



The **Pigeon Genetics** Newsletter

News , Views , & Comments

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"Leucism" Piebald (**Pied Factors**).

Introduction - By Jith Peter .

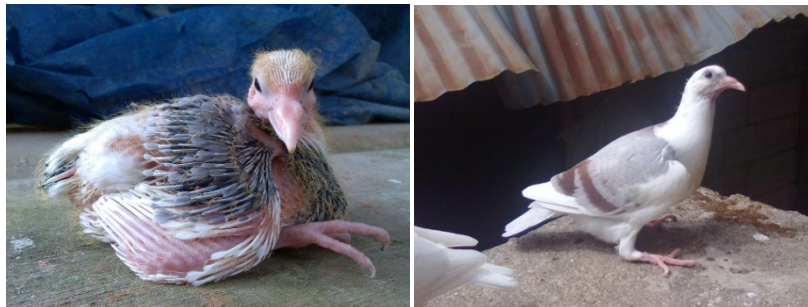
Domestic pigeons are diverse in their colour variation , and to enhance the diversity additionally , there are pied designs. We have dealt with many colour mutations in the previous issues. In this issue we talk about piebaldism. We usually refer to a bird as pied when there is /are de-pigmented area/s on the bird and the rest of the feathers are coloured. We know that it is not just the feathers but also the associated skin that is de-pigmented. That is clearly noticeable at their early stages of life after hatching. Toe nails , beak and eyes also can be affected by pied factors . Piebald shows its expression from the beginning and the expression is static , in other words all of the known pied factors in our domestic Pigeon Breeds come under the category static piebaldism. The expression of Pied factor , however ; may vary from bird to bird

. Usually that expression on most , if not all pied factors is roughly (if not perfectly) symmetrical , with exceptions .

There are some cases which show clear asymmetric expressions such as the so-called half sider. Piebaldism is believed to be related to Leucism and is often called partial leucism.

Albinism is another condition familiar to us which affects melanin production. Technically speaking , how do they differ ? I think it is important to have a brief explanation on melanin pigmentation and the cells associated with it , before we distinguish the two apart. During the embryonic stage , cells start to differentiate .. A zygote , the first diploid cell , differentiates into many different cell types which are capable to carry out specialized functions in the body. Cell differentiation is a controlled process and it happens many times during a life span. Each specialized cell type is produced in this manner . The life cycle of a melanocyte (a cell which produces melanin) , consists of several steps including differentiation of melanocyte lineage/s from the neural crest, migration and proliferation of melanoblasts , differentiation of melanoblasts into melanocytes, proliferation and maturation of melanocytes at the target places , melanin formation and transport to keratinocytes. In the case of the Albino, the melanocyte cells are normally present , however ; the pigment is not produced due to a mutation of certain gene or genes whose expression is essential for pigment production. In the case of pied birds , melanocyte cells in the embryo fail to migrate correctly to certain areas which results in a lack of melanocytes , thus no melanin in those areas.

Leucism is a condition of depleted pigmentation that is marked by overall diminished colour or patches of weaker colour and this is caused by a genetic mutation which inhibits melanin and other pigments . The pigment cells in the eyes are not affected by the condition because retinal pigment cells are derived from another source , not from the neural crest cells . In the case of the Albino , it effects pigment production in the eyes .



Photos owned by Jith Peter ~~~~~

Obviously the original MUTATION (S) , took place centuries ago perhaps before written records , but are seen in paintings of the very early 16th. century that already indicate that "Intelligent Design" , had been applied by mankind as opposed to Natural Selection.

While we can only surmise , it is likely that those early mutations were of a very irregular expression(s). Mankind , having been attracted to the unique trait would almost certainly have begun to seek ways to not only breed more but also to secure and maintain set Design units . Thus we created combinations of markings so as to fashion various fixed **Designs** that look like white on a basically coloured bird or colour on a basically white bird.



Diagrams by Bob R.

We have no record of pure white birds ever producing a mutation that resulted in colour markings of any sort on a white bird ; however , it is possible that a mutation took place centuries ago that presented as a primarily white bird with just a few coloured areas such as we see in other animals like the white tail Deer. This may explain why we get similarly Splashed coloured pids when we cross various fixed Designs , as the various degrees of dominance among the pied traits come into play.

We have added Diagrams of many of the well known pied phenotypes , in which you will see over the next three months, that often each has its own opposite marking. An example is a "spot" or snip of color on the forehead which has an opposite white spot or "Blaze" . A white " Beard " has its opposite , a colored "Bib", and so on ... some of these terms may have other names and/or are used interchangeably further leading to confusion .

Other birds of the world, where warm colour pigments exist , such as red, orange and yellow , may be affected differently by Leucism in that it does not completely shut off the colour, so a very light pastel version may be created in the presence of leucism. However there are no warm colours in the Columba livia pigeon , so Pied factor always cuts out pigment colouration causing completely white feathers in any areas affected , which may also affect the entire plumage .

There are many specific "markings" that when combined in a seemingly limitless manner , produce what we may call Specific or "FIXED DESIGNS". The **Designs** that you will be most familiar with are : Helmet Design, Magpie Design, Baldhead Design , Saddle Design , Lahore Design ., and Swallow Design.

There are other markings that may also be called Designs but usually they consist of only one or two Component markings that , in and of themselves , are not complex in design , an example would be Coloured tail (Tail mark) , or white tail (Body Marked). These are single unit markings.

Dr. Lester .P.Gibson is the only Genetics enthusiast that I have seen offering an explanation for Pied Factor. He suggested in one of his Books , that it was a Dominant trait that did not express a phenotype by itself , but possibly acted as an enabler when combined with other traits such as Baldhead , and turbit marking , etc. He thus proposed that we identify them in this manner : Baldhead Design (Pi//Bh, Pi//Bh) -- Saddle Design (Pi//t , Pi//t) and so on .

Below is a Diagram showing most of the areas of white that can be expressed on a self Patterned and also on a Solid whole colour bird . Corresponding patches of Colour with a predominantly white background may also be seen . Almost all colour markings have a corresponding white area as a result. Exceptions are Saddle Design that has no actual Pied factor opposite , and the Lahore Design which also has no corresponding exact opposite phenotype.



Diagram by Bob R.

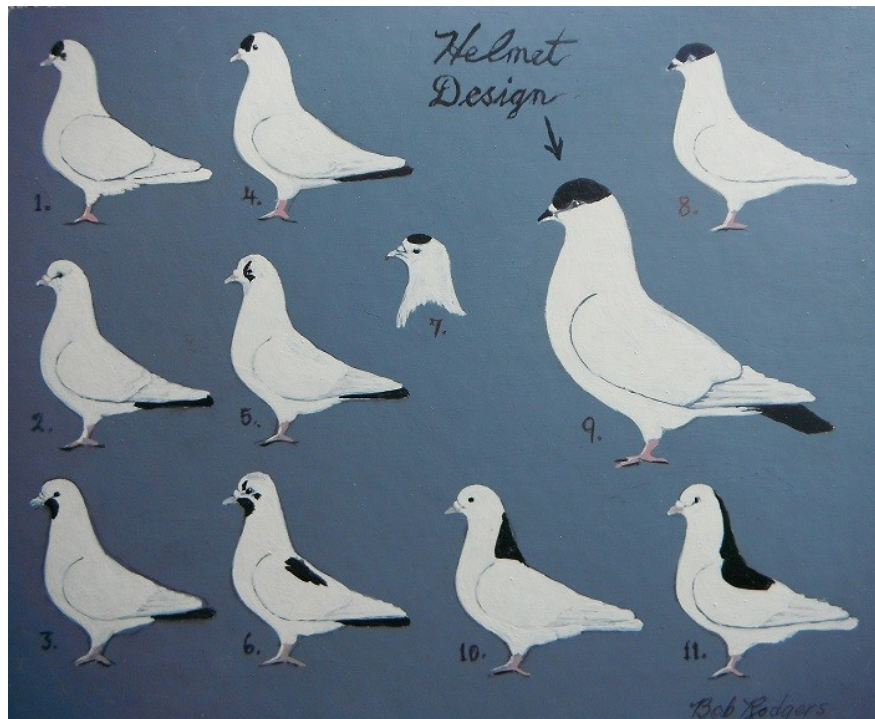
We previously mentioned that this Topic of Pied factor , would probably be in three instalments (separate Issues) . The last Issue will also deal with a number of traits that cause white or whitish regions that have nothing to do with the Pied factor (s).

So now let's take a look at the known "Designs" . We have Eight specifically named Designs . Each may have some sort of connection with one or more of the other Designs or at least share some of the same components . They may even be "linked" , which means that they are on the same chromosome.

The Diagrams have been firstly grouped basically by their similar "Phenotypical" traits, (what they actually look like). Each chart includes a larger diagram of a named Fixed Design. The other diagrams in each Group may or may not have a direct genetic influence on the given Design , but often we can see the correlation . That may sound confusing , but we think once you look at all of the charts you will readily see what we mean.

We begin with chart "A" (**The Helmet Design**), with primarily a white bird and the various component markings of colour that will be seen incorporated in several of the eight main Designs . The size and configuration of each of these markings can change depending upon genetic variations within the Breed to which it has been applied . The Helmet Design has been tested against "Wild Type" Self birds and found not to be a simple recessive but with confusing and contradictory results in various Countries , suggesting that the birds used may have been of different genetic configurations ., however; consensus is that the Design is not a simple recessive , as was once believed .

"A"



(1) spot or snip, (2) Colour Tail or Tail Marked, (3) Bib & Coloured Tail., (4) Spot and Coloured Tail., (5) Abrush ., (6) Akuruk ., (7) skull cap., (8) Fullhead or Cap ., (9) Helmet Design., (10) Bellneck., and (11) conjoined Bell and heart. Diagram by Bob R.



Jose Jacob, Patch Pied or Splash .

There is always going to be slight variations in the shape and size of the various named traits based upon the decisions made by the various Breed Clubs around the World. This is also true in the names of each trait as terminology has evolved differently within the various Languages of the World and even within Countries , depending upon the isolation of regions and old ideas..



Spot & Colored Tail , Photo Bassett



Coloured Flights , Levi's Encyclopedia of Pigeon Breeds.



Bellneck - Levi .



Helmet Design - Levi's Encyclopedia of Pigeon Breeds .

The Helmet Breed is named for its distinct Fullhead marking resembling an army Helmet combined with a Coloured Tail . The Breed may be Plain Headed or shell Crested . It has been tested to reveal that it is not a simple recessive trait that when mated to wild type (non-pied) produces splashed offspring similar to the one below . Which will not have a coloured tail. Levi photo.



Splash pied , typical example whereby coloured areas tent to always be on the top half of the bird .



Spot or Snip - Levi's Encyclopedia of Pigeon Breeds . (Other Traits - also appears to be pencilled)

Below is a Half sider with coloured tail , Satinette bred by Shoibal Sabbir of Bangladesh. This trait seems to be very common in any phenotype that genetically contains the "Saddle" Design. It is seen in clean leg Shiraji , which are Lahore Design otherwise .



Below is a White hen with two dun patches. Genetically she is a Baldhead and was produced by repeated crosses back to pure white birds. I also raised one that was nearly pure white save a tiny cluster of feathers about an inch from the throat area . Bob R.



Final word:

Normally when someone is attacked verbally by another, we have two choices, one is to crawl in the gutter with them and sling dirt back, or the other is to ignore them completely and go on with what you enjoy doing! However when the underlying subject of those attacks involves perhaps thousands of other people who enjoy the same thing that you promote, you feel obligated to them to set the record straight!

Our last Newsletter which, for your convenience was not secured with a password, was taken by a non-subscriber and published in bits and pieces on his friend's Facebook and Yahoo Groups with his opinions attached. There has been an ongoing effort to discredit Dr. Lester .P. Gibson for the past four years at least, and now also Jith & I since we took over the Newsletter. You would not believe the emails and chat messages that I have received from some of these people!

I had planned to ignore them as usual, but feel many of you may by now have heard about their accusations and I want to assure all of you that to begin with we stand behind everything we say herein, and we research and reconsider everything we say before we send out the final Newsletters!

Generally, the key points of contention were: (1) that I said "IT was my understanding that Ecu was not proven to actually be an allele of dilution". I did not say that it was not, I simply said it was my understanding that it was not!, (2) Then It was stated that Levi never used the term Design when referring to Colour & white markings, but if anyone read Levi., they would see that he in fact did.

(3) Then there was a concern over the idea of Wing pattern versus body pattern, however pattern series birds express that "pattern" over the entire bird, we can see it most clearly on the shields due to the coarse spread involved there, but it genetically involves the entire bird (all pigeons normally must be of one pattern or another). It is only when it is masked or partially masked by one or more modifiers that we may not be able to readily identify the pattern visually. Both Spread factor and recessive red mask pattern partially in the unimproved form, but after modifiers are used to support those genes, we get a complete masking effect. Personally I believe that the same will prove true with "Ecu", which cannot be achieved when breeding birds in Pale factor or dilution factor.

(4) There was also some fuss made about when and if someone has a right to name a trait and apply a symbol. It was suggested that Paul did not have a right to give the symbol Ecu., when Extreme dilution d^{ex} had already been given and that the first person to assign had precedence. It was also stated that no one should assign a symbol without the proper testing having been done first. Ironically Dr. Willard .F. Hollander had already sent a letter to Dr. A. Sell years before, which Axel recently published on his Facebook Home page to the effect that Hollander not only predicted that **one day** there would be an Extreme dilution mutation, but he named it and gave the **symbol d^w** .. (dilute white).

I have placed those who criticize us in a separate mailing list, and have given them the option to sign out of the mailing list if they have no wish to take part in a civilized manner. We have not refused nor ignored any applications in the past, that is just simply false. A number of these people have not been

on the mailing list , or have been there under a false name while telling you that they would never bother to subscribe . To date , only one has asked to stay on the mailing list .

I am certain that a great deal more could and should be said in our defense , but I feel that the majority of you support our efforts and do not wish to give them any more Letter space . On a positive note . , our subscriptions have taken another upward spike again as a result of their attacks against the Newsletter. Two appropriate quotes from Subscribers : "They just prove that an empty barrel makes the most noise" . , and " People do not throw stones at a tree without Apples " I thank all who have notified me of the actions of those people , and for your continued support ! ~ Bob R.

That is it from the Pigeon Loft for February Power outages prevented the Feb. 1st. mailing , so here it is Feb . 2nd .., Ground Hog day . , and in my region at least winter is predicted OVER ! Hope you all have your Bands ready for the new Breeding Season !

Next Issue we continue with Pied Factors and deal with Primarily Coloured Birds with white markings . This will include the Magpie and Baldhead Designs .

Please do not hesitate to let us know what you have going on for Genetic Projects . This is the place to reach the most people with the common interest around the World !

Finally , if you see actual errors of any kind or have a different opinion on any topic , we welcome a polite note from you which demonstrates what you say and we will share it with the members . We have had at least one case where someone mailed their opinion to all the people on their Group of our mailing lists . That is not acceptable , and only about thirty members get to see it. . My email address is bob_rodgers556@hotmail.com .

Bob in Canada , & Jith in Oman .