One Man's View: Inbreeding
Have You Got The Patience To Make It Work?

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There is a tendency these days for fanciers to cross pigeons, rather than inbreed. If you read the ad pages in any of the top pigeon papers, you will see that most pigeons advertised are bred from two very different lines.

The so-called "strain" may be the same, for example, both Seat Van Reets or both Busschaerts, but their direct relationship to each other is usually distant. There are, of course, exceptions, but these are not very common. For example, occasionally you will see that the bird is a "double grandson" or "double granddaughter" ofa champion. Less frequently you will see a "half brother x half sister mating," or "father x daughter," or "son x mother" pairing. Very rarely will you see a brother x sister mating. Most pigeons are bred from two unrelated, or distantly related pairs, and the current philosophy regarding breeding in racing lofts, seems to be to outcross most of the time.

In addition, ff you read the performances of the parents of advertised birds, they are often remarkable. For example, Sire 4xlst Fed, 2xlst Combine. Dam 3xlst Fed 1x1st Combine, sometimes the grandparent's performances are even more remarkable. It makes you wonder why the owner is selling these birds at all, especially for such a good price.

This is by no means an isolated example. There are scores of pigeons each week bred from

exceptional birds, but why are they being sold? The answer is that they simply don't breed pigeons of the same caliber, or at least, they have not done, so far. But why is it that they don't produce pigeons with the same winning characteristics? The answer? The winning gene patterns cannot be reproduced in the off- spring. The gene patterns that made the parents such remarkable pigeons have been blended and disrupted in the siblings, sometimes to such an extent that the offspring are only mediocre.

The reason for this is that only half of the genes from the father and only half from the mother will go into the offspring. Furthermore, even if the genes when expressed in the parents produce champion qualities, the two lots of genes might not be compatible when mixed together in the offspring. Together these genes are simply incapable of producing a pigeon that has winning characteristics. The genes can even cancel each other out. This disruption and dilution of winning genes will be further exacerbated when you buy a pigeon bred dowry from exceptional parents, and then cross it again.

Sometimes fanciers are lucky and the genes blend well together, allowing the best of both parents to show through in the youngsters. When this happens the parents are known as "prepotent." their winning characteristics being passed on without being lost. Furthermore, the genes are not only additive, but they enhance each other - a process known as "synergism." This can be illustrated if the cock donates genes to the youngster that produces fast sprint-type musculature, and the hen donates genes that allow the youngster's metabolism to work at maximum efficiency when working hard. The two qualities will work together. The offspring will be able to maintain a high frequency wing beat even when working hard.

An example of just additive genes is, for example, those in a hen that produces slightly longer flight feathers. The pigeon from this cross will be able to fly faster, but the musculature would not be able to cope with the extra workload put on 1t by the longer wing, so that the impact on performance would not be as dramatic as the first example.

There is a trend now to try to introduce a breeding program that creates the appearance of triple or multiple heterosis. With this system, fanciers blend three or more winning lines or families together. In the loft of Roy Evans, London, for example, Van der Weyer, Verheye and Janssen were intercrossed and blended together. This has resulted in the appearance of many fine racers from this loft including the famous Rob Roy, one of the best pigeons to ever fly out of London. If you can get three or more groups of genes from different sources working together in the offspring so that they produce different winning characteristics, then some spectacular birds can be produced.

So, how can you concentrate those winning genes of the parents? 'The answer is to inbreed. By inbreeding it is possible to produce almost identical copies of the champion parents. However, if it were that easy. why doesn't everyone do it? Well, unless you embark on an intensive breeding program it can take time and a lot of patience, but it can be done. The most famous example of such an inbreeding program was the Janssen brothers' pigeons. This particular strait was started by their father, and carried on by the sons with very few new introductions. It has been quoted in the early years of the brothers racing and breeding careers, the only introduction that was allowed to have any influence on the family was the pigeon called the "Half Fabry" this might explain why the Janssen family of pigeons, particularly in the early days. were so alike in form arid type. The Janssen family of pigeons took years to create. The breeding spanned at least two generations of owners.

So, how do you start your own breeding program and can you achieve a highly inbred colony of pigeons faster than the Janssen brothers? Well. first it's wise to stem with a true champion pigeon. One that has had a magnificent racing career. By that I mean a pigeon that has won consistently at both Federation and Combine level in races that contained large numbers of birds. It would be a waste of time to start with a pigeon that only won one race,

as this could have been a fluke. So. let's say your pigeon is a cock. Well, the first thing to do is to try to cross it with a winning hen. Ideally, it would be bested start with his sister or mother, but let's assume the worst. and he's all You've got. You will then have to cross him with any respectable hen. Now the offspring, called the Fl generation, will contain 50% of his genes. This is where the problem starts. You don't know if tire genes that are responsible for making him a champion, have been carried through to the offspring. They might have gone to his nest mates or been lost in unused sperm. To Increase the chances of breeding youngsters with the correct genes it will pay to breed several young birds from this cock. This can be more comfortably achieved if you use a "bull breeding" strategy. Using such a system you should be able to comfortably breed 16 young birds in one season and, perhaps, as many as 24.

If you then cross the champion cock with his daughters, the offspring, the resulting F2 generation, his grandchildren, will contain 75% of his genetic material. Now if you cross him with these grandchildren, the great grand children, the F3 generation will contain 87.5% of his original genes. You can see from this breeding strategy that already the amount of genetic material that originates from the champion cock is increasing. It is being concentrated in the offspring. So, how much inbreeding would you have to do to produce a pigeon almost identical to the parent cock? Well, the almost ideal amount of similarity to aim for would be if the children had 99.9% of their genetic material equal lathe original cock. The chart (top center) shows you that this would take ten generations of inbreeding to achieve this.

To increase the chances of tral ping those winning genes, it will pay to cross several of the hens back with the original cock. Each generation of new pigeons will have to be basket tested. Generation

FI	50
F2	75
F3	87.5
F4	93.75
F5	96.88
F6	98.44
F7	99.22
F8	99.61
F9	99.81
F10	99.90

Why, you might ask, is it necessary to get to 99.9% similarity to ensure that the offspring are as good as the original cock? Well, let's look at the human example. We humans have about 30,000 genes. These determine everything about **us, every** single physical characteristic that we have is determined by these genes. Any individual differs from another individual (except, of course, identical twins) by only 100 of these genes. That means that the things that make us uniquely different from each other, for example. Hair color, height, blood group, ate., is controlled by only 100 genes. That means that our differences are governed by only 0.3% of our genetic material. So, you see, if you have a champion pigeon you will need a highly inbred offspring with at least 99.9% similarity of genetic material, to make sure that they too can contain the combinations of winning genes that the original champion has.

To illustrate this further we can compare a chimpanzee with a human. Acllimpanaee has a 98°/o similarity of its genetic material with that of a human. Yet, if you put a chimpanzee together with a human and compare their differences you will see that the differences are enormous. These major differences are the result of only 2% difference in genetic material. The other 98% of the genetic material produces the tongs that we share with the chimpanzee - two legs, bones, teeth, hair, eyes, etc.

You can, therefore, see that a small difference in genetic material can have a profound influence on the pigeon's offspring. This explains why often pigeons don't reproduce their winning ways in their children, because that small percentage of generic material was not passed on. Remember, only 50% of the generic material passes from the cock to its offspring.

So, to reiterate, the only way to guarantee that the genetic material that creates a winning pigeon is carried to all the offspring is to have parents with identical or very near identical genetic makeup. This can be achieved in time by inbreeding. The closest pairing will be brother and sister, followed by father, daughter, mother son, then uncles to nieces, aunts to nephews. This will gradually lead to a loft of pigeons with identical pairs of genes. So that it does not matter if only half of the genes from the father and mother go to the youngster, because they will be the same genes.

There are two major problems with trying to embark on an inbreeding program. One is that you moat test all the young birds bred in each generation for those winning genes. You must basket test them. You need to make sure that they haven't lost the ability to home. They must have good resistance to disease, and they must contain the genes that made the parent cock a champion. You don't want to back cross with children that don't possess the individual genes or the gene patterns that made the original cock a champion.

The young bird's race record will give you a clue. The one problem with having to test the offspring is that you will probably only be able to breed one generation per year from the champion cock, especially if you use a "bull" or" stalliori' breeding system. But the young will have to be tested.

If you look at the inbreeding table you can see that it will therefore take you 10 years m product a pigeon almost equal to the original cock.

I think you can see why inbreeding is not a popular route to trying to breed a champion. However, one massive advantage is that once you have bred a few pigeons that share their genetic material to 99.9% comparability, you can cross these and guarantee that each youngster with be an unbeatable champion. To shortcut this whole procedure it will be speeded up considerably, if you start by crossing the original champion cock with his sisters.

Having said alt this, your task of inbreeding might not require this degree of inbreeding to produce winning pigeons like the original cock. It all depends how many genes contributed to his outstanding performance. With our example we have inbred a large number of characteristics, for example. color, shape, size, etc., but this may not be necessary. If it is a single gene that is responsible for the winning characteristic in the original pigeon, then reproducing it in the offspring would not be too difficult. Also, it would be easy to spot which pigeons have inherited it as they too will be winners. A high degree of inbreeding would not be necessary in this case and winning children might look and behave differently from the original cock, as much of their irrelevant genetic material will be different.

With a single gene or just a small cluster of winning genes it is also possible to outcross early. It is likely that his was the case with the early Soontjens pigeons. The early champions that originated from "a loft were the result of a cross from a cross from a cross. If, however, there is a large sequence, or pattern of genes needed to produce the winning attributes in a pigeon, and they are spread out over several chromosomes, the chances of getting them to fall in the same pattern, or even to be present in the young birds, will be less likely. In this case inbreeding will be needed to reorganize and concentrate those genes.

The other major problem with embarking on an inbreeding program is that if there are any detrimental genes these, too, can be concentrated in the youngsters. That is why the offspring have to be vigorously tested to identify the weaker genes that lead to poor health, poor homing ability and lack of athleticism.