

amount of variation. The intercrossing of the several aboriginal wild stocks, and of the subsequently formed races, has probably increased the total number of breeds, and, as we shall presently see, has greatly modified some of them. But we cannot explain by crossing the origin of such extreme forms as thoroughbred greyhounds, bloodhounds, bulldogs, Blenheim spaniels, terriers, pugs, &c., unless we believe that forms equally or more strongly characterised in these different respects once existed in nature. But hardly any one has been bold enough to suppose that such unnatural forms ever did or could exist in a wild state. When compared with all known members of the family of Canidæ they betray a distinct and abnormal origin. No instance is on record of such dogs as bloodhounds, spaniels, true greyhounds having been kept by savages: they are the product of long-continued civilization.

The number of breeds and sub-breeds of the dog is great; Youatt for instance, describes twelve kinds of greyhounds. I will not attempt to enumerate or describe the varieties, for we cannot discriminate how much of their difference is due to variation, and how much to descent from different aboriginal stocks. But it may be worth while briefly to mention some points. Commencing with the skull, Cuvier has admitted<sup>54</sup> that in form the differences are "plus fortes que celles d'aucunes espèces sauvages d'un même genre naturel." The proportions of the different bones; the curvature of the lower jaw, the position of the condyles with respect to the plane of the teeth (on which F. Cuvier founded his classification), and in mastiffs the shape of its posterior branch; the shape of the zygomatic arch, and of the temporal fossæ; the position of the occiput—all vary considerably.<sup>55</sup> The difference in size between the brains of dogs belonging to large and small breeds "is something prodigious" "Some dogs' brains are high and rounded, while others are low, long, and narrow in front." In the latter, "the olfactory lobes are visible for about half their extent, when the brain is seen from above, but they are wholly concealed by the hemispheres in other breeds."<sup>56</sup> The dog has properly six pairs of molar teeth in the upper jaw, and seven in the lower; but several

<sup>54</sup> Quoted by I. Geoffroy, 'Hist. Nat. Gén.,' tom. iii. p. 453.

<sup>55</sup> F. Cuvier, in 'Annales du Muséum,' tom. xviii. p. 337: Godron, 'De l'Espèce,' tom. i. p. 342; and Col. H. Smith, in 'Nat. Library,' vol. ix. p. 101. See also some

observations on the degeneracy of the skull in certain breeds, by Prof. Bianconi, 'La Théorie Darwinienne,' 1874, p. 279.

<sup>56</sup> Dr. Burt Wilder, 'American Assoc. Advancement of Science,' 1873, pp. 236, 239.