acter and those *lacking* it grows progressively greater with each factor added.

The practical value of the principle may prove to be considerable as it serves to explain cases in which a character dominant in F_1 almost completely disappears in F_2, and in which an apparently non-mendelian result is obtained involving a reversal of dominance.

For supposing that a certain character, x, depended for its visible manifestation upon the simultaneous presence in the zygote of 20 factors which we may designate as A, B, C . . . T. Then if an animal possessing this character and the above mentioned factors is crossed with one from a race lacking all these factors, F_1 *would all be of the formula Aa Bb Cc . . . Tt. All would develop the character in question since all had a single representation of the twenty factors. If, however, these* F_1 *animals were bred inter se* F_2 *would give approximately only one animal in 314 which had the character in question.* If only a small number of F_2 were raised the character might well be thought lost and perhaps not truly inherited by F_1.

An entirely different result would, of course, be obtained if the factors in question needed to be present in *all* the gametes of the zygote in order for the character to be visibly manifested. In such a case as this none of F_1 would show the character, and its reappearance in F_2 would follow the ordinary rules of mendelian segregation and recombination.

This note is merely offered in the hope that it may be of use in the explanation, on a Mendelian basis, of certain results which might otherwise be offered as examples of non-mendelian inheritance.

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THE STRUCTURE OF THE COTTON FIBER

In any kind of cotton the typical fiber, that is the one in which all the essential parts may be determined, can be found in rare cases. For this reason the structure of an ideal fiber can be inferred only from a series of studies of fibers in successive stages of development.

By subjecting such fibers to certain chemical and bacteriological treatments and then studying them under the microscope, we found that the typical cotton fiber consists of the following parts:

1. The outer layer or the integument.
2. The outer cellulose layer.
3. The layer of secondary deposits.
4. The walls of the lumen.
5. The substance in the lumen.

1. *The outer layer or the integument* is the incrusting layer and forms the cementing material of the fiber. Its chemical structure is not an homologous one, but is a mixture of components, some soluble in alcohol, some in ether, and some in water. The components are cutinous, pectinous, gummy, fatty and other unidentified bodies.

2. The *outer cellulose layer* is in its structure a distinct spiral, consisting of a limited number of component fibers, perhaps of one or of two. The structure of this layer is determined under the microscope from a longitudinal section of the fiber after the latter has been subjected to a series of chemical and bacteriological treatments. Careful treatment of some of the fibers by cuprammonia will show under the microscope this spiral. There is some evidence to show that this spiral consists of impure cellulose.

3. The *layer of secondary deposits* seems to be made up of component fibers which in no case have shown a spiral structure. Unlike the fibers of the above described layer, these components are from about five to ten in number and run with some irregularities along the length of the fiber.

4. The structure of the layer forming the *walls of the lumen* is a spiral much the same as the outer spiral, but differs from it greatly in its chemical composition. This is determined from a microscopical study of the fiber while under a cuprammonia treatment.

5. *The substance in the lumen* is structureless and, as is proven by a microscopical test, is of a nitrogenous nature.

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