

in a lesser degree in the foliage of the Pelargonium and Chrysanthemum, have been noticed. I will now add a few more cases of variation in leaf-buds. Verlot⁶⁰ states that on *Aralia trifoliata*, which properly has leaves with three leaflets, branches frequently appear bearing simple leaves of various forms; these can be propagated by buds or by grafting, and have given rise, as he states, to several nominal species.

With respect to trees, the history of but few of the many varieties with curious or ornamental foliage is known; but several probably have originated by bud-variation. Here is one case:—An old ash-tree (*Fraxinus excelsior*) in the grounds of Necton, as Mr. Mason states, “for many years has had one bough of a totally different character to the rest of the tree, or of any other ash-tree which I have seen; being short-jointed and densely covered with foliage.” It was ascertained that this variety could be propagated by grafts.⁶¹ The varieties of some trees with cut leaves, as the oak-leaved laburnum, the parsley-leaved vine, and especially the fern-leaved beech, are apt to revert by buds to the common forms.⁶² The fern-like leaves of the beech sometimes revert only partially, and the branches display here and there sprouts bearing common leaves, fern-like, and variously shaped leaves. Such cases differ but little from the so-called heterophyllus varieties, in which the tree habitually bears leaves of various forms; but it is probable that most heterophyllous trees have originated as seedlings. There is a sub-variety of the weeping willow with leaves rolled up into a spiral coil; and Mr. Masters states that a tree of this kind kept true in his garden for twenty-five years, and then threw out a single upright shoot bearing flat leaves.⁶³

I have often noticed single twigs and branches on beech and other trees with their leaves fully expanded before those on the other branches had opened; and as there was nothing in their exposure or character to account for this difference, I presume that they had appeared as bud-variations, like the early and late fruit-maturing varieties of the peach and nectarine.

Cryptogamic plants are liable to bud-variation, for fronds on the same fern often display remarkable deviations of structure. Spores, which are of the nature of buds, taken from such abnormal fronds, reproduce, with remarkable fidelity, the same variety, after passing through the sexual stage.⁶⁴

With respect to colour, leaves often become by bud-variation zoned, blotched, or spotted with white, yellow, and red; and this

⁶⁰ ‘Des Variétés,’ 1865, p. 5.

⁶¹ W. Mason, in ‘Gard. Chron.,’ 1843, p. 878.

⁶² Alex. Braun, ‘Ray Soc. Bot. Mem,’ 1853, p. 315; ‘Gard. Chron,’ 1841, p. 329.

⁶³ Dr. M. T. Masters, ‘Royal Insti-

tution Lecture,’ March 16, 1860.

⁶⁴ See Mr. W. K. Bridgman’s curious paper in ‘Annals and Mag. of Nat. Hist.,’ December, 1861; also Mr. J. Scott, ‘Bot. Soc. Edinburgh,’ June 12, 1862.