

it is highly remarkable, and is established on excellent evidence. Kölreuter minutely describes five varieties of the common tobacco,²⁵ which were reciprocally crossed, and the offspring were intermediate in character and as fertile as their parents: from this fact Kölreuter inferred that they are really varieties; and no one, as far as I can discover, seems to have doubted that such is the case. He also crossed reciprocally these five varieties with *N. glutinosa*, and they yielded very sterile hybrids; but those raised from the *var. perennis*, whether used as the father or mother plant, were not so sterile as the hybrids from the four other varieties.²⁶ So that the sexual capacity of this one variety has certainly been in some degree modified, so as to approach in nature that of *N. glutinosa*.²⁷

These facts with respect to plants show that in some few cases certain varieties have had their sexual powers so far modified, that they cross together less readily and yield less seed than other varieties of the same species. We shall presently see that the sexual functions of most animals and plants are eminently liable to be affected by the conditions of life to which they are exposed; and hereafter we shall

²⁵ 'Zweite Forts.,' s. 53, namely, *Nicotiana major vulgaris*; (2) *perennis*; (3) *transylvanica*; (4) a subvar. of the last; (5) *major latifol. fl. alb.*

²⁶ Kölreuter was so much struck with this fact that he suspected that a little pollen of *N. glutinosa* in one of his experiments might have accidentally got mingled with that of *var. perennis*, and thus aided its fertilising power. But we now know conclusively from Gärtner ('Bastarderz.,' s. 34, 43) that the pollen of two species never acts *conjointly* on a third species; still less will the pollen of a distinct species, mingled with a plant's own pollen, if the latter be present in sufficient quantity, have any effect. The sole effect of mingling two kinds of pollen is to produce in the same capsule seeds which yield plants, some taking after the one and some after the other parent.

²⁷ Mr. Scott has made some observations on the absolute sterility of a purple and white primrose (*Primula vulgaris*) when fertilised by pollen from the common primrose ('Journal

of Proc. of Linn. Soc.,' vol. viii., 1864, p. 98); but these observations require confirmation. I raised a number of purple-flowered long-styled seedlings from seed kindly sent me by Mr. Scott, and, though they were all in some degree sterile, they were much more fertile with pollen taken from the common primrose than with their own pollen. Mr. Scott has likewise described a red equal-styled cowslip (*P. veris*, *ibid.* p. 106), which was found by him to be highly sterile when crossed with the common cowslip; but this was not the case with several equal-styled red seedlings raised by me from his plant. This variety of the cowslip presents the remarkable peculiarity of combining male organs in every respect like those of the short-styled form, with female organs resembling in function and partly in structure those of the long-styled form; so that we have the singular anomaly of the two forms combined in the same flower. Hence it is not surprising that these flowers should be spontaneously self-fertile in a high degree.