

certain number of the seeds, as in the case of the pea, or only a part of the ovarium, as with the striped orange, mottled grapes, and maize, is thus affected. It must not be supposed that any direct or immediate effect invariably follows the use of foreign pollen: this is far from being the case; nor is it known on what conditions the result depends. Mr. Knight<sup>148</sup> expressly states that he has never seen the fruit thus affected, though he crossed thousands of apple and other fruit-trees.

There is not the least reason to believe that a branch which has borne seed or fruit directly modified by foreign pollen is itself affected, so as afterwards to produce modified buds; such an occurrence, from the temporary connection of the flower with the stem, would be hardly possible. Hence, but very few, if any, of the cases of bud-variation in the fruit of trees, given in the early part of this chapter can be accounted for by the action of foreign pollen; for such fruits have commonly been propagated by budding or grafting. It is also obvious that changes of colour in flowers, which necessarily supervene long before they are ready for fertilisation, and changes in the shape or colour of leaves, when due to the appearance of modified buds, can have no relation to the action of foreign pollen.

The proofs of the action of foreign pollen on the mother-plant have been given in considerable detail, because this action, as we shall see in a future chapter, is of the highest theoretical importance, and because it is in itself a remarkable and apparently anomalous circumstance. That it is remarkable under a physiological point of view is clear, for the male element not only affects, in accordance with its proper function, the germ, but at the same time various parts of the mother-plant, in the same manner, as it affects the same part in the seminal offspring from the same two parents. We thus learn that an ovule is not indispensable for the reception of the influence of the male element. But this direct action of the male element is not so anomalous as it at first appears, for it comes into play in the ordinary fertilisation of many

<sup>148</sup> 'Transact. of Hort. Soc.,' vol. v. p. 68.