

to be produced by the frequent intermixture of two well-known species of *Centaurea*, grows wild upon a hill near Turin. *Ranunculus lacerus*, also sterile, has been produced accidentally at Grenoble, and near Paris, by the union of two *Ranunculi*; but this occurred in gardens.*

Mr. Herbert's experiments.—Mr. Herbert, in one of his ingenious papers on mule plants, endeavours to account for their non-occurrence in a state of nature, from the circumstance that all the combinations that were likely to occur have already been made many centuries ago, and have formed the various species of botanists; but in our gardens, he says, whenever species, having a certain degree of affinity to each other, are transported from different countries, and brought for the first time into contact, they give rise to hybrid species.† But we have no data, as yet, to warrant the conclusion, that a single permanent hybrid race has ever been formed, even in gardens, by the intermarriage of two allied species brought from distant habitations. Until some fact of this kind is fairly established, and a new species, capable of perpetuating itself in a state of perfect independence of man, can be pointed out, it seems reasonable to call in question entirely this hypothetical source of new species. That varieties do sometimes spring up from cross-breeds, in a natural way, can hardly be doubted; but they probably die out even more rapidly than races propagated by grafts or layers.

Opinion of De Candolle.—De Candolle, whose opinion on a philosophical question of this kind deserves the greatest attention, has observed, in his *Essay on Botanical Geography*, that the *varieties* of plants range themselves under two general heads: those produced by external circumstances, and those formed by hybridity. After adducing various arguments to show that neither of these causes can explain the permanent diversity of plants indigenous in different regions, he says, in regard to the crossing of races, "I can perfectly comprehend without altogether sharing the opinion, that, where many species of the same genera occur near together, hybrid species may be formed, and I am aware that the great number of species of certain genera which are found in particular regions may be explained in this manner; but I am unable to conceive how any one can regard the same explanation as applicable to species which live naturally at great distances. If the three larches, for example, now known in the world, lived in the same localities, I might then believe that one of them was the produce of the crossing of the two others; but I never could admit that the Siberian species has been produced by the crossing of those of Europe and America. I see, then, that there exist, in organized beings, permanent differences which cannot be referred to any one of the actual causes of variation, and these differences are what constitute *species*."‡

Reality of species confirmed by the phenomena of hybrids.—The most decisive arguments, perhaps, amongst many others, against the probability of the derivation of permanent species from cross-breeds,

* Hon. and Rev. W. Herbert, Hort. Trans., vol. iv. p. 41.

† Ibid.

‡ *Essai Élémentaire*, &c., 3me partie.