

science. In the meantime, it is necessarily considered that the clear-headed person who passed the examination for trainer's license can comprehend the Mendel's laws and the like in a short time, i.e. within ten minutes or so. If I am an owner, I will never make my horses under such a trainer as fails to make efforts of it.

3.2 Pedigree Theories Outside of Science (1)

Have you ever heard "X Factor"? It is an pedigree theory made up by Marianna Haun, an Australian pedigree researcher asserting that some particular X-chromosome has a close relationship with excellent athletic ability; however it is quite a hypothesis as detailed in the previous edition of this book, the key points of which are as follows:

- i) This theory completely ignores a scientific fact that one of X-chromosomes in the female cell is inactivated.
- ii) It further ignores a fact that a pair of X-chromosomes being alleles are mutually crossed, so that the consequent X-chromosomes after such crossing work as if they are the original alleles.

Regarding i)

The sex of animals, including the humans and horses, is determined by the sex chromosome, i.e. X-chromosome and Y-chromosome, and the male is XY, while the female is XX, as you know.

According to the current biology, while X-chromosome has a lot of genes useful and meaningful for handling the biological functions in the living body, Y-chromosome has only small amount of such genes other than the one determining the sex.

Consequently, in the number of the genes so useful and meaningful, there is much difference between the male and the female. To biologically adjust such difference, one piece of the X-chromosome pair in the female body is inactivated. It is called the "inactivation of X-chromosome," which is deemed one of the mechanism of offsetting genetic quantity and recently mentioned in the high school textbook; that is to say, it is the basics, actually.

In the theory "X Factor," the mare having the particular X-chromosome pair is called "double copy" with assertion that it has a close relationship to the excellent athletic ability; however, such way of thinking is too easy-going. If you understand the "inactivation of X-chromosome," you will never call such a mare "double copy" or use such silly words when discussing the importance of sex-linked inheritance with X-chromosome. If each piece of the X-chromosome pair is excellent, the foal receives the excellent one without any exception as a matter of course; that's about it.

Regarding ii)

This is fatal for this theory in light of biology. In the female cell, any given parts of both X-chromosomes in a pair are mutually crossed very often, so that the consequent X chromosomes after such crossing work as if they are the original ones. In spite of it, "X Factor" argues that some particular X chromosome inherited from generation to generation has scientific realities, absolutely ignoring the vital phenomenon of the "crossing of X chromosomes."

3.3 Pedigree Theories Outside of Science (2)

"Dosage, Pedigree and Performance" is a pedigree theory well known in the world's racing circles.