

retain less of the peculiar characters of the individual from which they spring, than those of the latter. This is remarkably exemplified in the case of orchard trees, such as apples and pears; for all the trees which derive their origin from shoots, or grafts from the same individual, partake of the same properties, and produce a fruit of nearly the same flavour and qualities; whereas, trees of the same species, which grow from seed, have the characters of distinct individuals, and losing all the peculiarities that may have distinguished the parent, revert to the original type of the species to which they belong. Thus, from the seeds of the golden pippin, or nonpareil, arise trees bearing the common crab apple, which is the natural fruit of the species. By continued graftings, after a long period, the vitality of the particular variety is gradually exhausted, and the grafts no longer bear the same fruit. This has already happened with regard to the two varieties of apples just mentioned. For these curious facts, and the theory which explains them, we are indebted to the observation and sagacity of Mr. Andrew Knight.*

The plans hitherto noticed are suited only to the simplest of vegetable or animal beings; but for the continuance of the higher races in both kingdoms of nature there is required a more complex procedure. The latent germ, contained in the seed or ovum, is never developed beyond a certain point, unless it be vivified by the action of a peculiar fluid, which is the product of other organs. Thus, there are established two distinct classes of structures; the office of the one being the formation of the seed or ovum, and that of the other the production of the vivifying fluid. The effect of this vivifying fluid upon the dormant germ is termed *Fecundation*; and the germ, when fecundated, receives the name of *Embryo*.

The modes in which the fecundation of the germ is accomplished are exceedingly various in different classes of organized beings. In all *Phanerogamous plants*, (so named

* See his various papers in the Philosophical Transactions.