

## THE EFFECT OF ARTIFICIAL SELECTION ON BRISTLE NUMBER IN *DROSOPHILA AMPELOPHILA*.

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The following brief abstract gives a summary of the results obtained in an experiment designed to test the effect of artificial selection on bristle number in *Drosophila ampelophila*, and to find out in what way selection is active.

The normal number of bristles on the scutellum is four. In a mass culture which had been bred in the laboratory about three months, a female was found with one extra bristle, or five in all. This female was mated to a male from the same mass culture. Of the F offspring, two females had five bristles. These two females were mated to their normal brothers, and gave in F<sup>2</sup>, 935 normal flies, thirty-nine with five bristles, and four with six bristles. The flies with extra bristles were again mated and this method of selecting the high-grade parent has been continued throughout the experiment. The per cent of extra bristled flies and the mean bristle number have been gradually increased until in the last generations of selection no normal flies were found and the mean reached 9.089 in the twenty-eighth generation. From the twenty-eighth to the thirty-eighth generations, the mean remained practically the same. A back selection line started from the eleventh generation was without effect.

Selection then has produced decided results. The larger question is, how have the results been produced? Have they been produced by selecting somatic variations, by selecting the variations of the gene which stands for bristle number, or have they been produced by piling up or getting rid of modifying factors? The first possibility can be dismissed without much consideration, as any character which is inherited must be germinal. Of the other two possibilities, my evidence is in favor of the latter. It shows quite conclusively, I think, that there is a factor in the X-chromosome and also one in the third chromosome which modifies bristle number. There may be more than two such factors. One was no doubt present at the beginning of the experiment. The others probably occurred as mutations during the course of selection.

