

with Polish fowls the tuft of feathers was probably at first small; by continued selection it became larger, and then rested on a fibrous mass; and finally, as it became still larger, the skull itself became more and more protuberant until it acquired its present extraordinary structure. Through correlation with the protuberance of the skull, the shape and even the relative connection of the premaxillary and nasal bones, the shape of the orifice of the nostrils, the breadth of the frontal bone, the shape of the post-lateral processes of the frontal and squamosal bones, and the direction of the bony cavity of the ear, have all been modified. The internal configuration of the skull and the whole shape of the brain have likewise been altered in a truly marvellous manner.

After this case of the Polish fowl it would be superfluous to do more than refer to the details previously given on the manner in which the changed form of the comb has affected the skull, in various breeds of the fowl, causing by correlation crests, protuberances, and depressions on its surface.

With our cattle and sheep the horns stand in close connection with the size of the skull, and with the shape of the frontal bones; thus Cline³⁵ found that the skull of a horned ram weighed five times as much as that of a hornless ram of the same age. When cattle become hornless, the frontal bones are "materially diminished in breadth towards the "poll;" and the cavities between the bony plates "are not so "deep, nor do they extend beyond the frontals."³⁶

It may be well here to pause and observe how the effects of correlated variability, of the increased use of parts, and of the accumulation of so-called spontaneous variations through natural selection, are in many cases inextricably commingled. We may borrow an illustration from Mr. Herbert Spencer, who remarks that, when the Irish elk acquired its gigantic horns, weighing above one hundred pounds, numerous co-ordinated changes of structure would have been indispensable,—namely, a thickened skull to carry the horns; strengthened cervical

³⁵ 'On the Breeding of Domestic Animals,' 1829, p. 6.

³⁶ Youatt on Cattle, 1834, p. 283.