

pollen of *V. thapsus*; but the flowers could not be fertilised by their own pollen. Kölreuter, also,<sup>74</sup> gives the case of three garden plants of *Verbascum phæniceum*, which bore during two years many flowers; these he fertilised successfully with the pollen of no less than four distinct species, but they produced not a seed with their own apparently good pollen; subsequently these same plants, and others raised from seed, assumed a strangely fluctuating condition, being temporarily sterile on the male or female side, or on both sides, and sometimes fertile on both sides; but two of the plants were perfectly fertile throughout the summer.

With *Reseda odorata* I have found certain individuals quite sterile with their own pollen, and so it is with the indigenous *Reseda lutea*. The self-sterile plants of both species were perfectly fertile when crossed with pollen from any other individual of the same species. These observations will hereafter be published in another work, in which I shall also show that seeds sent to me by Fritz Müller produced by plants of *Eschscholtzia californica* which were quite self-sterile in Brazil, yielded in this country plants which were only slightly self-sterile.

It appears<sup>75</sup> that certain flowers on certain plants of *Lilium candidum* can be fertilised more freely by pollen from a distinct individual than by their own. So, again, with the varieties of the potato. Tinzmann,<sup>76</sup> who made many trials with this plant, says that pollen from another variety sometimes "exerts a powerful influence, and I have found sorts of potatoes which would not bear seed from impregnation with the pollen of their own flowers would bear it when impregnated with other pollen." It does not, however, appear to have been proved that the pollen which failed to act on the flower's own stigma was in itself good.

In the genus *Passiflora* it has long been known that several species do not produce fruit, unless fertilised by pollen taken from distinct species: thus, Mr. Mowbray<sup>77</sup> found that he could not get fruit from *P. alata* and *racemosa* except by reciprocally fertilising them with each other's pollen; and similar facts have been observed in Germany and France.<sup>78</sup> I have received two accounts of *P. quadrangularis* never producing fruit from its own pollen, but doing so freely when fertilised in one case with the pollen of *P. cœrulea*, and in another case with that of *P. edulis*. But in three

<sup>74</sup> 'Zweite Fortsetzung,' s. 10; 'Dritte Forts.,' s. 40. Mr. Scott likewise fertilised fifty-four flowers of *Verbascum phæniceum*, including two varieties, with their own pollen, and not a single capsule was produced. Many of the pollen-grains emitted their tubes, but only a few of them penetrated the stigmas; some slight effect however was produced, as many of the ovaries became somewhat

developed: 'Journal Asiatic Soc. Bengal,' 1867, p. 150.

<sup>75</sup> Duvernoy, quoted by Gärtner, 'Bastarderzeugung,' s. 334.

<sup>76</sup> 'Gardener's Chronicle,' 1846, p. 183.

<sup>77</sup> 'Transact. Hort. Soc.,' vol. vii., 1830, p. 95.

<sup>78</sup> Prof. Lecoq, 'De la Fécondation,' 1845, p. 70; Gärtner, 'Bastarderzeugung,' s. 64.