Wheeldons Wisdom Part 1

Breeding Winners by Alan Wheeldon

One question is on all our minds. How can we breed winners? This is the million-dollar question. You often read of a single pigeon that consistently breeds winners, irrespective of the mate chosen for it. Such pigeons often carry a name, such as the Goldmine cock or Producer hen. Sometimes a mating is stumbled upon in which a pair of pigeons, also produce a high proportion of champions. Such pairs are often named after the person who discovered this exceptional mating e.g. The Larkins pair.

Now why is it that only a few pigeons consistently produce the goods and yet the majority, fail to produce any creditable offspring? When a pigeon grows inside the egg it uses the genes within it's chromosomes as the blueprint or plan as to how it is to look and fly. It gets these genes or plans from it's parents. It's a little like the plans of an aeroplane. The builder looks at the engineers plans and it is these plans from which the builder can determine how big the plane is to be, how long the wings are and how many engines it should have. With our young pigeon half of the genes or building plans come from the hen and half from the parent cock.

So let's use the plans of our aeroplanes as a working example. Imagine our cock is a jumbo jet and our hen is Concorde. The builder wants to make a new plane. He sees the jumbo jet as a fine aeroplane, it can carry many passengers over great distances and he looks at the merits of Concorde and although it carries less, it can fly extremely fast. So he wants to incorporate the best of both planes into the new plane that he is to build. He then rips the plans for a jumbo jet in half and then rips the plans for Concorde in half and joins the two halves of the plans together. He then sets about building his new plane. You can imagine the outcome. The plane is a disaster. It's got one wing from Concorde and one from a jumbo jet. It's got two engines from the jumbo on one side and one engine from Concorde on the other. The builder can't understand it, the plane performs worse than either of it's predecessors.

This is a simplified example of why pigeons don't always breed winners, even if the parents have a winning pedigree. Of course the mechanisms that control the transfer of genes and merging of genes from each parent are a little more complicated than the joining together of two halves of a blueprint but the principle is the same.

So let's look at the mechanisms that are involved in the transfer of genes to the future youngbird. The genes determine how the youngbird will look, how large the muscles will grow, how powerful its heart will be, what capacity it's lungs will have and how efficiently its metabolism will perform. The genes will also determine the youngbirds resistance to disease, how sexually active it will be and how keen it's homing instincts are.

The dam of the youngbird will have pairs of genes for all these characteristics and so will the sire. However both parents cannot contribute both pairs of genes for each of the characters to the youngbird, or the youngbird will have too many genes, only half of each gene pair will come from each parent. This is easily achieved. The cells in the testes of the cock will split in half to become sperm. The genetic material in each sperm will thus be half of that usually carried in a normal body cell. Similarly the hen will produce eggs in which each only has half the

normal number of genes. This is one of the reasons why in the normal adult cells genes come in pairs. Of course when the sperm joins with the egg the genes pair up and a normal cell is produced. This subsequently multiplies and develops into a youngbird. This is why trying to breed young that are just like the parents is so unpredictable. It is hard to know which of the pair of genes from each parent is in each sperm or egg. Also it cannot be predicted which of the pair of genes that make each characteristic will be used by the offspring. And so for example although two genes that help make the muscle are present in the offspring, one from the sire and from the dam, only one will be expressed in the offspring. The one that is expressed will be dominant, it's partner gene recessive. So imagine these characteristics are depicted as letters, in which a capital letter is a strong character and a lower case letter is a weak character.

Thus:- L - powerful lungs	l - average lung
H - strong heart	h - weaker heart
M - highly efficient metabolism	m - slower metabolism
R - high resistance to disease	r - vulnerable to disease
A - strong desire to home	a - poor homing ability

Remember the genes for each characteristic will be in pairs in the parents but the cock will only pass one half of each pair to the offspring in his sperm and the hen will also only pass one gene from each pair to the offspring in the egg. So lets cross these typical examples and see what type of young they are capable of producing.

Cock Ll Hh Mm Rr Aa ——— Hen Ll Hh Mm Rr Aa

A range of individuals can be produced from this pairing and youngsters will vary in makeup from a superpigeon right down to a very poor specimen.

LL HH MM RR AA = CHAMPION PIGEON SUPER ATHLETE

LL	HH	MM	RR	Aa
LL	HH	MM	Rr	AA
LL	HH	Mm	RR	AA
LL	Hh	MM	RR	AA
Ll	HH	MM	RR	AA
LL	HH	MM	Rr	Aa
LL	HH	Mm	RR	Aa
LL	Hh	MM	RR	Aa
Ll	HH	MM	RR	Aa

Over 1,024 combinations

Ll	Hh	mm	rr	aa
ll	hh	Mm	rr	Aa
ll	hh	mm	Rr	Aa
Ll	hh	mm	rr	aa
ll	Hh	mm	rr	aa
ll	hh	Mm	rr	aa
ll	Hh	mm	ra	aa
Ll	hh	mm	rr	aa

ll hh mm rr aa = weak pigeon,slow,vulnerable to disease

So just by using these five characteristics as an example we can surmise that there can be over one thousand combinations. When you consider that most fanciers breed only two young from each pair you can see that they have a long way to go to find that super champion. Luckily things aren't that impossible. Even though a large number of unique individuals can be produced, in our example, a quarter of those hatched will have a large number of the dominant supergenes, half of the young will have an average number of supergenes and the last quarter will have few or no supergenes. So in real terms at least one in four birds bred from this pairing will be a good pigeon. It can be estimated that probably one in twenty will be an excellent pigeon and perhaps one in a hundred will be an exceptional pigeon, a champion. This pigeon will contain most if not all the dominant winning genes from both parents. Of course we have no control over which of the pair of genes are in the sperm that will fertilise the egg or indeed what genes will be present within the unfertilised egg carried by the hen. Remember only half the genetic material comes from the cock and half from the hen. We could be lucky and the first youngbird hatched will contain all of the supergenes. Generally the rule is, the more young birds that you breed from a pair, the more chance you have of producing a youngster with that winning combination of supergenes. Then remember the winning genes must be present in the parents in the first place, and you can shorten your odds by starting with champions.

One method that is used to increase the chance of producing a young bird with the winning genes is using the Bull or Stallion breeding sytem. Here a cock can be mated to four, or as many as eight hens within a very short period of time to produce as many as thirty-two youngbirds from a single cock in one season. This dramatically increases your chances of producing youngbirds with winning combinations of genes.

Such methods are also used to inbreed and concentrate those very genes. Another less intensive method of increasing offspring from a single pairing is by undersitting eggs from proven breeders of good pigeons to keep the quality of the race team high. In reality most fanciers will only breed one or two pair of youngbirds from a single mating.

From our example you can see that most of the pigeons bred from the pairing will fall inbetween the two extremes and be slighty better, or just as good as, or slightly worse than the parents. Occasionally just by chance someone will win the lottery and the right combination of super genes will occur in the sperm and egg and combine to produce a super pigeon, but as you can imagine this is rare. An example of such a pigeon would have been 'Supercrack' bred by Mons Hovaert of France, raced by Mons Crusson and finally owned by Robert Venus. An exceptional pigeon winning at least three national races. That combination of winning genes was passed down to his immediate children and they too were good pigeons, two sons won first nationals, six of the grandchildren won first nationals, but none were as good as the original Supercrack. You can see that this was because the winning combination of genes, was diluted, by lesser genes, inherited from the hens that he was paired to. The champion cock could only pass half of his genetic material carried in his sperm to his offspring and not all of those genes would be dominant. The hens that he was paired to would contribute the other half within the egg. Of course the genes would be diluted even further in the grandchildren when the sons and daughters were paired. This is why you often

hear top fanciers use expressions such as 'the apple never falls far from the tree'. Meaning that if you want winning pigeons with the winning genes you need to stay close to the original parentage. The sons and daughters might have some or most of the winning genes but the further away you go from the champion the less likely it will be that the original gene combinations will be intact. They would have been diluted and disrupted. Sons and daughters will only have half the genetic material from the parents, the grandchildren only a quarter.

Inbreeding

To overcome this problem of winning genes being halved and diluted in the offspring many fanciers use the strategy of inbreeding. By recrossing a champion cock pigeon for example with its dam, or with it's daughters, or by mating it with its sisters, the winning combination of genes can be concentrated and held together. We can illustrate this by using our original example. To inbreed we should pair the super-pigeon, a cock, back to it's dam.

Cock Ll Hh Mm Rr Aa ——Hen Ll Hh Mm Rr Aa
Superpigeon ————————X———————— dam
LL HH MM RR AA ———————— ————Ll Hh Mm Rr Aa

75% of the young from this pairing will have capital letters - the supergenes.Then of course you can inbreed further with one of the daughters from the superpigeon x dam mating, and backcross again to the original superpigeon. By constantly doing this you can concentrate the number of supergenes in the offspring dramatically. In theory you can, with this example, reproduce youngbirds with 100% of the original supergenes. The genetic equal to the original champion. In practice it will take a lot of backcrossing to achieve this. You must remember that there aren't only the five pairs of genes that we are using. In reality there will be tens of thousands. It is thought that to produce a true inbred, a pure group of individuals that have 99% of their genes the same, it would take parent-sibling matings for over 23 generations.Though luckily this degree of inbreeding is not necessary to reproduce the winning pigeon, as a large number of genes are responsible for characteristics in the children that are irrelevant to winning races, for example the colour of the feathers. That is why champion pigeons can produce other champions that are not always exactly identical to the parents. It is only the characteristics that make the pigeon race home faster that are important.

To be continued.