pass on their colouring.

1. Pure olive yellow mated to pure olive yellow will give all olive yellow young.

2. Pure olive yellow mated to pure light yellow will give all dark yellow young.

3. Pure olive yellow mated to pure dark yellow will give half olive yellow and half dark yellow young.

4. Pure dark yellow mated to pure dark yellow will give a quarter light yellow, half dark yellow and a quarter olive yellow.

The word ‘pure’ here indicates that the birds are not carrying any other colour characters in their genetic make-up.

## Other Varieties From Splits

If the parent birds used happen to be split for other colour characters then varieties of yellow birds can arise such as cinnamon or opaline light, dark or olive yellows. There is no visual way in which pure birds can be distinguished from those, which are carrying other colour characters. In a controlled breeding stud any hidden colours are invariably revealed in the course of time. The most frequent colour carried by yellow series birds is white and in the case of olive yellows results in the appearance of white mauves. Although white mauves can be used in the breeding of olive yellows their use will only cause an increased number of them to be produced resulting in fewer olive yellows.

I am sometimes asked how a start can be made when the would-be breeders do not possess any examples of the olive yellow in their studs. Let me say right away that it is not easy and requires considerable perseverance and patience to produce a nucleus of the desired coloured birds. One way to start is to obtain a pair or so of genuine dark yellows, which seem to appear quite regularly amongst the young of normal pairs when one partner has a single dark character and both are split for dilute. The expectation of pairing together two pure dark yellows is 50% dark yellows, 25% olive yellows with the remaining 25% being light yellows which are not required in this exercise.

Such matings will give the breeder an average of one olive yellow in four during the first season and in the following year these birds can be paired to dark yellows again giving some 50% of the desired coloured birds. Their numbers can be further increased by mating together some of the surplus dark yellows as in the first season. In the third year a series of olive yellow matings can be made with a certain amount of selection for obtaining the near clear deep orange body shade. It is very important that from this period a selection of the best coloured stock is made every year. If during the pairings the cinnamon character is incorporated via either cinnamon light yellows or cinnamon dark yellows it only takes a season or two before the very pleasing cinnamon olive yellows can be produced.

## Good Overall Colouring

The few results I have seen coming from the crossing of olive yellows with yellow wing olive greens or yellow wing dark greens were very good for overall colouring. Some of these birds had an exceptional depth of body colour together with quite good clear wings giving a most attractive appearance. Most of these birds were very tight feathered which gave them a rather less substantial look but I feel this could be corrected by the choice of suitable breeding partners.

With all the varieties that carry a double quantity of the 'D' character in their genetic make-up it is found that they are more difficult to improve in substance than those where the 'D' is absent. It would seem that the only sure way to achieve this is to periodically mate double dark to single dark with the single dark being bred from a single dark and a non-dark (light yellow, light green, sky blue etc).

Full body coloured greywings, a composite form very few present day budgerigar fanciers have yet to see. These delightfully coloured birds are a combination of the greywing and clearwing characters in one bird, they have the greywing undulations of the greywing set off by the deep brilliant body colour of the clearwing. In the heyday of the greywings and the introduction from Australia of the clearwings (which included some full body coloured greywings), only a very limited number of full body coloured greywings were bred in this country and very few of these found their way on to the show benches. As far as I know it is a very long time since an example has been shown in this country although an odd specimen or two have been bred in mixed coloured aviaries.

At times heavily wing marked clearwings have been wrongly called full body coloured greywings and although such birds have several features of the full body coloured greywings they are not the real composite birds. By test pairing it is quite easy to discover which are the genuine birds and which are poorly coloured clearwings. When a full body coloured greywing is paired to a dilute (yellow or white) half the young will be greywing/dilutes and half clearwing/dilutes. On the other hand when a poorly coloured clearwing is paired to a dilute all the young will be clearwings or if the clearwing parent is split for dilute then half will be clearwings and half dilutes. It should be noted that a clearwing cannot be split for greywing or vice versa and that a full body coloured greywing cannot be split for dilute.

# Dark-Eyed Clears - An Old Variety Ghalib Al-Nasser

When examining the varieties covered by the Budgerigar Society's colour standards, one wonders why certain varieties are popular while others are not. In fact some are almost extinct.

There are a number of reasons for this: the arrival of a new mutation; lack of interest; not making headway; insufficient stock available and most of all lack of encouragement from various official bodies. All these assist in the decline in popularity of certain varieties.

Two such varieties that enjoyed brief acknowledgement and success in the fifties and sixties and then returned to oblivion are the "Dark-Eyed Clears" and the "Continental Clearflights". Other varieties that hit bottom are the Violets, Mauves and their counterparts, the Olive, Fallows, Dutch Pieds and the Brownwings, just to name a few.

The Rare Variety and Colour Budgerigar Society must take full credit for reviving the interest in these varieties and of course, the Specialist and Rare Variety Open Show catering exclusively for such specialist colours and varieties will further assist their revival.

I became interested in the Dark-Eyed Clears (*DEC*) in 1988. The ones I had seen previously were of such poor quality that, like others, I criticised the variety and their owners, even though I am known for my appreciation of, and interest in the "lesser varieties".

I acquired two white DEC cocks from my friends Geoff and Cherril Bunker who were at that time in the process of moving house to the West Country. The two cocks were brothers and of reasonable quality. One of those cocks when exhibited in the Recessive Pied class on two occasions was wrong-classed even though it was entered in the correct class. I took them on for two reasons; I needed a new challenge and perhaps wanted to do my bit in promoting a variety.

## What are They?

Dark-Eyed Clears, from their name, are budgerigars of clear yellow or white, free from any markings and colour pigmentation. This purity of colour covers the entire body and wings. They resemble the Lutinos and Albinos except in the eye. They share a common ground with Recessive Pieds, insofar as they have the solid black eye without the white iris ring; hence at times they are referred to as a "Black-Eyed Clears". Like the Lutino and Albino the DEC can mask any colour. For instance, a Yellow DEC could be in fact, an Olive Green DEC or a Light Green DEC. The shade of yellow in this case will be deeper and richer in the Olive than in that of the Light Green.

The *Budgerigar Society 1994 Colour Standards* (for the Yellow variety) defines them as follows:

**Mask, frontal, crown and general body colour**

Pure buttercup yellow throughout and free from any odd green feathers or green suffusion.

Note: The intensity of body colour varies in depth according to the number of dark factors in the make-up of each bird.

**Wings**

Pure buttercup yellow throughout, free from black or grizzled tickings or green suffusion.

**Cheek Patches**

Silvery white.

**Primary wing flights**

Paler yellow than rump colour.

**Primary tail flights**

Paler yellow than rump colour.

**Cere**

Fleshy-pink in cocks, brown in hens.

**Beak**

Orange coloured.

**Feet and Legs**

Fleshy-pink.

**Eyes**

Dark and solid in colour without a light iris ring.

| Scale of Points for Dark-Eyed Clears | | | |
|---|---|---|---|
| **Size,shape,balance and deportment** | **Size and shape of head including mask and spots** | **Colour** | **Variety markings** |
| 35 | 25 | 40 | -- |

N.B.Points for depth and clarity of colour.

Records of their origin are rather scarce. They seem to have originated in Belgium about 1948, and a couple of years later in Denmark too. A breeder found these colours appearing in his aviary. He had at the time, the dominant Continental Clearflights and Danish Recessive Pieds breeding on the colony system.

The appearance of those DEC's caused some confusion, in the genetical sense, as to why two different type of pieds, one dominant and one recessive, should produce a bird free from any colour pigmentation as are the Redeyes, Lutinos and Albinos. Therefore, it is in order to describe them as a synthetic colour or man-made colour resulting from the mixing of two different forms of Pieds.

## Genetics

It took a while to understand the gene that controlled their production and by the fifties they were popular, as were the Continental Clearflights. It was found that when pairing a Clearflight with a Recessive Pied, half of the young would be Clearflights and the other half Normals, with all the young split for Recessive Pied. It was also found that by mating a Clearflight split for Recessive Pied back to a Recessive Pied, a certain percentage of the young will be DEC. These Clears are not really Pieds in appearance but are the Recessive Pied form of the Continental Clearflight, or more concisely "Clearflighted Recessive Pied".

It took me a while to understand their genetical breeding behaviour as written material on them was rather scarce. Those DEC's are in fact, birds that carry in their genetical make-up, one dominant gene (gene for Clearflight) and two recessive genes (genes for the Recessive Pied). Depending on which partner they are paired with, one type of gene will predominate and various varieties will be produced.

For example, if a DEC is paired to a Recessive Pied, then the recessive genes will act and the pairing will be as pairing two birds of recessive genes or two Recessive Pieds together. This type of pairing will produce DEC's and Recessive Pieds of equal numbers, theoretically.

The confusion arises when pairing a DEC with a normal (non-pied or split for Recessive Pied); we then produce the Clearflights. In this pairing we will not produce DEC's even though we started with one. In fact, the pairing will produce Clearflights and normals all split for Recessive Pied. What happens in this type of pairing is that the dominant Clearflight gene will act and the pairing is just like a Dominant Pied to a normal. Because the DEC had two recessive genes in hidden form, then these genes will continue to be present in the progeny in a hidden form as well, hence all the progeny will be split for Recessive Pied.

Yet, when pairing a DEC with a Clearflight split Recessive Pied, the dominant gene on both sides will act and the pairing is similar to Dominant Pied  Dominant Pied. This pairing will produce DEC, Clearflight and normal; both of the latter being split for Recessive Pied because of the recessive genes of the DEC, and because of the presence of the recessive gene on both sides, Recessive Pieds will appear as well.

It is interesting to see how the dominant and recessive genes of the DEC act depending on the partner. Because of the presence of a dominant gene in the DEC make-up, this gene can be present in a single or double dosage, visually both alike. The Pied genes act by eliminating the pigment melanin from the Pied patches. It seems that neither the recessive nor the dominant Pied genes can on their own, eliminate all the pigment, but two recessive and one dominant are sufficient to give complete elimination.

If you are not already confused with the genetics then perhaps the table of expectations below will assist in understanding the intermingling of the three varieties with each other.

The table below shows the various types of pairings that can be used to produce the DEC.

The single and double factor Clears from the above matings are indistinguishable from each other.

## Second Revival

Will the Dark-Eyed Clears progress in their second revival? That will remain to be seen and be dependent on the level of interest shown in this variety by other fanciers. I know that I am very interested in them. To me they are a new challenge and the progress that I made in three breeding seasons was quite noticeable.

The Specialist and Rare Variety Open Show, of which I am the show organizer, provides separate classes for them rather than combining them with the Recessive Pieds as in all other shows. At the 1989 show a young Yellow DEC cock of mine came third in the Recessive Pied breeder CC line-up. He won best DEC in show and repeated his success as an adult the following year. The same bird was second in the breeder CC line-up at another area championship show. This was a pleasant success for me indeed.

In 1988 I paired the best of the two DEC cocks that I had acquired, with one of my best Recessive Pied hens. That pair produced three White DEC hens and some Recessive Pieds. Again, using the best of those hens back to one of my best Recessive Pied cocks the following year, produced three Yellow DEC cocks, one of which I mentioned above. Now the quality of those DEC's are such that I use them with Recessive Pieds instead of splits as partners. In this way there is no production of inferior quality splits and therefore, no wastage.

There is great scope for the Recessive Pied breeder in taking up breeding DEC's, as there is no wastage with them. They are exhibited in the same class as the Recessive. Pied. With understanding and appreciation by the judges, they did win CC's allocated to them in conjunction with the Recessive Pied, in the early- and mid-90s.

email Ghalib Al-Nasser

# The Dark-Eyed Clear

| Expectation Table | |
|---|---|
| **Pairing** | **Expectation** |
| Clearflighted (sf) x Recessive Pied | 50% Clearflighted/Recessive Pied<br>50% Normal/Recessive Pied |
| Clearflighted (sf)/Recessive Pied x Recessive Pied | 25% Recessive Pied<br>25% Normal/Recessive Pied<br>25% Clearflighted (sf)/Recessive Pied<br>25% Dark-eyed Clears |
| Clearflighted(df) x Recessive pied | 100% Clearflighted (sf)/Recessive Pied |
| Dark-eyed Clear x Recessive Pied | 50% Dark-eyed Clear<br>50% Recessive Pied |
| Dark-eyed Clear (sf) x Dark-eyed Clear (sf) | 50% Dark-eyed Clear (sf)<br>25% Dark-eyed Clear (df)<br>25% Recessive Pied |
| Dark-eyed Clear (sf) x Clearflighted (df) | 50% Clearflighted (df)/Recessive pied<br>50% Clearflighted (sf)/Recessive pied |
| Dark-eyed Clear (sf) x Clearfighted (df)/Recessive Pied | 25% Dark-eyed Clear (sf)<br>25% Dark-eyed Clear (df)<br>25% Clearflighted (sf)/Recessive Pied<br>25% Clearflighted (df)/Recessive Pied |
| Dark-eyed Clear (sf) x Clearflighted (sf)/Recessive Pied | 12.5% Dark-eyed Clear (df)<br>25% Dark-eyed Clear (sf)<br>12.5% Recessive Pied<br>12.5% Clearflighted (df)/Recessive Pied<br>25% Clearflighted (sf)/Recessive Pied<br>12.5% Normal/Recessive Pied |

# THE EXHIBITION LIGHT YELLOW

**By the late Cyril Rogers, date unknown**

***Since the clear yellow-red-eyed (lutino) variety came into popularity the dark-eyed exhibition light yellows (the so called buttercups) have been forced out of their position on the show bench. No doubt many of the pre-war breeders remember the wonderful classes of light yellows which were to be seen at practically every show throughout the country during the 1930's and how these light yellows frequently vied with the light greens for Best in Show. The disappearance of light yellows from the present day show bench has I think been accelerated somewhat by the cancellation of individual classes for them, causing them to be shown in AOC class against all the new and exciting colours.***

I know that with the many colours which now exist in budgerigars, show promoters find it difficult to formulate schedules to please everyone - we would all like to see our own favourite varieties have separate classes - and I hope that some of the larger shows will consider giving the breeders of exhibition light yellows a chance to show their birds under reasonably favorable conditions of competition. Much of course is up to the actual breeders of exhibition light yellows who can, by showing their birds, freely make the need for special classes apparent.

In an article Roy Wilson made certain observations about the breeding of light yellows (buttercups) which should help to create an interest in the breeding and exhibiting of this fine old variety. As a past breeder and exhibitor of light yellows and living near Cambridge the "home" of light yellows and their "godfather" R J Watts, I should like to add my own collected observations. Many times Mr Watts and myself have discussed from every possible angle the production and breeding possibilities of the exhibition light yellows.

## Bred Within Their Own Variety

Breeding records reveal clearly that to get a continued measure of success exhibition light yellows must be selectively bred within their own variety. Light yellows follow the laws of Mendel like all other colours and variations but the breeder's skill in selecting the right mates can help to achieve the best results in the shortest possible time. It is known that certain factors, which can modify the expression of other characters exist in the general make-up of the various coloured budgerigars but how these factors operate exactly is not yet very clear. The "bad" light yellows (pastels, the ordinary light yellows and the exhibition light yellows (buttercups)) are all basically the same but with certain characters, which control their individual visible colouring. Mr Wilson's article gave the theoretical aspect of the crossing of exhibition light yellows with other colours and I will now explain what has actually happened from certain cross-breeding pairs.

**Pair No 1:** Light green (pure) paired to exhibition light yellow gave eight light green (a beautiful bright shade) coloured young which were all "split" for yellow. From these eight youngsters the best cock and hen were selected and mated the following season to other exhibition light yellows and they produced in all twelve young, five yellow coloured and seven green coloured. The yellow colouring of the yellow birds was quite good on the breast but failed badly on rump, tail and wing butts. Two further young "splits" were mated together and of their six young only one was a yellow, a fine bird for size and shape, but again lacking

in colour. It took two more seasons of breeding the light yellows of light green extraction before they produced young of the desired exhibition light yellow shade. However, the experiment was a success as the quality and size of the ultimate young exhibition light yellows had been improved through inheriting good exhibition characters from their light green ancestor.

**Pair No 2:** Exhibition light yellow cock paired to lutino hen. This pair gave seven young, made up of the following colours; two grey green, one dark green, two light greens, two dark yellows and one grey light yellow. As these young were such a mixed batch they were not used for re-crossing with exhibition light yellows and a further mating was made. Incidentally the two grey greens proved most useful in producing some soundly coloured and well shaped lutinos.

**Pair No 3:** Exhibition light yellow cock paired to lutino hen. This time the lutino hen was a lutino light yellow having been proved such by the previous year's breeding. This was quite a prolific pair and they produced eleven chicks, all yellow in colour as would be expected. The four young hens were mated the following season to four exhibition light yellow cocks and gave thirty-two young in all. These young varied very considerably in their purity of colour, five being quite passable for clearness of shade. Even with these fairly clear birds it still took another two seasons to get back that desired purity and richness of yellow colouring. Although some little improvement had been made in the exhibition light yellows bred from the lutino hen's descendants it was not so great as the advancement made by the light green pairing No 1.

Many other crosses have been made with such colours as sky blues, opalines, greywings, greys, yellow faces etc, but little or no success has been achieved, that is as regards to colour. The use of the cinnamon character with the exhibition light yellow has produced some most useful results in quite a short space of time with many of the cinnamon light yellows raised being very pure in colour throughout. Although cinnamon light yellows (and the other cinnamon yellows) are pure in colour the majority of normal exhibition light yellows will beat them quite easily for depth and general richness of yellow colouring. Taking all things into consideration I should say that the colours, which have the greatest value in crossing with the exhibition light yellows when the need arises are pure light greens and cinnamon light greens. Last week I saw some very fine nests of exhibition light yellows in the aviaries of Mr Watts, which had been bred pure for a great many years. These youngsters certainly did not look as though they needed the help of any other colours to improve their size, quality or clearness and richness of shade.

# The Involvement of Recessive Pied in the Origin of the Dark Eyed Clears in the Budgerigar

## [Melopsittacus undulatus]

By: Inte Onsman, Research coordinator
MUTAVI
Research & Advice Group

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### Recessive pied

The first pied mutation in Budgerigars was established in 1932. The mutation appeared to be recessive and was called Danish pied. These birds were also referred to as Finnish pieds for a short time because the first species who reached England came from Finland [17].
The very first mutant was discovered in a mixed coloured flock of Budgerigars breeding as a colony. Therefore is was not possible to find out from which parents this bird was derived. One of the first aviculturists who understood that this actually was an important new mutation was C. af Enehjelm, head of the Helsinki zoo in Finland. Thanks to his interest and dedication this mutation was quickly distributed through the whole of Europe.
During World war II Danish pieds almost died out but the Danish fancier Walter Langberg saved the mutation from total extinction.

### Dutch pied

The source of the first Dutch pieds cannot be established for sure. In "The Handbook for Budgerigar Breeders" written by W.Beckmann (1966) is written that Mr. Van Dijk, head of "Animali" zoo in Eindhoven (The Netherlands) was already breeding Dutch pieds before World war II. Also foreign sources mention the year 1939 to be the year in which the first Dutch pieds appeared and even in America the mutation is known as "Dutch pied".
Many authors consider the clearflight to be a selective form of Dutch pied and both in England and America these clearflights are known as "continental clearflights". The first specimens were developed by R. Raemaker from Bruxelles who claimed it took him several years to breed the first clearflights from birds who initially had only a few unpigmented feathers.

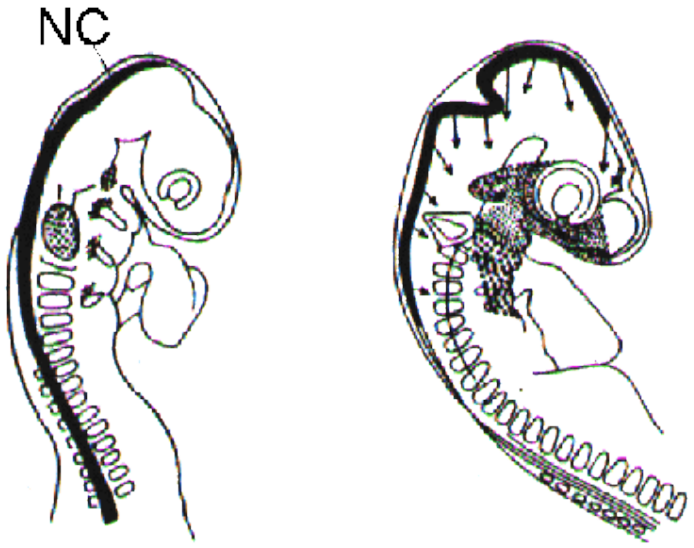
During the late Forties and the early Fifties, people from Europe mentioned black-eyed "albinos" and "lutinos". During several years it was presumed that these birds could only be bred by cross breeding them, but later on evidence was found that this was not true. Experimental matings with these birds adventually cleared the matter. They were in fact a combination of recessive pied and continental clearflights (a selective form of Dutch pied). These birds also did not have black eyes but the plum eyes of the recessive pieds. Yet they were known as dark eyed clears. Unfortunately Dutch pieds never became very popular in the Netherlands unlike America and Germany where some fanciers breed them with great enthousiasm [22,23,24].
There are some remarkable similarities between Dutch pieds and recessive pieds to be found in literature. If a DF Dutch pied is mated to a normal, one expects 100% Dutch pieds. However, some authors report the appearance of a single normal youngster among the offspring of such mating (...).
Male Dutch pieds show more pied feathers than female Dutch pieds. This is also the case in Australian pieds and recessive Danisch pieds. In the USA and in England one distinguishes

Dutch pieds from continental clearflights. Some people state that continental clearflights could be a selective form of Dutch pied and having seen my own results with Dutch pieds I am willing to believe that this is actually the case. The main question is why the combination Danish- / Dutch pied produces a dark eyed clear bird and the combination Danish / Australian does not. To find the answer to this question, we have to return to the early embryonical state and the source where melanoblasts, the precursors of melanocytes, are produced.

## The research

The origin of pigmentation in vertebrates has always been a favourite subject of scientists all over the world [7,9,10,11,15]. The first authors were very much impressed by the starshaped cells containing melanin they found in the skin.
Already in 1860 Kölliker described migration of pigment cells in the skin which were derived from mesenchymal (brain) tissue. This point of view was already confirmed by Kerbert in 1877 for reptiles and birds, again for humans and birds by Riehl in 1885 and several mammals and again birds by Ehrmann. In 1890 Haecker studied pigmentation in bird feathers and came to the conclusion that feather pigmentation is caused by migrating pigment cells derived from mesenchymal sources. (The mesenchym is a network made of embryonal tissue from which in a later state the ordinary tissues, blood and lymfe vessels are derived.)
Soon it became clear that the source of pigment cells could not be found under the microscope because melanoblasts (pigment cell precursors) are not to be distinguished from other cells. Experimental transplants involving amphibians showed notable different conclusions, for pigment cells do not derive from mesenchymal tissue, or as some people stated, in the skin itself, but derive from the neural crest. In 1935 this was definitely confirmed by Dushane [3] who did research on transplanted parts of the neural crest from Ambystoma (a Mexican salamander).
In the fowl this problem was first investigated in 1936 and 1939 by Dorris [2] and also in 1941 by Ris [18]. By studying cultivated tissues and transplantation experiments, they concluded that the neural crest was able to produce pigment cells and that the mesoderm as well as the skin were not able to do so.

**The neural crest**




The neural crest in fowl embryos was first described by His in 1868.
In a very early stage the neural walls are formed. These neural walls rise and close in order to

form the neural tube, the precursor of the central nerve system and the spinal cord. The neural crest is situated on the backside of the neural tube and immediately starts dispersing celprecursors.
Along both sides of the neural tube somites are to be found. Somites are blockshaped embryonic tissue elements which turn into a dermatome from which skin segments are formed. All skin segments together eventually will form the entire skin.

## Pied genes

Genes causing nonuniform pigmentation patterns have been found and investigated in many vertebrates. In mice more than fifteen different pied mutations are known, some of them are even multiple allelic.
Pied genes are able to manifest themselves in different ways as many research projects that have been done over the past years have shown. Deol investigated the role of the tissue environment in the expression of pied genes in mice [1] and found that some pied genes affect melanoblasts (pigment cell precursors). Others affect the tissue environment in which the melanoblasts reside.
During this research particularly interest was taken in the eye pigmentation of several piebald mutations. Some of these mutations affect eye pigmentation and others do not.

In the fowl the migratory behaviour of neural crest cells was studied extensively by Noden [14]. He found that the migratory behaviour of cells derived from the neural crest, is influenced dramatically by certain interactions with their environment. All neural crest cells, with regard to which part they came from, do possess the ability to recognize specific genetical signals, react on them and so determine the direction of their migration.
In 1982 Hirobe published a paper in which he described investigations on the regulation of melanoblast / melanocyte populations in the skin of newborn mice [5].
He came to the conclusion that the distribution of melanoblasts / melanocytes into the skin, is under control of a number of (up to now) unknown semi dominant genes. In 1992 he publishes the results of a follow-up where he investigated the proliferation and differentiation of melanocytes [6] and announced research on the number of genes involved.

## Eye pigmentation

The research of Deol inspired me some years ago to compare eye pigmentation from Danish- and Australian pieds using a light microscope. The following items are important to know in this respect.
Melanocytes or pigment cells derive from three different sources:
1) The neural crest from where they migrate to all parts of the body including the choroid and the outher layer of the iris of the eye.
2) The outher ridge of the optic cup which eventually will form the pigment epithelium of the retina.
3) The neural tube from where neuromelanins are formed who mainly are to be found in brain tissues.

Summarized the melanocytes of the eye have two sources. To be precise, the melanocytes of the choroid and the iris stroma (frontside of the iris) are derived from the neural crest, the melanocytes of the pigment epithelium (retina) and the inner (back) side of the iris are derived from the edge of the optic cup. The optic cup is the precursed state of the eye, the definite eyeball and lens are yet to be formed. The pigment epithelium excists of honeycomb shaped highly specialized melanocytes, residing between the retina and the choroid. The melanocytes of the choroid reside amongst the bloodvessels of this layer which is situated

between the pigment epithelium and the scleral cartilage (outher layer of the eye in birds). The difference between eye melanocytes and epidermal (skin) melanocytes is that the melanocytes of the eye do not disperse their pigment granules into neighbouring tissues unlike skin melanocytes. The results of my investigations showed that the eyes of Danish pieds do have unpigmented areas in the choroid, and the outher layer (frontside) of the iris almost totally lacks pigment cells. The retinal pigment epithelium and the inner layer (backside) of the iris are unaffected.
The eyes of Australian pieds were completely unaffected and eyes from Dutch pieds have not yet been investigated but are presumed to be unaffected as well.

## Conclusion:

Having seen these results I came to the conclusion that in Danish pieds, exclusively melanocytes derived from the neural crest are affected by the ***s***-locus. This suggest a possible defect of the neural crest itself causing a disturbed production of too few, abnormal and also normal pigment cell precursors. Obviously the ***s***-locus (Danish pied) acts in the neural crest and not in the skin. In Australian pieds, the ***Pb***-locus could act in the former mentioned dermatomes or in certain skin areas in which as a result melanoblasts are unable to differentiate into melanocytes leaving those areas unpigmented.
The Dutch pied gene (***Pi***-locus) could affect e.g. the proliferative capacities of melanoblasts because often wingtops, being most far apart from the neural crest, show pied areas. It could also be possible that the Dutch pied locus is involved in determining the direction of the migrating melanoblasts.
The real dark eyed clears (or should we say plum-eyed) can only be achieved by the interaction of Danish- and Dutch pied. Apparently these two loci are playing a major role in pigment distribution in Budgerigars. The combination Australian- / Dutch pied will never develop a dark eyed clear phenotype, that is quite obvious.
The mottle is deliberately disregarded in this article, because the cause of the mottled phenotype differs significant from the other pied mutations.
Breeding Dutch pieds should be recommanded strongly. They are very attractive in appearance, have bright colours just as Danish pieds and body size is easy to improve.

# OLIVE YELLOW BUDGERIGARS

**by Cyril Rogers**

***It is now many years since examples of Olive Yellows have been seen on our show benches. Nevertheless, a few specimens are bred each year, generally in mixed collections. Good coloured Olive Yellows are very handsome birds, with their deep, rich, golden olive body colouring and are a variety well worth the attention of colour breeders. The reason for their loss of popularity some years ago, was the emergence of the grey yellow which is somewhat similar in colouring, although much duller and greyish green in shade and are far easier to produce. Having a double quantity of the dark character in their genetical make-up, they invariably lack size and as there is a prevailing demand for large birds these days, Olive Yellows only now appear occasionally and as I remarked before, usually in mixed, uncontrolled aviaries.***

I think that breeders will realise there are many matings which can give varying percentages of Olive Greens and Olive Yellows, but of course, the desire to make the best use of materials on hand is paramount. The primary object of the matings we are about to discuss, is the production of Olive Yellow birds. Breeders know that by pairing 2 birds, each having a single dark character in their genetical make-up, they can produce 25% of birds having a double, dark character. It is this double dark character that is so essential in Olive Yellow breeding. If fanciers look round amongst their stocks I feel sure they will find many birds having the dark yellow character, both in the pure and split forms. In the production of Olive Yellows, it is best to have, if at all possible, pure dark yellow birds as stock, as it is the colours when mixed that make the resulting Olive Yellows a peculiar shade of colouring.

By mating 2 dark yellows together, the theoretical expectation is; 25% Light Yellows, 25% Olive Yellows and 50% Dark Yellows. I feel that I must point out here that a Dark Yellow budgerigar is not necessarily heavily suffused with green and some of them can be quite a nice rich yellow shade. At the same time, a heavily green suffused light yellow is not a Dark Yellow, although in some cases, they may look somewhat alike. It will have been seen that Olive Yellows can be produced in the very first generation by mating together 2 genuine Dark Yellow birds and the Dark Yellows produced from these matings can also be used in the following years for the production of further Olive Yellows. This can be achieved by pairing an Olive Yellow to a Dark Yellow. 50% of each colour can be expected from the crossing.

It is possible to find amongst various stocks, fine and well made Dark Yellows and if these are used to mate amongst themselves or to normal Normals split for Yellow, some excellent Olive Yellows can be expected. Strangely enough however, the majority of Olive Yellows are a little less in substance than the Dark Yellows that have produced them. This fact appears to be the same with nearly all the double quantity dark character birds. It is particularly noticeable amongst Olive Greens and Mauves.

Once the breeder has produced a few Olive Yellows, a certain amount of selection can then be carried out to produce birds of a fine quality, more substance and of a purer and richer colouring throughout. It is possible, by very careful selection of the parent birds over a number of seasons, to produce Olive Yellows that are of a very deep, rich, orange olive shade; a very attractive and handsome bird indeed. In addition, if the cinnamon character is added to the Dark Yellows and Olive Yellows, there is further scope for the production of a soft, rich yellow, both in the dark and olive forms.

I certainly hope that breeders will, during the course of this coming season, be successful in getting a few Olive Yellow specimens when they pair their Dark Yellows together and that in the course of time, they will be finding their way to the show benches. Here other breeders can have a look at just what can be expected from the Dark Yellow kinds.

# THE OLIVE YELLOW VARIETIES

**By the Late Cyril Rogers**

***From what I hear from various fanciers it seems that one of the most frequently misnamed varieties is the attractive yellow olive. From the standpoint of the new breeder they always seem to be birds that are rather mysterious and should be kept in the background for some reason or other. In this article I am going to try to explain about the different kinds of yellow olives and how to name them correctly.***

The first question is I think just what are yellow olives? Yellow olives are birds belonging to the yellow group, that is yellow birds, which are more or less devoid of the characteristic markings. Also they have a double quantity of a darkening factor, usually known as 'D', which suffuses the otherwise light yellow colouring with an olive tint in various degrees of intensity. This is the same darkening factor, which causes the greens to be olive greens, the blues to be mauves, the whites to be white mauves etc. It is therefore to be expected that the olive yellows reproduce in exactly the same way, as do the other dark birds. The main rules of olive yellow inheritance are as follows:

1. Pure olive yellow paired to pure olive yellow will produce 100% olive yellow young.

2. Pure olive yellow paired to light yellow will produce 100% dark yellow young.

3. Pure olive yellow paired to pure dark yellow will produce 50% dark yellow and 50% olive yellow young.

Sometimes however, when two olive yellows are mated together there appears a few white birds amongst their offspring; this does not mean that the parent birds are not olive yellows, it is a definite indication that they are "split" for white. There is no visible means of distinguishing between a pure olive yellow and one which is "split" for another colour.

## Impossible Results

As a point of interest, and one that is very frequently useful under certain conditions, is the knowledge that it is not possible to breed light birds from one yellow olive parent. By light I mean genetically light birds, such as light yellows, light greens, sky blues etc. Any young birds, which have an olive yellow for one parent, must be either dark or olive (mauve) in their colouring as per the rules mentioned above.

Before we proceed any further it might be as well to get the naming of these birds definitely and clearly settled. The name allotted to them by the Colour Standards Committee of the Budgerigar Society and now universally recognised is olive yellow. Previously they had been know as yellow olives, but as this name was not quite an accurate description, and to bring them into line with the other two yellow kinds, it was altered to the present and correctly descriptive one.

I have quite frequently heard these birds called olive/yellows and dark yellows, neither of which are correct as there are actual birds corresponding to these two names which are different from the real olive yellows.

Once again I would urge all breeders when discussing birds, particularly when in the company of new breeders, to use only the correct and recognised names for the different varieties. If the beginner is inaccurately informed it is quite probable that mistakes will be made both in the breeding pen and on the show bench and disappointments at the start of a breeder's career are not at all good.

## Detailed Descriptions

It is now I think about time that I gave a detailed description of the various types of olive yellows, commencing with the ordinary kind. Like the ordinary whites there can be yellow olives with both light and deep suffusions. With the lightly suffused kind of olive yellows the marking on the back of the head, the nape of the neck, shoulders and wings, should be as faint as possible - their complete absence being perfection, on a bright rich yellow ground. The tail is usually slightly tinted but in some strains it is almost clear dull yellow - a very desirable feature. The general body colour is a deep, mustard shade with a slight olivish tinting on the rump. In most specimens the feet and legs are pinkish in colour but occasionally specimens are seen with bluish tinted feet and legs. Actually this leg colour has no real bearing with regard to show birds, although I myself think the pinkish legs give a better finish.

With the deeply suffused kind the colour scheme is the same as with the lightly suffused kind, only the markings are a little more pronounced and the body colour is deeper and the olivish shade is more pronounced. Some of the deeply suffused kinds carry such a depth of body colouring that they appear to be pale editions of the yellow wing olive greens. There are of course birds produced having varying degrees of body suffusion but generally they can be placed into one or the other of the two main suffusions.

Closely allied and very similar in their general colouring to the ordinary olive yellows are the cinnamon olive yellows. Here, as with the white varieties, the cinnamon character has the effect of considerably lessening the dark markings and giving a body colour of a more clear and brighter tone, and at the same time producing a very desirable silkiness of feather texture.

## Hardly A Marking

I have seen some specimens of the lightly suffused cinnamon olive yellows with hardly a marking showing anywhere on their bodies and a truly magnificent body colouring almost clear golden in tone. The more deeply suffused cinnamon olive yellows are also very colourful and the slight olive shading they show is particularly pleasing as it is generally so rich and solid.

To get the best colour results of the cinnamon kind it is very necessary to pay special attention to the selection of the ordinary stock at the commencement of the matings for cinnamon olive yellow production. Chose only birds which are solid in colour and do not show too heavy wing markings, birds bred from some of the clearwing crosses are very useful for this purpose, particularly cock birds which may be "split" for cinnamon.

Incidentally I have found that the fact that olive yellows or cinnamon olive yellows are "split" for white has no undesirable effect as regard to the purity of their colouring. In fact one of the

best nests of cinnamon olive yellows I have seen so far this season were produced from a cinnamon white mauve cock and a cinnamon olive yellow hen.

Without previous experience it will at first be found that extra care will be needed to differentiate between certain cinnamon olive yellows and their ordinary olive yellow counterparts. However, on close inspection it will be observed that the actual cinnamon birds are silkier in feather, lighter and clearer in wing colouring, and the cheek patches show quite faintly and are of a soft colour not seen in the ordinary olive yellows.

## Cinnamon Eye Colour

As an extra precautionary measure when "split" cinnamon birds are being used a special note should be taken of the ring numbers of the youngsters, which show the cinnamon eye colour when in the nest. By doing this, the breeder is saved the trouble and worry of differentiating between the difficult borderline coloured birds.

At this point it would perhaps be as well to explain how to recognise the cinnamon nestlings. This distinctive eye colour of the cinnamons is only visible for the first week or two after the chicks have been hatched and when they leave their nest boxes their eyes have taken on the same dark colouring as the normal dark eyed birds. The eyes of newly hatched cinnamon chicks appear a dull pinkish purple colour through the skin and stand out quite plainly beside the normal dark eyed nest mates. When the eyes are first open they show a distinct red gleam for a few days, then they gradually darken until they appear just the same as the normals.

Another very pretty and interesting olive yellow variety is the fallow olive yellow which at the present is rather rare but I am pleased to say steadily increasing in number. With the fallow olive yellow we have the red eye colouring of the fallow group coupled with a most distinctive and rich olive yellow body colouring.

As with the other types of olive yellows the body colouring throughout of the fallow kind varies in depth with individual birds and the majority of the specimens I have seen have been of the deeply suffused kind. Strangely enough most of the fallow olive yellows carry heavier markings on their wings than one would expect, but as this is of a soft brownish tint it is not disagreeable to the eye. Their body colouring is invariably a very deep rich shade with a tremendous depth of soft golden olive on the rump, this being particularly attractive. I have not yet seen a fallow olive yellow with real clear wings so they need not be confused because of their red eyes with real lutinos. However, by careful selection and the introduction of the cinnamon character it is possible to produce the cinnamon fallow olive variety.

## Devoid Of All Markings

Now with this particular cinnamon form it is quite possible to breed birds, which are quite devoid of all markings and could quite easily pass for real lutinos. Actually on the show bench it is immaterial whether these clear birds are lutinos or otherwise, all that counts is the visible colouring and not the genetic make-up. This is a point, which should always be borne in mind, the visible colour is one thing and the genetic make-up may be a very different matter.

Of course, it will be realised that when breeding cinnamon fallow olive yellows only an odd bird will turn up here and there that will be quite pure in colour throughout. As a rule they just show slight wing markings, at the butts particularly, and a little tinting of the tail feathers. These markings take on a peculiar attractive reddish brown colour and on their rich yellow ground give the birds rather a striking appearance. Several breeders who have produced or seen these cinnamon fallow olive yellows tell me they actually prefer them to the clear yellow ones. It is a matter of opinion of course but I know that quite a lot of breeders think budgerigars without their characteristic markings are not really complete and that the markings make a definite finish to any bird.

Another form of olive yellow, which is likely to be met with in the near future, is the opaline olive yellow. I have only seen three birds of this particular kind and they were all hens, the opaline character being a sex-linked one, so hens appear on the scene before the cock birds. The body colour of these hens was just the same shade as a good deeply suffused normal olive yellow and their characteristic mantles were of the same shade. The heads were slightly barred with soft markings on a deep rich yellow ground.

These opaline olive yellows may not be particularly colourful but they are of great value for breeding the very beautiful opaline cobalt types. Taken all through, the olive yellow varieties are extremely useful birds in the breeding pens and at the same time make very good exhibition specimens. I do think they are worthy of more attention than they have been receiving and hope that in the future they will be more widely cultivated.

# Rare Budgerigar Varieties, Pieds

**Ghalib Al-Nasser**

When examining the varieties covered by the Budgerigar Society's Colour Standards, one wonders why certain varieties are popular while others are not. In fact some are almost extinct. There are a number of reasons for this:

- the arrival of a new mutation
- lack of interest
- not making headway
- insufficient stock available
- and most of all lack of encouragement from various official bodies

All these assist in the decline in popularity of certain varieties. Two such varieties that enjoyed brief acknowledgement and success in the fifties and sixties and then returned to oblivion are the "Continental Clearflights" and the "Dark-Eyed Clears". Other varieties that hit rock bottom are the Fallows, Dutch Pieds, Slates and the now extinct Brownwings, just to name a few.

The Rare Variety & Colour BS must take full credit for reviving the interest in some of the rarer varieties and of course the Specialist and Rare Variety Open Show catering exclusively for such specialist colours and varieties, has further assisted in their revival.

The two varieties that I mentioned earlier have a common factor connecting them. Even though in appearance they do not resemble each other, one was responsible in producing the other and their fate seems to have run parallel paths.

For many years there have been birds bred on the Continent with varying amounts of clear areas on their plumage. To mention one mutation was the Danish Recessive Pied which appeared in 1932. But it was not until 1940 that a strain of these Clearflighted birds was established in the aviaries of Mon. M R Raemaker of Belgium. Initially these birds only had a few patches of clear areas but with selective breeding Mon. Raemaker was able to establish the Clearflights as we know them today.

Soon after the war examples of this variety found their way to the United Kingdom and breeders established that the variety is dominant in its breeding mode of inheritance. The variety when bred to the correct marking is very beautiful to look at but the arrival of the Australian Dominant Pied variety in the United Kingdom in 1958 and the beauty of the initial Australian Pieds with the band across the chest pushed the Continental Clearflight into the background.

The Clearflighted Pied characteristic is that the flights and tail should be clear and the bird should have a clear head patch, which varies in size. All other markings, such as spots, cheek patches, beak, feet and body marking and colour is as per the normal variety.

The factor that controls the production of the Clearflight is variable in its expression; hence many birds that are produced today differ from the ideal described by the Budgerigar Society Colour Standards produced in 1994. The ideal depicted by the Budgerigar Society requires seven visible clear flights and clear tail with no spillage of the mask into the body colour but exhibits produced today seldom show the correct marking.

Most, if not all, of the Clearflights show the breaking of the colour mask into the chest, which at one time was written into the previous BS Colour Standards. How this spillage from the mask into the body occurred can be debated by those who were around the period of the Second World War. Others, like myself, will have to depend on what we read in history books.

It was apparent that during that period there was another Pied variety established in Holland in the early fifties called the Dutch Pied. This was a separate mutation, dominant in its breeding pattern, and its coloration was 50% dark and 50% clear. In appearance they resembled the Danish Recessive Pied from the body colour pattern but had the white iris ring around the eye. Their cere, beak and feet were the same as other varieties while the Recessive Pied has the fleshy pink colour cere, orange coloured beak and fleshy pink colour feet and legs.

The Clearflights were crossed with Dutch Pieds as well as with the Recessive Pieds, which eventually resulted in this colour spillage into the chest.

As far as I know there are no Dutch Pieds in this country and very few examples on the Continent but I saw many examples when I visited Australia in 1994.

The Clearflight gene, like the Dominant and Dutch Pieds, is dominant to Normal hence the gene can be expressed in single and double factor in both sexes. The rules that govern the production of this variety can be expressed as follows:

| | | |
|---|---|---|
| 1 | Clearflighted Pied (s.f.) x Normal | 50% Clearflighted Pied s.f.<br>50% Normal |
| 2 | Clearflighted Pied (d.f.) x Normal | 100% Clearflighted Pied (s.f.) |
| 3 | Clearflighted Pied (s.f.) x Clearflighted Pied (s.f.) | 25% Clearflighted Pied (d.f.)<br>50% Clearflighted Pied (s.f.)<br>25% Normal |
| 4 | Clearflighted Pied (s.f.) x Clearflighted Pied (d.f.) | 50% Clearflighted Pied (s.f.)<br>50% Clearflighted Pied (d.f.) |
| 5 | Clearflighted Pied (d.f.) x Clearflighted Pied (d.f.) | 100% Clearflighted Pied (d.f.) |

It is important to realise that since the number of Pieds produced per nest will differ from one pairing to another, the actual percentages may differ from theoretical expectations. Also the Clearflighted Pied can be produced in all combinations and colours.

While the Danish, Clearflight and Dutch Pieds were flourishing in the period up to the late 1940's, a new variety of Budgerigar resembling in appearance the Lutino and Albino but with a black eye and no iris ring was appearing. They seem to have originated in Belgium in about 1948, and a couple of years later in Denmark too. A breeder found these black eyed Yellows and Whites appearing in his aviary. He had, at the time, the dominant Continental Clearflights and Danish Recessive Pieds breeding on the colony system. This new variety was given the name of Dark-Eyed Clears (DEC) from the colour description mentioned above.

The appearance of those DEC's caused some confusion, in the genetical sense, as to why two different types of Pieds, one dominant and one recessive, produced a bird free from any colour pigmentation as in the Red-eye's Lutinos and Albinos. Therefore, it is in order to describe them as a synthetic colour or man-made colour resulting from the mixing of two different forms of Pieds.

Dark-Eyed Clears, from their name, are budgerigars of clear yellow or white, free from any markings and colour pigmentation. This purity of colour covers the entire body and wings. They resemble the Lutinos and Albinos except in the eye. They share a common ground with Recessive Pieds in so far as they have the solid black eye without the white iris ring; hence at times they are referred to as "Black-Eyed Clears". Like the Lutino and Albino the DEC can mask any colour. For instance a Yellow DEC could be in fact an Olive Green DEC or a Light Green DEC. The shade of the yellow in this case will be deeper and richer in the Olive than in that of the Light Green.

It took a while to understand the gene that controlled their production and by the fifties they were popular as were the Continental Clearflights. It was found that when pairing a Clearflight with a Rec. Pied, half of the young would be Clearflights and the other half normals, with all the young split for Rec. Pied. It was also found that by mating one of those Clearflights that are split for Rec. Pied back to a Rec. Pied, a certain percentage of the young will be DEC. These Clears are not really Pieds in appearance but are the Recessive Pied form of the Continental Clearflight, or more precisely "Clearflighted Recessive Pied".

I became interested in the Dark-Eyed Clears (DEC) in 1988. The ones I had seen previously were of such poor quality that, like others, I criticised the variety and their owners even though I am known for my appreciation of, and interest in, the "lesser varieties".

I acquired two White DEC cocks from my friends Geoff & Cherril Bunker who were, at that time, in the process of moving house to the West Country. The two cocks were brothers and of reasonable quality. One of those cocks when exhibited in the Recessive Pied class on two occasions was wrong classed even though it was entered in the correct class. I took them on for two reasons; I needed a new challenge at that time and perhaps wanted to do my bit in promoting a variety.

It took me a while to understand their genetical breeding behaviour as written material on them was rather scarce. Those DEC's in fact are birds that carry in their genetical make up one dominant gene (gene for the Clearflight) and two recessive genes (genes for the Rec. Pieds). Depending on which partner they are paired up with one type of gene will predominate and various varieties will be produced.

For example, if a DEC is paired with a Rec. Pied, then the recessive genes will act and the pairing will be as pairing two birds of recessive genes or two Rec. Pieds together. This type of pairing will produce DEC's and Rec. Pieds of equal numbers, theoretically. The confusion arises when pairing a DEC with a normal we then produce the Clearflights. In this pairing we will not produce DEC's even though we started with one. In fact the pairing will produce Clearflights and normals all split for Rec. Pied.

What happens in this type of pairing is that the dominant Clearflight gene will act and the pairing is just like a Clearflight Pied to a normal. And because the DEC has two recessive genes in hidden form then these genes will continue to be present in the progeny in a hidden

form as well, hence all the progeny will be split for Rec. Pied. Yet, when pairing a DEC with a Clearflight split Rec. Pied, the dominant gene on both sides will act and the pairing is similar to Clearflight Pied x Clearflight Pied. This pairing will produce DEC, Clearflight and normal; both of the latter being split for Rec. Pied because of the recessive genes of the DEC. And because of the presence of the recessive gene on both sides, Rec. Pieds will appear as well.

It is interesting to see how the dominant and recessive genes of the DEC act depending on the partner. Because of the presence of a dominant gene in the DEC make-up, this gene can be present in a single or double dosage, visually both alike. The Pied genes act by eliminating the pigment melanin from the Pied patches. It seems that neither the recessive nor the dominant Pied genes can, on their own, eliminate all the pigment, but two recessive and one dominant are sufficient to give complete elimination.

If you are not already confused with the genetics then perhaps the table of breeding expectations below will assist in understanding the intermingling of the three varieties with each other. The Table below shows the various types of pairings that can be used to produce the DEC.

| | | |
|---|---|---|
| 1 | Clearflighted (s.f.) x Recessive Pied | 50% Clearflighted/Rec. Pied<br><br>50% Normal/Rec. Pied |
| 2 | Clearflighted (s.f.)/Recessive Pied x Recessive Pied | 25% Recessive Pied<br>25% Normal/Rec. Pied<br>25% Clearflighted (s.f.)/Rec. Pied<br>25% Dark-Eyed Clears |
| 3 | Clearflighted (d.f.) x Recessive Pied | 100% Clearflighted (s.f.)/Rec. Pied |
| 4 | Dark-Eyed Clear x Recessive Pied | 50% Dark-Eyed Clear<br>50% Recessive Pied |
| 5 | Dark-Eyed Clear (s.f.) x Dark-Eyed Clear (s.f.) | 50% Dark-Eyed Clear (s.f.)<br>25% Recessive Pied<br>25% Dark-Eyed Clear (d.f.) |
| 6 | Dark-Eyed Clear (s.f.) x Dark-Eyed Clear (d.f.) | 50% Dark-Eyed Clear (s.f.)<br>50% Dark-Eyed Clear (d.f.) |
| 7 | Dark-Eyed Clear (s.f.) x Clearflighted (d.f.)/Recessive Pied | 25% Dark-Eyed Clear (s.f.)<br>25% Dark-Eyed Clear (d.f.)<br>25% Clearflight (s.f.)/Rec. Pied<br>25% Clearflight (d.f.)/Rec. Pied |
| 8 | Dark-Eyed Clear (s.f.) x Clearflight (s.f.)/Recessive Pied | 12 1/2% Dark-Eyed Clear (d.f.)<br>25% Dark-Eyed Clear (s.f.)<br>12 1/2% Recessive Pied<br>12 1/2% Clearflight(df)/Rec Pied |

| | | |
|---|---|---|
| | | 25% Clearflight (s.f.)/Rec Pied<br>12 1/2% Normal/Rec. Pied |

The single and double factor Dark-Eyed Clears from the above matings are indistinguishable from each other.

Here you can see the close relationship between these two varieties; the Clearflighted Pied and the Dark-Eyed Clear. Although I bred both varieties in the late eighties and early nineties I did find them difficult to breed to perfection. As I said earlier most of the Clearflights have that clear spillage into the chest which is now not desirable in the BS Colour Standards. This spillage came from the usage of both the Dutch and Recessive Pieds. One way to eliminate this spillage is by selective breeding and a lot of patience. Most Clearflights of today are bred from the Dark-Eyed Clears and hence carrying the Recessive Pied gene. I think that we need to eliminate this Recessive Pied gene from the Clearflights by constantly pairing the Clearflights to pure Normals. Eventually we can produce Clearflights that are pure and not split for Recessive Pieds. It is possible that we can then produce Clearflights without the spillage of colour into the chest. I, for one, will be very much interested to hear from breeders who have or who are attempting to carry out this type of pairing.

The confusion arises at times when fanciers put certain exhibits on the show bench in specialist shows where separate classes for Clearflights are provided. These exhibits will most probably fit the exact description of the Clearflights (seven clear flights, clear tail, head patch and most of all no colour spillage) but in fact when quizzed they will confess that the bird came from a Dominant Pied pairing. There is no relationship between these two Pied varieties except that they are both dominant in their genetical breeding behaviour, but those exhibits to my mind are badly marked Dominant Pieds with no body variegation. The poor judge has no

# Suffusion confusion

**By Peter Dodd. April 2010**

At every show I have attended this year (2010), either as an exhibitor or a judge, there has been a great deal of confusion and concern over the difficulty of exhibitors knowing in which class they should show their Blackeyed Yellows and Suffused Yellows. Judges also seem to have a problem in deciding as to whether the birds are Blackeyed Yellows or Suffused Yellows.

It has now reached the stage where some judges do not even wish to judge either of these Blackeyed Yellow or the Suffused Yellow classes.

As a direct result of the decision to make the Suffused Yellow / White a Standard variety, a leading breeder of Blackeyed Yellows in Australia has indicated to me that he is seriously considering selling all of his Blackeyed Yellows. At one show he had a particular bird "wrong classed" in the Blackeyed Self class, and then subsequently again had it "wrong classed" when entered as a Suffused Yellow at the following show. This is an absolute travesty.

Other exhibitors of these varieties are also having the same problems. Even the results of the Blackeyed class at the National competition in Tasmania last year caused much controversy.

It has now reached the ludicrous situation whereby at some shows the officiating judges get together prior to the commencement of judging, to ensure that birds in the Blackeyed Self & Suffused Yellow classes will not be "wrong classed" later in the day.

I have lobbied to the BS NSW Inc that the Suffused Yellow-White be removed from the Standard, as it is not a true separate variety. Yet, I have been duly informed that "as it is the original mutation" it is entitled to have its own class.

The Blackeyed Self Variety, as we know it today is a vast improvement on the original Yellows / Whites. Over many years, skilled breeders have worked hard to remove the suffusion, resulting in the attractive clear buttercup yellow body coloured birds we know today.

One solution to this ongoing problem (Suffusion confusion) is to remove the Suffused Yellow- White Variety from the Standard, and have these birds included in the Blackeyed Self Colour Variety and be penalised accordingly (for having body colour suffusion). To use a similar analogy, if Lutino and Albinos are presented at a show with body colour suffusion, then they are penalised according to the amount of suffusion.

I believe that if the Suffused Yellows / Whites are to remain a Standard Variety; we may well lose the beautiful buttercup Yellows that we have spent so many years perfecting. It is far easier to breed Yellows & Whites with suffusion than without, so why would breeders bother trying to breed the optimal Blackeyed Self Coloured Yellows / Whites?

For that matter, lets also change the terminology "Blackeyed Self Colour" to Blackeyed Yellow or White. The Standard allows for the Blackeyed Self Colour to have markings on the back of the head, neck and wings, and as such is not a true Self Colour.

We should do everything to protect and preserve the Blackeyed Variety and remove the Suffused Yellow / White Variety from the Standard- and thus put an end to the Suffusion confusion.

# Dark-Eyed Clear Breeding Expectations

| Pairing | Expectation |
|---|---|
| Clearflight(DF) x Recessive Pied | 50% Clearflighted/Rec Pied<br>50% Normal/Rec Pied |
| Clearflighted (SF)/Rec Pied x Rec Pied | 25% Recessive Pied<br>25% Normal/Rec Pied<br>25% Clearflighted(SF)/Rec Pied<br>25% Dark-Eyed Clear |
| Clearflighted(DF) x Rec Pied | 100% Clearflighted(SF)/Rec Pied |
| Dark-Eyed Clear x Rec Pied | 50% Dark-Eyed Clear<br>50% Rec Pied |
| Dark-Eyed Clear(SF) x Dark-Eyed Clear(SF) | 50% Dark-Eyed Clear(SF)<br>25% Dark-Eyed Clear(DF)<br>25% Rec Pied |
| Dark-Eyed Clear(SF) x Clear-flighted(SF) | 50% Clearflighted(DF)/Rec Pied<br>50% Clearflighted(SF)/Rec Pied |
| Dark-Eyed Clear(SF) x Clear-flighted(DF)/Rec Pied | 25% Dark-Eyed Clear(SF)<br>25% Dark-Eyed Clear(DF)<br>25% Clearflighted(SF)/Rec Pied<br>25% Clearflighted(DF)/Rec Pied |
| Dark-Eyed Clear(SF) x Clear-flighted(SF)/Rec Pied | 12,5% Dark-Eyed Clear(DF)<br>25% Dark-Eyed Clear(SF)<br>12,5% Rec Pied<br>12,5% Clearflighted(DF)/Rec Pied<br>25% Clearflighted(SF)/Rec Pied<br>12,5% Normal/Rec Pied |