

Title : Science course unit 19
(Clock and script title: Natural selection)

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R.M. Holmes

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1ST TX:

Seq.	Time	Footage	Sequence List	Sound Cue
	1'27"		M. Pentz discusses Darwin's ideas on <u>natural selection</u> as an introduction to the <u>unit</u> . As an example of the process of natural selection, he introduces, first, the peppered moth experiment. It is an example of natural selection which can actually be observed taking place.	575.0162 Darwin, Charles
	2'04"		R. Holmes explains how the relative usefulness of a gene to an animal determines the rate of the spread of that characteristic through the population.	
	3'05"		Holmes with a graph of a computer calculated curve which predicts the length of time required for a mutant gene of a given usefulness to replace the original gene (100%) in a population. The graph represents a prediction for the melanic mutation of the peppered moth.	Holmes, R.M. Varley, M.E. 595.781 595.7810415 595.7810457
	3'58"		M. Varley with moth trap. She explains how the trap works.	
	4'31"		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.	
	5'25"		Varley with a map of the U.K. which shows the distribution pattern of the two varieties of moth. The map shows that the melanic form predominates in industrial areas of the country, while in agricultural areas of the west, the pale form predominates.	
	6'16"		Varley explains how this pattern came about. As an aid she shows specimen of each type of moth against light coloured tree bark and then against dark, soot covered bark. The adaptive advantages of each type are clearly seen.	595.781045222

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PROGRAMME SEQUENCE LIST

Continuation

Seq.	Time	Footage	Sequence List	Sound Cue
1.	7'05"		Film sequence of the Kettlewell experiment:- Both varieties of moth are fixed to a pale barked tree. Birds eat only the melanic variety which they can see.	595.781041592
	7'30"		Both varieties fixed to a dark, soot covered tree. This time the birds eat only the pale variety of the moth.	
	8'58"		Varley continues her explanation of the distribution of the peppered moth. Map of the region from Liverpool to North Wales. The distribution of peppered moths is shown. Nowhere is there 100% of one or the other variety.	
	10'42"		Holmes explains why 100% for the melanic mutation was not reached. A major factor is moth migration. An adjustment for this factor results in a new curve showing the extent of melanic moth mutation in the population over a period of years. The curve is much nearer to reality.	
2.	13'18"		Varley takes up the importance of reproduction in natural selection. The importance for members of the same species to recognise one another in order to breed is stressed. Shot of fish tank containing fish of the <u>Anabantidae</u> family. Varley explains the mating process and the fish are seen to mate. Recognition is by sight.	597.58041823
	14'12"		Varley shows that the fish can also recognise one another by smell. The male begins to build a nest when he smells a female even though he cannot see her.	
	15'24"		Varley performs an experiment to determine if fish of different species can be induced to mate. Shots of fish of different species ignoring each other. The smell of a female of the other species however causes the male to build his nest. When the tank is deluged with chemical signals the fish will mate even if of different species.	

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PROGRAMME SEQUENCE LIST

Continuation

Seq.	Time	Footage	Sequence List	Sound Cue
2.	15'30"		Shots of the result - tiny hybrid fish looking little like either parent.	
	16'15"		Varley discusses the reason for breeding barriers between species.	struggle for existence
	16'45		Pentz introduces a sequence on artificial selection.	
3.	17'48"		S.M. Manton tells how she began breeding cats. Shots of a long haired Persian and a colour patterned Siamese cat. Manton tells how she cross bred these two and with what results. Shot of the resulting cross breed.	Manton, S.M. 536.8082 591.158 599.7442804158
3.	19'48"		Manton gives the results of breeding this new cross breed. Shots of the next generation. One in sixteen has the desired features - long hair and colour point.	
	22'58"		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.	Showed you now.
4.	24'10"		Pentz sums up the unit with a short discussion on natural selection.	So, in this programme Changes we want
5.	24'29"		Credits	