

its native woods, the flowers change colour, even during the first year.<sup>87</sup> It is notorious that the improved varieties of the Hearts-ease (*Viola tricolor*), when transplanted, often produce flowers widely different in size, form, and colour: for instance, I transplanted a large uniformly-coloured dark purple variety, whilst in full flower, and it then produced much smaller, more elongated flowers, with the lower petals yellow; these were succeeded by flowers marked with large purple spots, and ultimately, towards the end of the same summer, by the original large dark purple flowers. The slight changes which some fruit-trees undergo from being grafted and regrafted on various stocks,<sup>88</sup> were considered by Andrew Knight<sup>89</sup> as closely allied to "sporting branches," or bud-variations. Again, we have the case of young fruit-trees changing their character as they grow old; seedling pears, for instance, lose with age their spines and improve in the flavour of their fruit. Weeping birch-trees, when grafted on the common variety, do not acquire a perfect pendulous habit until they grow old: on the other hand, I shall hereafter give the case of some weeping ashes which slowly and gradually assumed an upright habit of growth. All such changes, dependent on age, may be compared with the changes, alluded to in the last chapter, which many trees naturally undergo; as in the case of the Deodar and Cedar of Lebanon, which are unlike in youth, whilst they closely resemble each other in old age; and as with certain oaks, and with some varieties of the lime and hawthorn.<sup>90</sup>

*Graft-hybrids.*—Before giving a summary on Bud-variation I will discuss some singular and anomalous cases, which are more or less closely related to this same subject. I will begin with the famous case of Adam's laburnum or *Cytisus adami*, a form or hybrid intermediate between two very distinct species, namely, *C. laburnum* and *purpureus*, the common and purple laburnum; but as this tree has often been described, I will be as brief as I can.

Throughout Europe, in different soils and under different climates,

<sup>87</sup> Godron, 'De l'Espèce,' tom. ii. p. 84.

<sup>88</sup> M. Carrière has lately described, in the 'Revue Horticole,' (Dec. 1, 1866, p. 457,) an extraordinary case. He twice inserted grafts of the *Aria vestita* on thorn-trees (*épinés*) growing in pots; and the grafts, as they grew, produced shoots with bark, buds, leaves, petioles, petals, and flower-stalks, all widely different from those

of the *Aria*. The grafted shoots were also much hardier, and flowered earlier, than those on the ungrafted *Aria*.

<sup>89</sup> 'Transact. Hort. Soc.,' vol. ii. p. 160.

<sup>90</sup> For the cases of oaks, see Alph. De Candolle in 'Bibl. Univers.,' Geneva, Nov. 1862; for limes, &c., Loudon's 'Gard Mag.,' vol. xi., 1835, p. 503.