action of the male element, not in the ordinary way on the ovules, but on certain parts of the female plant, or in case of animals on the subsequent progeny of the female by a second male. I may premise that with plants the ovarium and the coats of the ovules are obviously parts of the female, and it could not have been anticipated that they would have been affected by the pollen of a foreign variety or species, although the development of the embryo, inside the embryonic sack, inside the ovule and ovarium, of course, depends on the male element.

Even as long ago as 1729 it was observed [127] that white and blue varieties of the Pea, when planted near each other, mutually crossed, no doubt through the agency of bees, and in the autumn blue and white peas were found within the same pods. Wiegmann made an exactly similar observation in the present century. The same result has followed several times when a variety with peas of one colour has been artificially crossed by a differently-coloured variety.[128] These statements led Gärtner, who was highly sceptical on the subject, carefully to try a long series of experiments: he selected the most constant varieties, and the result conclusively showed that the colour of the skin of the pea is modified when pollen of a differently coloured variety is used. This conclusion has since been confirmed by experiments made by the Rev. J. M. Berkeley.[129]

Mr. Laxton of Stamford, whilst making experiments on peas for the express purpose of ascertaining the influence of foreign pollen on the mother-plant, has recently [130] observed an important additional fact. He fertilised the Tall Sugar-pea, which bears very thin green pods, becoming brownish-white when dry, with pollen of the Purple-podded pea, which, as its name expresses, has dark-purple pods with very thick skin, becoming pale reddish purple when dry. Mr. Laxton has cultivated the tall sugar-pea during twenty years, and has never seen or heard of it producing a purple pod: nevertheless, a flower fertilised by pollen from the purple-pod yielded a pod clouded with purplish-red which Mr. Laxton kindly gave to me. A space of about two inches in length towards the extremity of the pod, and a smaller space near the stalk, were thus coloured. On comparing the colour with that of the purple pod, both pods having been first dried and then soaked in water, it was found to be identically the same; and in both the colour was confined to the cells lying immediately beneath the outer skin of the pod. The valves of the

[127] 'Philosophical Transact.,' vol. xliii., 1744–45, p. 525.

[128] Mr. Goss, in 'Transact. Hort. Soc.,' vol. v. p. 234: and Gärtner, 'Bastarderzeugung,' 1849, ss. 81 and 499.

[129] 'Gard. Chron.,' 1854, p. 404.

[130] Ibid., 1866, p. 900.