

Title : Science course unit 19.
 (clock title- Natural selection)
 Contributors : M.J. Pentz
 S.M. Manton, F.R.S.
 M.E. Varley
 R.M. Holmes

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| Seq. | Time | Footage | Sequence List | Sound Cue |
|------|--------|---------|---|--|
| 1/ | 1'05" | | Pentz introduces Dr.S.M. Manton who will discuss her work in breeding cats. | how, in fact you started. |
| 2 | 2'13" | | Manton tells how she started <u>breeding cats</u> . Shots of long haired <u>Persian</u> and colour patterned <u>Siamese</u> cat. Manton tells how she cross bred these two and with what results. <u>Shot</u> of the cross breed. | Well, we started--- Manton, S.M. 636.8082 591.158 |
| | 3'16" | | Manton tells the result of breeding this new cross breed. Shots of the next generation of cats. 1 in 16 has the desired features - long hair and colour point. | 599.7442804158 |
| | 7'55" | | Shots of several types of cross bred cats in the studio. Manton explains how each type was arrived at and how she goes about planning new breeds. | natural selection, Dr. Holmes. |
| 3 | 9'40" | | Holmes takes up <u>natural selection</u> . He discusses the way in which a mutant gene can gain ascendancy over the original gene in a population of animals. A graph with a computer calculated curve shows the length of time this would take. | 595.7810415 595.7810457 595.781045222 |
| | 10'27" | | Dr. Varley with a moth trap. She dismantles it and explains how it works. | |
| | 11'07" | | Varley with two specimen of the peppered moth - one black and one pale. She explains that the only difference between the two is a mutant gene in the melanic (black) moth. | |
| | 11'59" | | Varley with a map of the U.K. showing the distribution pattern for the 2 varieties of peppered moth. The map shows that the melanic form predominates in industrial areas of the country while in the agricultural west, the pale form predominates. | |
| | 12'52" | | Varley explains how this pattern came about: She shows specimen of each type against light coloured bark of a tree and then dark, soot covered bark. The <u>adaptive advantage</u> for each type is clearly seen. | |

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PROGRAMME SEQUENCE LIST

Continuation

| Seq. | Time | Footage | Sequence List | Sound Cue |
|------|--------|---------|--|------------------------------|
| | 14'08" | | Film sequence of the Kettlewell experiment. Both varieties of moth fixed to a pale barked tree: Birds eat only the melanic variety which they can see. | |
| | 14'32" | | Both varieties fixed to a dark soot covered tree. This time the birds eat only the pale variety of the moth. | |
| | 16'02" | | Varley continues her explanation of the distribution of the peppered moth. Map of region from Liverpool to North Wales. The distribution of peppered moth is shown. Nowhere in there 100% of one or other variety. | 595.781041592 |
| 3 | 17'46" | | Holmes explains why the 100% figure for the mutation was not reached. A major factor in this is the migration factor. An adjustment for this is made and a new curve is plotted on the graph showing the extent of the melanic north over a period of years. This curve is much closer to reality. | 10% migration, nothing else. |
| 4 | 18'04" | | Credits. | |