S100: Science: a foundation course
S100/19: Natural selection

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Clip transcript: Artificial selection.

Michael Pentz:
Of course one can speed up a selection process by breeding as every rose grower or pig farmer knows, but whereas evolutional varieties in nature may be haphazard and slow, modern breeding techniques can make selection a surprisingly rapid process. Some time ago, in the studio, I interviewed a cat breeder who didn't work haphazardly at all. That was Dr Sidnie Manton. And I asked her first of all how she started her breeding programme.

Sidnie Manton:
Well it was started purposefully in 1947 but cats, Persian Cats, with the long hair and Siamese colour pattern had turned up accidentally in various parts of the world but the type was not very good as Persian standards go. There were many beginnings of colour points, either from black Persians or from blue Persians but let's take a black Persian there and cross it with a Siamese, and you notice the difference in the type; the long nose here, the short nose of the Persian, the wide top to the head of the Persian, the narrow top and the upright ears of the Siamese and so on. Well if you mate those two together you get a short haired cat with a plain colour but that cat is invisibly carrying the long hair and the Siamese colour pattern. Now if you mate those two such cats together carrying the two features that you see above, you get four different sorts of cats in the next generation. You get a Siamese like cat, you get a black short hair, you get a black long hair and you get a long haired cat with the Siamese colour pattern. Now one in sixteen cats from this mating will be like that in appearance. Some of these will be pure for black, some of them will be carrying the pattern. Some of these will be pure for black, others will carry the pattern and the same there. But the only cat in the whole lot, of one in sixteen of the offspring which carries the two recessive characters, the long hair and the Siamese colour pattern is this and it breeds true.

Michael Pentz:
So that's your true breed. That's in fact your target.

Sidnie Manton:
Yes.

Michael Pentz:
Now having got that far, what's the next move? Do you just breed out from this particular cat? Is that the best way to proceed or what did you do in fact?

Sidnie Manton:
Well we do two things, partly, mating that to that and proceeding by selection as was largely done in America too, but a much more profitable way is to pay great attention to the genetics of your animals and plan your breeding and back cross to Persians carrying this colour point pattern. And if you cross those two you will step up the Persian characteristics that you see up there and in about four, five, six, I suppose eight generations altogether, we have achieved cats which look like this, you see, very different from that. With the short nose, the wide head, approximating much more to the Persian ancestor up there.

Michael Pentz:
I see that Peggy Varley has got one of them right here which perhaps we could show it.

Sidnie Manton:
Well this is a primitive colour point. She's about fifteen. Much too dark in the body, a good top to her head, ears a bit too big, nose ever so much too long but she at least was a beginning. Now contrast that with a blue point, now, the last was a seal point this is a blue point and you get this grey colour to the ears with a blue dilution factor added and you see a much more Persian face. The fur will get much longer; this is an eight month old, purr purr. One of the reasons why we wanted to breed them was their delightful temperament.

Michael Pentz:
Well this one is purring like a bomb.

Sidnie Manton:
Well he's been one of the most successful of the British colour points. He's won a great deal on the show bench and in the winter he has an enormous frill round there. He's a very amiable boy and if he can persuade anybody to scratch his tum well that is just ideal.

Michael Pentz:
Having got, perfected rather, this basic colour point have you attempted to develop any new cats from there?

Sidnie Manton:
Yes we've attempted to get two new colour patterns. Now the original were seal points and blue points that I've just shown you. We then imported the brown gene from the short hairs from chocolate point Siamese and from Havana and we've got here a chocolate point colour point, not such good type as the older ones because the breeding of this has only gone on for about twelve years and that's as far as I've got. He looks much better in the winter when he's got a good frill but there he is, he's got very nice blue eyes. Now put the blue dilution factor into the genetics of the last one and you get the lilac point there with a lovely pale body colour which stays throughout life. If you don't have the Siamese colour pattern you have the self-lilac which is a new thing, and you have the self-chocolate too. So there were our four new kinds of cat and it's taken me about twelve years to make them and you see…

Michael Pentz:
I like the way you say make them Dr Manton, it seems there's a great deal of deliberation in what you do, not very much hit or miss…

Sidnie Manton:
No, no, we know just how to do it…

Michael Pentz:
There's evidently a bit of genetic engineering practically?

Sidnie Manton:
You're doing the two things. You're selecting and planning your genetics.

Michael Pentz:
And would you say that knowing as much as you do about genetics you can really take short cuts compared to the ordinary breeder who might be doing a bit of chopping?

Sidnie Manton:
Oh yes, oh yes, yes you can. Yes if you know what genetics is of course your, the chances of getting what you want may be pretty thin. I mean at one point getting the chocolates our chances were one in thirty two of getting what we wanted. And then it was whittled down to one in sixteen, one in eight, one in two but here you've got as good a colour point as we can get at the present day. These are in the older colours and you see that they are more Persian in type than the new colours I showed you just now.