The Pigeon Genetics Newsletter, News, Views & Comments.

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(Founded by Dr. Willard .F. Hollander)
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July 2024, I prepare this Issue for mailing as I celebrate my 80th. year June 29th !

Gazzi and Pencil dual for supremacy!

Over the years Breeders of Gazzi Design and the Penciled phenotype have been attempting to figure out if they are alleles or just what is going on with these often quite similar looking traits. We will go back again to experts in genetics during the early years of this Newsletter to glean some ideas from their findings and compare them with that which is known today.

Firstly it must be realized that the Pencil gene is basically a 'de-pigmenting' gene similar to the grizzle family. It only can be seen expressing on 'COLOUR" , therefore when a Gazzi Design Pigeon also has the Pencil gene , we see the effects of the pencil gene acting on the colour areas only. The confusion comes when we look at the heads of both a normal Gazzi , and the normal Penciled self or solid coloured bird. Each specimen appears to have a coloured head. In the case of the penciled bird , this is because only the tips of all feathers maintain colour as pencil de-pigments basally. This means that in the case of the tiny feathers over the head and neck, we see only the tips and no basal whitening . This gives the illusion of a solid coloured (Gazzi) head marking.

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Ralph Smith writes:

"I have been working on this and here are some of what I have gotten. I put pencil into my Fantails by way of a Saxon Breast pigeon. (It's all I could get at the time) so for the most part my pencil Fantails have color in the head and tail. But I wanted the gazzi {design} on them. So I mated Gazzi Modena to my pencil Fantails and the half Fantail in the second pic that is gazzi is showing the pencil effect also.

The bird in the first picture below is from a pencil Fantail and a satinette marked Fantail. This appears to be gazzi "z" marked, I have raised a few of these over the past few years. All were marked very similar to this one.

So it seems that pencil works with gazzi or satinette {design} birds. I haven't tried satinette and gazzi together yet. **- Ralph**

(1) from a pencil fan X a satinette Fan (2) Gazzi Modena X pencil Fantail.
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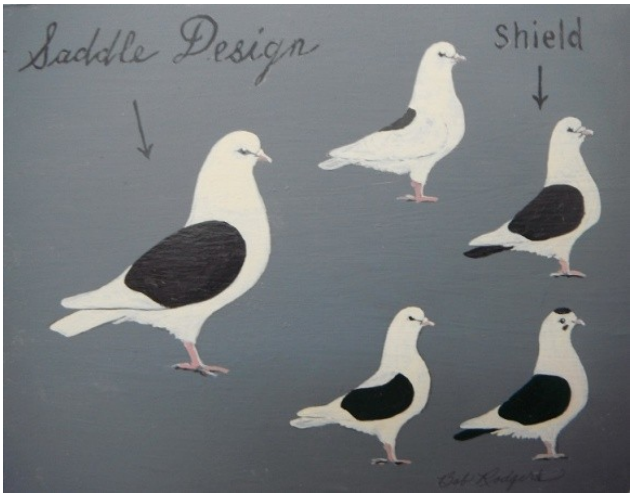
Below (1)-This is what my pencil Fantails look like, dark head,light color in the tail and no color in the wings. Bred down from the Saxon Breast pigeon. This bird is spread indigo. The next bird (2)is a Moravian Strasser, he is mated to a brown Fantail that is split for pencil. Hope to get the color back in the wings. The pencil Moravian Strasser in gazzi {design} is my goal to put into fantails.

(1) 

(2) 

Below -These are the satinettes (toy stencil frill stencil) that I have that I used to the pencils that produce the gazzi {Design}. I started the satinettes back when we started putting toy stencil Frill stencil into the Fantails.

Editors - Here are some paintings that I did for previous Issues to help demonstrate some of the standard fixed colour designs and possible component markings that seem to be shared in many cases with one another. Beginning with Gazzi , then Lahore , then saddle/ shield.



A comparison of each chart above will demonstrate just how the various PIED components are/ have been combined to create the various fixed Designs.

Dr. Paul Gibson gave the symbol (Pi) for the Pied gene in Pigeons. He followed that with designations for each Design thusly: Pi//Bh for a Baldhead Design., Pi//tr for a Turbit shield marked Design., Pi//sw for the swallow marked Design etc. I wonder if we should have all of the Pied factors at the Pied (Pi) locus with Gazzi (Pi//z). ?? He suggested that (Pi) does not express on its own but rather, {I take it}, as being in conjunction with the various set designs created artificially by unnatural selection. There are however dominant, partial dominant, and recessive pied genes governing such components as Tail colour, flight colour, and all of the various set markings we know as components of Design. This Diagram is one I did to outline the many ways Pied factors express on Pigeons mainly through selective breeding.

The effort to sort out this complex 'z' locus requires a great deal more study and testing. It looks as if we have all of the Pied traits at the 'z' locus along with bull eyed recessive white, but is there any evidence that this is correct or that 'penciled' should join them? I suspect that we can have the penciled gene expressed on any pied bird including a Tail mark in the same way that you can have "flash" or 'Undergrizzle'. I also suspect that a bull eyed recessive white can have absolutely any pied markings or non-pied expressions hidden as the main genetic colour trait. Are they all mutations at the same locus, I think not. The above Diagram shows most all Pied expressions and how they overlap. The overlapped areas may be expressed on an otherwise white bird leaving a great deal of difficulty identifying the true genomic inheritance of specimens within a given test group distorting the visually expected F2 - 1.2.1 ratio in any given test situation..

From **Jens Stinner** - Good evening Bob,
I don't know if this is fitting into your July newsletter about Pencilled but I am sending you a picture. You choose if usable or not. I made the combination of Qualmond and Pecilled last year. The bird shown is also hetero recessive red. Best regards **Jens Stinner**.

Thanks , it is interesting and I will use it. The hetero red expresses exactly the way I have been telling 'almond' breeders that it does but getting opposition from them on that . Do you have a photo of it as an adult? (Below are those adult photos.)

"Editors" - This brings to mind the great number of phenotypes that all express some sort of basally white 'grizzling' in the flight feathers. Many resemble undergrizzle . The photo shown below is not (Ug) nor Qualmond or pencil yet it has the grizzled flights. Most unimproved recessive reds and yellows will have this whitening of the flights and tail feathers. In fact all feathers usually have this but it is most easily seen in the larger more coarsely structured feathers.

It is often confused with being "Almond bred" , or being an "Agate" when it occurs in Stipple bred birds.

The fact is that even wild type (blue bars) have whitened feathers basally and this is particularly evident in all of the new mutations that have diminished pigment expression.

Unnknown traits (1)**Jith Peter**, (2) & (3) **Mike Bordelon** , (4) Undergrizzle Red **Walter Wojenski**.

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From **Jeff Butler** -

I have only a bare bones knowledge of genetics. Basically the colors blue, ash red, brown, their dilutes, bald head, milky. I also breed whites. I've been at it for over 50 years 37 with Chinese Owls. This may sound like an easy question for you but wanted to make sure I'm figuring right. The way I see it with my main colors minus bald head and milky I can mate them to whites and some whites will be produced if the "colored" bird carries it. I also believe that young from the non-white X white will all carry white and when mated together will produce whites at about 50% both sexes. If I'm not understanding this right please correct me. I'm trying to improve my whites but have kind of stalled as they are closely related. Yes, I could bring in new whites but I know what my blues are capable of. I have placed whites, blues, and browns in the top birds of shows. I think I may have placed brown bars in the top 5 more than anyone. My browns were produced from my blues. Any help, suggestions would be appreciated.
Thank you . - **Jeff Butler.**

Editors' { thanks for the response and yes you have it with the {Bull eyed}recessive whites. I bred American Show Racers starting back in 1980 and was not able to purchase any pure whites so I crossed out to a couple of nice white Racers that had considerably well developed heads. It was not long before I had a stud of white birds that were close to the quality of my ASR's. I did not get to complete the program of perfecting them before I was forced to stop breeding and keeping birds. Sure do miss the fun! All the Best **}** ~ Bob.


One hen of the early crosses from a white Racer X ASR.
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We have decided to devote a full Issue to "WHITE" so we will leave it for now. Usually we think of a white pigeon in terms of a pure white bird with Bull /Black eyes. There are many thoughts and ideas about white and whether or not it should count as a colour and whether or not it is actually an epistatic gene. Hopefully we will be able to shed new light on that topic in the New Year so if you have any sort of material on the subject that you would like to contribute , Please send it along to bob_rodgers556@hotmail.com

Editors - I (Bob R.) see (bull eyed) recessive white as a mis-directed gene that can express in the homozygous state only and prevents us from seeing the true colour/ Pattern/ and Design of the bird. It can even shut off the epistatic genes of both Spread factor and recessive red. Quinn referred to this as a 'different kind' of epistasis in which the pigment expressions were not 'covered' but rather were "shut off". White therefore being an ABSENCE OF COLOUR .

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I think of alleles as "ALTERNATE" versions. The two traits cannot share equal status on the same bird, but may appear in such a way that both are obviously involved. I cannot see how we can consider them to be either co-dominants or co-recessives. Perhaps someone can shed some light on that subject.

In the case of the base colour pigments we are familiar with the fact that all mutations at this locus are, of course, alleles. We know that, because they are sex-linked, males with one of the more dominant traits can therefore carry one of the less dominant traits on the second chromosome and a good example of that is the Ash-Red male that carries either blue/Black, or brown / Chocolate. As he ages he will develop flecking of the second allele colour, which usually does not show at all in the juvenile feathers, but intensifies as he ages particularly so in the flights and tail feathers as well as the shields. However they are never a completely 50/50 even mix of the two colours, such as you might see on a Chimera Mosaic. Brown flecking on a blue bird is usually not distinguishable due to the similarity in colour tones.

Getting back to the Gazzi design and the pencil gene, let's have a look at various ideas the first of which comes from **Hein Van Grouw**. We asked him for a comment because he is very well acquainted with pied factors as they appear in wild species of birds and have not been tampered with by unnatural selection by mankind.

Pied Zebra Finch from **Hein's** article which we will print in the future.
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This from **Hein Van Grouw** - Slightly edited and as stated in earlier issues, changes by the Editors will be enclosed thusly { } . We promote **Levi's** term 'design' instead of pattern relating to colour arrangement.

Hi Bob,

Well, the pieds….. That is a 'under-studied' subject with still lots of unknown facts….
First of all, certain forms of pied (certain forms of magpie-{design}) are said to produce white with dark eyes (like recessive white) in homozygous form but…. the percentages in the offspring of white, magpie and non-pied (only white primaries) do not add up, so it may be that these particular magpie-{designs} are, in fact, the combination of two different mutations, incl. recessive white.
Regarding gazzi, I think that this {design} *is* caused by one gene and is *not* the result of many different pied mutations (like shield marked, for example). Obviously the gazzi {design} is perfected by selection, but it does inherit consistently as being one mutation. It is very much comparable, I think, with 'belted' in mammals (that is also one gene). And also consistent pied {arrangements} in wild species are, if caused by leucism (pied), based on single mutations and not a combination of different mutations. The former 'pied ravens' on the Faroe Islands are a good example of that.
Whether recessive white and gazzi are allelic I don't know for sure, but it is certainly not unlikely. Also other pied mutations may be allelic with recessive white (and gazzi) without us knowing so far.

I've crossed Jacobins (monk {marked}) with recessive white Indian Fantails, and all the offspring were over-marked monk {marked}. If one crosses a monk {marked} Jacobin with a coloured (non-white or non-pied) partner, the offspring is mainly coloured with only a few white feathers (mainly the primaries). So, is recessive white an allele of one of the pied genes in Monk {design}. I don't know. It is possible….
Schmalkalderner Moorhead crossed with recessive white gives white offspring with only the tail coloured. So is the coloured head and tail of the Moorhead allelic with recessive white, and a bird with the two different alleles has the tail only coloured? It is possible, but I don't know.
A problem is that of the recessive whites used in crossings, one never knows exactly what else is present in their genotypes….

What I do know (I think) is that gazzi and pencilled are not allelic as I've seen pencilled birds in gazzi {design}. More likely both mutations harbour a place on the same chromosome very close to each other (close linkage).

So, in short, there are several different pied mutations, most of them not allelic to each other (so in my opinion, there is not a 'pied locus'), but I'm not aware of any evidence of certain pied mutations (apart from gazzi) being allelic with recessive white; however, that doesn't mean there aren't.

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Back in Issue 45 March 1994 page 5 **Dr. Lester P. Gibson** commented to **James Kimball** - Pencilled does not usually show well in the heterozygous state. Heterozygous pencilled resembles Undergrizzle in that it expresses on (whitens) the basal part of the feathers. Pencilled will show on all ground colors - brown, blue and Ash-red. As I stated in my Book, Penciled obliterates the "C" patterns - thus bars , checks etc. do not show. The action of the gene kicks in shortly after the pigment gene(s) kicks in, thus restricting the color to the tip of the feathers. You should mate the brown hens back to the blue brothers or back to the father to get the pencil expression in its fullest.

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Issue 46 June 1994 Page 19, **Kerry Hendricks** comments to **Paul Gibson** thusly: " I do disagree on Pencilled being a dominant as we've discussed before. Although you describe it well, in alluding to it being a middle of the road type thing. Easy enough for those of us who have been around a while than the beginners who will find it very confusing. I'm pulling together my data of the last few years and will send it in. **I think I have also proven that Pencilled is an allele of recessive white.** I've tested with recessive white and Gazzi and it is not independent. I mentioned these findings to WFH about five years ago with his response being "interaction". Now I think his data confirms mine? I also believe there may be something else involved, maybe linked, that is causing the heterozygous effects that I think cause you to vote dominant. Perhaps a Toy Stencil component? I recommend some testing of Pencilled and Toy Stencil to see what happens. Another reason to suspect Toy Stencil (or Od, but I doubt it) is that Saxon Breast Pigeons and Hana Pouters originated in the middle of the German Toys and Pouters/Croppers that are Toy Stencil. No Proof, just a feeling? (Ah we need more data , more data!) Anyway , a lot of fun.
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{You may recall this bird pictured below from previous Issues. He is a Gazzi marked bird that came from a recessive white Modena hen mated to a Monk marked / white head Capuchin. You can see that the coloured head expresses the hetero Baldhead marking. Clearly the pure white Modena hen was pure for the Gazzi design. This form of baldhead is a partial dominant to wild type and apparently also to the Gazzi design. The hen's sire was a barred ash grizzle Gazzi and the Capuchin was ash T-Pattern, therefore it is difficult to say whether the Tail is white or ash, if I recall correctly it was white. The flights were dominant white. I did not get to take the cross any further.}

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Robert Mangile wrote a paper on the testing that he did regarding recessive white and Gazzi a number of years ago and that will be in the Issue on recessive white for some time in the New Year not yet set.

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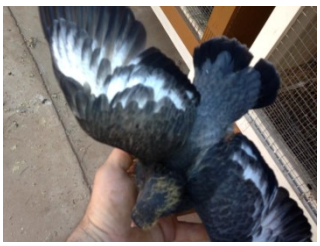
When we talk about a gene being dominant , partial dominant or recessive , we are usually speaking about it in relation to "wild type", but that same gene mutation may not have the same relationship with its other alleles. Ember is dominant to recessive red but is it dominate over wild type ?

Paul Gibson determined that the Pencil gene is a partial dominant to wild type but near the recessive end of that nebulous designation. Others had it as a recessive.

Axel Sell rounded out his chapter on Penciled thusly : "For the interpretation of a test mating also the source of the pencil trait is important and in this test Breast Pigeons were involved. **Gibson** found in his early tests with Breast Pigeons that some of them underneath carried also the Gazzi trait. That is plausible when we consider the juvenile plumage especially of blue and black with a dark lacing in the coloured parts of the gazzi marking. Thus probably the traits Gazzi , Pencil and also recessive white are not allelic. There might be other kinds of interactions like supporting effects. For some Breast Pigeons we might assume that they carry both, Gazzi and Pencil, and in addition at least one bleaching trait."

The photos below: (1) **Levi's Encyclopedia of Pigeon Breeds** is incorrectly labelled as a black Mottle. Mottle generally now represents a heterozygous Tiger Grizzle. This is thought to be both homozygous Penciled and homozygous Undergrizzle. I think it retains too much colour to be homozygous Pencilled and perhaps also to be Homozygous (Ug). (2) **Jith Peter** hetero Ug. and (3) **Barry McPhee** hetero Ug. (Both(2) & (3) Juveniles, that usually darken considerably).

igure 491. Berne Half Beak, black-mottled young cock, No. 1961-439, bred and owned by W. Nyffenegger, Worben-Busswil BE, Switzerland. Photo by Stauber.



I had juvenile (Ug) that were laced on white all over but became self T-Pattern with just tail whitened.

Below Tail shots of (1) hetero (Ug)**Jith Peter**, (2) Dominant Opal Spread **Ryan Ward**, (3) unnknown **Mike Bordelon** possibly of (St.) breeding., (4) Homo Undergrizzle rec. red **Walter Wojcieski**,

Below - Gazzi Design Pencil Spread blue/Black T-Pattern, Homozygous Pencil blue barred , Hetero Pencil blue/Black T-Pattern Gazzi Design Pouter . - Photos **Mick Bassett** Leipzig Show Germany.

Below Tiger grizzle / pied /Penciled. - **Shoibal Sabbir**.

We think that you will see that the pencil gene affects only the base pigment colour that normally presents as a self patterned or solid spread (whole) colour. The effect is similar to that of Classical Grizzle, Undergrizzle, etc. We close this Issue with a few photos of the heterozygous effects of some of these traits on the wing shield "C" Pattern areas. You may be hard pressed to see the differences. It is no wonder why some mistakenly think that pencil is a recessive gene. However , it is visible in the heterozygous state so obviously a partial dominant at least.

First five photos : (1) (2) & (3) hetero Undergrizzle, pseudo Gazzi pied wild caught feral- Bob Rodgers.



For several years some people argued with me that Undergrizzle was not a gene mutation but merely an effect of the Pied gene. They eventually realized that they were incorrect but have never admitted it.

Of course we know that many pieds do not express the whitened feathers of the tail and pattern basally.



Mother & Tail mark son without Ug.

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H. Arpad - Frill Stencil spread blue/Black., Hetero Pencil + (Ug) - **Bassett**., **Qafi's** Loft Dominant Opal.



I hope all of you found this interesting and helpful, we think the general consensus is that Pencil is a weak partial dominant that is NOT an allele to Gazzi nor recessive white and that recessive white is NOT an allele of Gazzi.

That is it for this Month , CU the first of August when we are "SPREADING" The News! with Symbol (S).
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