

flowers and ripen their seed within shorter and shorter periods. So that the tall, slowly maturing southern varieties do not succeed in New England, and the New English varieties do not succeed in Canada. I have not met with any statement that the southern varieties are actually injured or killed by a degree of cold which the northern varieties can withstand with impunity, though this is probable; but the production of early flowering and early seeding varieties deserves to be considered as one form of acclimatisation. Hence it has been found possible, according to Kalm, to cultivate maize further and further northwards in America. In Europe, also, as we learn from the evidence given by Alph. de Candolle, the culture of maize has extended since the end of the last century thirty leagues north of its former boundary.⁵⁸ On the authority of Linnæus,⁵⁹ I may quote an analogous case, namely, that in Sweden tobacco raised from home-grown seed ripens its seed a month sooner and is less liable to miscarry than plants raised from foreign seed.

With the Vine, differently from the maize, the line of practical culture has retreated a little southward since the middle ages;⁶⁰ but this seems due to commerce being now easier, so that it is better to import wine from the south than to make it in northern districts. Nevertheless the fact of the vine not having spread northward shows that acclimatisation has made no progress during several centuries. There is, however, a marked difference in the constitution of the several varieties,—some being hardy, whilst others, like the muscat of Alexandria, require a very high temperature to come to perfection. According to Labat,⁶¹ vines taken from France to the West Indies succeed with extreme difficulty, whilst those imported from Madeira or the Canary Islands thrive admirably.

Gallesio gives a curious account of the naturalisation of the Orange in Italy. During many centuries the sweet orange was propagated exclusively by grafts, and so often suffered from frosts, that it required protection. After the severe frost of 1709, and more especially after that of 1763, so many trees were destroyed, that seedlings from the sweet orange were raised, and, to the surprise of the inhabitants, their fruit was found to be sweet. The trees thus raised were larger, more productive, and hardier than the old kinds; and seedlings are now continually raised. Hence Gallesio concludes that much more was effected for the naturalisation of the orange in Italy by the accidental production of new kinds during a period of about sixty years, than had been effected by grafting old varieties during many ages.⁶² I may add that Risso⁶³ describes some Portuguese varieties

⁵⁸ 'Géograph. Bot.,' p. 337.

⁵⁹ 'Swedish Acts,' Eng. transl., 1739-40, vol. i. Kalm, in his 'Travels,' vol. ii. p. 166, gives an analogous case with cotton-plants raised in New Jersey from Carolina seed.

⁶⁰ De Candolle, 'Géograph. Bot.,'

p. 339.

⁶¹ 'Gard. Chronicle,' 1862, p. 235.

⁶² Gallesio, 'Teoria della Riproduzione Veg.,' 1816, p. 125; and 'Traité du Citrus,' 1811, p. 359.

⁶³ 'Essai sur l'Hist. des Orangers,' 1813, p. 20, &c.