

HERMAPHRODITE FLOWERS.

Mr Darwin's last contribution to natural science comes to us in a volume entitled, "Different Forms of Flowers on Plants of the Same Species." A broad scope of study, coupled with a persistent labour, and the choicest scrutiny of all effect, and the reason thereof, has placed Darwin, by the consent of the learned world at least, at the very head of the modern school, which has adopted the verity of primordial law. Our author, with that modesty which often permeates genius, says, in his introduction, that the subject "ought to have been treated by a professional botanist, to which distinction" he "can lay no claim." If the work before us is an illustration of the distinction between the treatment of such a subject by a non-professional and a professional botanist, then we say the reading world is fortunate in the possession of a work on this subject by a non-professional, for the reason that, by a careful perusal of it, anyone may learn more of the nature, habits, and characteristics of plant life than by the study of the technical tomes of professional botanists for months, if not for years. Up to the year 1862, when Darwin called attention, in his work on the fertilisation of Orchids, to the "wonderfully complex and perfect adaptations" provided by nature for the fertilisation of plants, the world was entirely ignorant of the part which insects took in assisting in the reproduction of plant life. And more especially was this the case in relation to those flowers which were hermaphrodite, that is, having both stamen and pistil on the same stem, and which, therefore, were supposed to be exclusively adapted for self-fertilisation. Since the study of the subject by Darwin, the attention of

botanists was attracted to this long-neglected subject, and numerous and able workers in the field have since appeared, confirming and finally establishing the truth of his then declared conclusions. We have room to give only a single illustration of the experiments, of which this book gives us the results. He collected some hundreds of each of the common cowslip, primrose, oxlip, loosestrife, and upwards of forty other species. Of one of these he made 223 unions, fertilising over a dozen flowers of each in the necessary eighteen different methods, having eliminated the reproductive organs of each flower, and marked and numbered each, thereby preserving a perfect record. He propagated plants from the seeds of different unions of the same species in all different ways, as a test, during a period of from 12 to 14 years, observing carefully the results of the different union in all their varied phases, whether of vigour or

growth, or prolificacy in the number, weight or size of seed, comparing the offspring, in this manner, of legitimate and illegitimate unions. He continued these observations from parent to offspring in direct and collateral lines down through six generations, weighing, measuring, and counting the seed of each successive crop (counting in one instance over 20,000 seed of *Lythrum Salicaria* under the microscope). He covered some plants with nets, leaving like kinds exposed to the visits of insects, noted the effect in each case. All this shows the wonderful patience and perseverence of the true scientist. One of the most fascinating of the many subjects of which our author treats, is the adaptation of plants to their surroundings, in order to secure proper fertilisation by foreign agency. The structure of the plant is "manifestly adapted" to the action of the winds, or again to that of visiting insects and to self-fertilisation. Thus, where insects are admitted, the flower is so modified that the organs, in the course of generations, become adapted to the order of things.