

In a special chapter MORGAN treats of the ticked hair as a "unit-character" and he shows how this factor which produced this ticking is characterized by different authors on the subject.

M. develops the idea that it is "yellow" which must disappear, if an agouti animal is to become black, not a special "barring" factor. This is of course true in a certain way, a black mouse has no yellow pigment or hardly any. But when we are speaking about these genetic factors we do not identify them with the pigments they "produce", and this factor, which CASTLE calls the "barring" factor, is a well-known factor, studied in four or five animals, and which by no means in all circumstances makes the coat yellower.

I would draw attention to the fact that a chemical analysis of the hair of a coloured mouse can in no case be used as a criterium as to the correctness or otherwise of the genetic formula found to correspond to this colour, for the reason, already given, that these formulae do not tell anything about pigments, but simply about the genetic factors which cooperate to form, influence or modify these pigments. For example, we know that in a black mouse there must be first a factor which would, if present in a certain combination give yellow colour. Secondly another factor, which, when added to this combination would make the colour brown, and thirdly one which, when added to these two, would make the colour black.

It was, as I have already pointed out, a great mistake to call these factors "Yellow", "Brown", and "Black" respectively. But, as this has been done by several authors, the unavoidable outcome was, that people did not distinguish between these genetic factors and the three pigments, yellow, brown and black (I have formerly made this same mistake). If these genetic factors were, or stood for, the pigments, MORGAN would be right in saying that a black mouse, with the formula  $YBrBl$ , should have yellow, brown, and black pigments, and that, if any one of these pigments should be found missing, the genetic formula could not be correct.

As, however, these factors are in no way representative of the pigments, it may be well conceived that, under the influence of the second factor all the hitherto yellow pigment is transformed into brown, and under the influence of the third, all the brown into black pigment.

In the conclusion of his paper, MORGAN develops some ideas, which bring him to essentially the same views as to the mode of operation of the genetic factors as are held by BAUR and by myself<sup>1)</sup>, namely, that not every genetic factor stands for, and calls into being a definite "unit-character", but that each of these factors influences the development somewhat, and by modifying the course of this development causes the result to be something different from what it should have been without its cooperation, and that the genetic factors cooperate with non-genetic factors and can only act in special combinations of other genetic and non-genetic factors.

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**EAST, E. M.** and **HAYES, H. K.** Inheritance in maize. Connecticut agricultural experiment station bulletin N: 167 and Contribution from the

<sup>1)</sup> Autokatalytical substances the determinants for the inheritable characters. Roux' Serie Vorträge und Aufsätze. 1911.