

characters lying latent. The most obvious illustration is afforded by secondary sexual characters. In every female all the secondary male characters, and in every male all the secondary female characters, apparently exist in a latent state, ready to be evolved under certain conditions. It is well known that a large number of female birds, such as fowls, various pheasants, partridges, peahens, ducks, &c., when old or diseased, or when operated on, assume many or all of the secondary male characters of their species. In the case of the hen-pheasant this has been observed to occur far more frequently during certain years than during others.<sup>54</sup> A duck ten years old has been known to assume both the perfect winter and summer plumage of the drake.<sup>55</sup> Water-ton<sup>56</sup> gives a curious case of a hen which had ceased laying, and had assumed the plumage, voice, spurs, and warlike disposition of the cock; when opposed to an enemy she would erect her hackles and show fight. Thus every character, even to the instinct and manner of fighting, must have lain dormant in this hen as long as her ovaria continued to act. The females of two kinds of deer, when old, have been known to acquire horns; and, as Hunter has remarked, we see something of an analogous nature in the human species.

On the other hand, with male animals, it is notorious that the secondary sexual characters are more or less completely lost when they are subjected to castration. Thus, if the operation be performed on a young cock, he never, as Yarrell states, crows again; the comb, wattles, and spurs do not grow to their full size, and the hackles assume an intermediate appearance between true hackles and the feathers of the hen. Cases are recorded of confinement, which often affects the reproductive system, causing analogous results. But cha-

<sup>54</sup> Yarrell, 'Phil. Transact.,' 1827, p. 268; Dr. Hamilton, in 'Proc. Zoolog. Soc.,' 1862, p. 23.

<sup>55</sup> 'Archiv. Skand. Beiträge zur Naturgesch.' viii. s. 397-413.

<sup>56</sup> In his 'Essays on Nat. Hist.,' 1838, Mr. Hewitt gives analogous cases with hen-pheasants in 'Journal of Horticulture,' July 12, 1864, p. 37.

Isidore Geoffroy Saint-Hilaire, in his 'Essais de Zoolog. Gén.' ('suites à Buffon,' 1842, pp. 496-513), has collected such cases in ten different kinds of birds. It appears that Aristotle was well aware of the change in mental disposition in old hens. The case of the female deer acquiring horns is given at p. 513.