

# Wheeldons Wisdom Part 2 Continued from December

## Breeding Winners by Alan Wheeldon

### Hybrid Vigour

So imagine you have achieved a highly inbred family of winning pigeons, how can you make it better? One example of such a family must be the Janssen family of pigeons. This family was developed over generations, inbreeding, racing, selecting the best offspring, and further inbreeding. With an inbred family, to produce even better youngbirds, you need to introduce a new supergene that your own family of inbred pigeons does not possess, you need to add something extra. This is the blessing of an outcross, it will introduce new genes into an inbred family of pigeons. It has been suggested that the introduction of the Fabry pigeon into the Janssen strain did just that. It introduced fresh genetic material that added something extra to an already good family. Lets look at our super-pigeon example

LL HH MM RR AA

It's got powerful lungs, a strong heart, super efficient metabolism, resistance to disease and a strong homing ability. However it's wings for example may only be average, if it had extra long primary flight feathers it could sweep more air and travel further for every wingbeat.

Super-pigeon LL HH MM RR AA ww —X— Outcross Ll Hh Mm Rr Aa WW  
WW - longer more powerful wings

By introducing this outcross some of the offspring will inherit combinations of these supergenes from both parents and by inbreeding once again, these winning genes can be concentrated. The result will be a pigeon that now has all the best genes from the old family plus the new genes that produce a better wing structure.

Exceptional champion

LL HH MM RR AA WW

This introduction will produce a pigeon that is superior to either of the parents. This is known as heterosis or hybrid vigour. Thus it generally occurs when new supergenes are incorporated within the genes of a highly inbred group of individuals.

Regarding the Janssen pigeons I think history shows us that these pigeons are one of the most successful families in which new genes can be introduced using a cross, the offspring often demonstrating hybrid vigour, to produce some outstanding pigeons. An ideal situation in which to produce hybrid vigour is if you have two families of highly inbred pigeons, with each family containing winning genes that produce very different winning characteristics. For example, if you cross a cock from a family that win because they have a highly efficient cardiovascular system, with hen that wins because it has superbly developed wing muscles, the youngbirds from this crossing, will inherit genes that produce both qualities within a single pigeon. This pigeon would be a tremendous athlete, performing better than either of it's original parents. However, hybrid vigour can be a very fragile phenomenon. When it occurs within a loft, unless a careful breeding strategy is carried out, it can soon be lost.

I think this frequently happens, and explains why fliers can have a fabulous one, or two seasons, winning prestigious races such as Combines, and then sink into oblivion never to be heard of again.

The most simple solution to maintaining hybrid vigour is to keep together the pairs of pigeons that produce the winners and not to introduce any outcrosses. To increase the number of pairs that produce the magic hybrid vigour it is essential to set up two



lines of breeding. The producer hen must be line bred back to her father or brothers but never to her sons and the cock must also be line bred back to it's mother or sisters but never to his daughters. The resulting offspring from the two separate lines can then be mated and hybrid vigour will reappear.

### Best to best

An alternative strategy to produce winners is simply keep pairing best to best, buy in new champion blood, cross this with your best pigeons and keep pairing winners to winners. In this case a variety of winning genes will combine, and they will keep recurring in subsequent generations. An example of such a strategy must be with the Busschaerts. George Busschaert was a millionaire, he bought the best there was in Belgium in the sixties and seventies and brought them to England. The birds were totally unrelated but they had one thing in common they contained a variety of genes that were capable of producing super athletic characteristics in pigeons. They were certainly not an inbred family, but by line breeding the different combinations of winning genes kept reappearing in subsequent generations. This addition of new winning genetic material was further enhanced when fanciers started to cross the Busschaerts with their own winners. This constant introduction of new winning genes from pigeons from different sources explains why the Busschaerts are such a diverse family of pigeon, having every combination of colour, size, shape and form ever seen within a family of pigeons. And it raises the question, what exactly is a family of pigeons. Well George Busschaert had his own definition, and in spite of his pigeons originating from a variety of sources, he said that when they were in his loft they were Busschaerts.

This concept of bringing in champion blood, outcrossing and vigorously testing the offspring is used to great success on the continent, particularly in Belgium. If you look at the foundation birds of many of the continental sprint pigeons they come from many diverse sources. Typically the Janssens usually appear in most at some stage. One of the problems associated with constantly outcrossing is that you generally have to breed a large team of youngbirds. This has to be done to increase the chances of producing an individual pigeon with the right combination of winning genes. However once a champion has been found it is then a matter of outcrossing with new winning genes from other champion pigeons; this produces a problem in it's own right. If an outcross does not improve the winning line, then the decision has to be made to remove all traces, in case these new genes dilute or disrupt the winning combination of genes. It is easier to remove birds that have inherited bad gene combinations. In fact they will usually select themselves out when it comes to the basket. A pigeon with poor homing ability, weak constitution or poor resistance to disease will soon become apparent.

### Breeding selection

If you breed from your race team and you find a race pair that breed winners you should put them to stock immediately. It is a rare occurrence to find such a goldmine pair. You will find out when you race and lose them to a hawk or a wire. You will never find another mating like it again. If you have any doubts just consider the mathematics, you could race the parents and win but you could also comfortably produce 4 youngsters per year for say 10 years and potentially have 40 winners. One further point when breeding, keep comprehensive, thorough records of what is paired to what, make a note of the ring numbers of the youngbirds from each nest. It would be so frustrating if a nest pair of champions was discovered but you couldn't remember



who produced them. An ideal breeding set up is one in which pairs of birds are housed in separate sections. In most lofts this is impractical usually because of limitations with space. However, it raises an important issue, and that is that pigeons are promiscuous. They will mate with others in the loft if they get an opportunity. If you have a reasonably inbred colony this is less of a problem as the gene pool is relatively homogeneous, however if you do see examples of hanky panky make a written note. Again it would be extremely frustrating if you bred a champion and you hadn't realised that it was from a different cock.

If you do decide to introduce fresh blood to improve your race team several points will help to improve your chances of success. Look for a flier that has had consistent success over a number of years rather than the odd good result. If you go to a loft that has a reasonably inbred family of pigeons this will cut down on the number of aberrant genes that you have to select out when testing the offspring. It will also allow the option to practice the introduction of hybrid vigour at a later date. Also look for a flier with a management system that will suit you. For example if a fancier has success with his family of pigeons, but only if he trains them to 40 miles twice a day, you might want to reconsider. It is also important to buy from a family that has had success at the type of racing that you want to do. For example it is no good buying from a fancier that only wins up to 120miles if you want to fly long distances, over the channel. And finally remember that the 'apple never falls far from the tree'. Buy the parents of the champions, the champions themselves, full brothers and sisters of the champions or children of the champions especially if they were the result of a backcross with a grandparent.

A dilemma occurs if a pigeon is bought in with a superb pedigree, it might even be a champion itself and yet it fails to produce any winners. Well there are several options.

- 1) Change the pairing. It could be that it needs to be mated to a different partner for the winning genes to be expressed in the offspring.
- 2) Persevere. It could be that not enough young have been produced for that elusive winner to show itself. This is a particular problem encountered by those who only fly widowhood cocks. A disproportionate number of hens might be hatched and only the cocks will be appropriately tested.
- 3) Sell the pigeon and try a new introduction.
- 4) Buy in another similarly bred to the first introduction and start a new line, based on the new champions.

In all cases offspring from any pairing must be thoroughly tested using the basket, because winning is the criterion for selection. This also presents a problem, and that is, how long do you keep a pigeon before you can make the judgement that it is no good. Some pigeons perform to their maximum potential as youngbirds or as yearlings, but there are always examples that occur, in which the pigeon has needed to mature to at least 3 years before showing it's true form. I think the choice of when to say that the pigeon has been given a fair chance usually depends on how many pigeons you want to keep.

#### The Effects of Age

One other serious consideration when selecting stock for breeding is it's age. If we go back to the mechanism by which sperm and egg cells are made. They are made when a stem cell divides and allocates half of each pair of genes to each sperm, similar events occur when an egg is produced. You can imagine that as a cell gets older this process becomes less efficient and mistakes will be made. It happens in



all cells as they age. They find it harder to reproduce exact copies. We see the result of this as we grow old. Our skin becomes wrinkled our muscles weaker. Well the same thing happens when sperm and eggs are produced in older pigeons. Genetic material on the chromosomes gets switched, it becomes muddled and in extreme cases it may breakdown or be altered. The result is that a youngster conceived with this genetic material will look and perform even less like the parent. An extreme example of this in humans, is the increased risk that mothers over 40 have, of giving birth to a Down's syndrome baby.

This is why experienced breeders have noted that you stand a much greater chance of reproducing the winning genes if you breed from yearlings than from very old birds.

#### The Future

Science has made great advances within the field of molecular genetics. It is now possible to reproduce an exact copy of an individual. This has been achieved with mice, pigs and sheep, and legislation is now in place to prevent scientists trying such an experiment using humans. There is no reason why cloning could not be achieved using pigeons. Imagine just by taking the genetic material from inside the cell of a champion pigeon and placing it inside an egg in which all the genetic material has been removed, an identical twin of the champion will be produced. I am surprised that the large studs have not yet started their own cloning program. Technically it would be easier to clone a pigeon than cloning mammals, as the fertilised egg does not have to be implanted into a surrogate female. It just has to be hatched normally in the nestbowl. Imagine being able to buy an identical twin of Magic Blue or Champion Studtopper.

And why stop there. Genetic engineering now has the capability of introducing genes from one species and inserting them into the chromosomes of another. This is what is causing so much controversy within the major supermarkets, most of which now ban genetically modified foods. Furthermore, it's not only crops into which foreign genes have been inserted. It has already been achieved with animals. Imagine taking the genes that allow the swift to fly at up to 150mph and inserting them into the egg of a racing pigeon. Races would be won with velocities of 4400 ypm! A pigeon would fly 500 miles in less than three and a half hours. Notwithstanding - these are things for the future. As for now we will have to rely on the tried and tested methods that have proved fruitful over the years ,and if you haven't already done so, I hope you all get the chance to breed a champion of your own one day.

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