

NEW PUBLICATIONS.

THE MOVEMENTS AND HABITS OF CLIMBING PLANTS. By CHARLES DARWIN, M. A., F. R. S., &c. With Illustrations. New-York: D. APPLETON & Co.

The ground-work of this interesting book was a paper read several years ago by the author before the Linnæan Society of London. The subject had received some attention long before that, but Mr. Darwin tells us that it was a brief note by Prof. Asa Gray which first led him to investigate it. He entered upon the inquiry with all the power of close observation, impartiality, patience, and fertility of resource which have characterized him in all his researches; and as might be supposed from the manner which he selected to make his labors known, the details of many of his experiments are amply recorded.

But the original paper has undergone a process of correction, and some additions have been made to it, by which it must be regarded as fairly representing the author's mind upon the subject at the present time. We shall not attempt to detail the various observations that are given, but some of the conclusions deduced from them are worthy of outline, especially as Mr. Darwin regards many cases mentioned in the body of the work as illustrating "in a striking manner the principle of the gradual evolution of species."

Taking the four subdivisions into which climbing plants have been arranged, two are of secondary importance in the consideration. The other two, namely, those which twine spirally round a support and those provided with irritable organs, have however rewarded the observer in a very remarkable manner. It is from want of space to do them justice, and not from any lacking of interest in the details of the observations, that we pass them by in this place. But we must not do so without commending them to the careful attention of the reader, who will find a rich source of information and much entertainment in the particulars of some curious vegetable phenomena. They should, however, be read in their entirety.

Climbing plants are very numerous in the vegetable kingdom, and are to be found in a great number of different orders. The purpose of their peculiar organization is to enable them to reach the light, and to expose a large surface of their leaves to the action of light and air, an object which is attained with very little expenditure of organized matter. The divisions which comprise twining plants, leaf-climbers, and tendril-bearers graduate to a certain extent into one another, and in some species, as the *Corydalis claviculata*, and the common vine, intermediate states between organs fitted for widely different purposes are observed. These facts lead Mr. Darwin to the inquiry whether during a lapse of ages plants belonging to one subdivision may not have passed from one state to the other. "Has, for instance, any tendril-bearing plant assumed its present structure without having previously existed as a leaf climber or a twiner?" He replies to these questions with a very specious argument, based entirely on the results of observation, and he asserts at least the probability that all leaf-climbers were originally twiners, and tendril-bearers (when formed of modified leaves) were originally leaf-climbers. On this theory the latter should be intermediate between twiners and tendril-bearers, and ought to be related to both, a condition which, he undertakes to prove, actually does exist. Nor does he forget that cavaliers in questions of this kind, unable to resist the facts, and fully as incompetent to argue against the inferences drawn from them, may suggest that some reason should be alleged why in the operations of nature a plant which has been originally a twiner should evolve into a leaf climber or tendril-bearer, and in so doing obtain a better position in the vegetable world. He answers this by adducing a number of reasons: "It might be an advantage to a plant to acquire a thicker stem, with short internodes bearing many or large leaves, and such stems are ill fitted for twining." Plants with tendrils secure a much stronger support than mere twiners. They do so at little cost of organized matter. They can ascend outside of a tree or shrub, and so gain the best advantages of light and air, while twiners are most at home around a bare stem, up which they start most readily from the shady side. One paragraph in the final chapter of this book is so suggestive that we quote it entire:

"It has often been vaguely asserted that plants are distinguished from animals by not having the power of movement. It should rather be said that plants acquire and display this power only when it is of some advantage to them, this being of comparatively rare occurrence, as they are affixed to the ground, and food is brought to them by the air and rain. We see how high in the scale of organization a plant may rise when we look at one of the more perfect tendril-bearers. It first places its tendrils ready for action, as the polypus places its tentacula. If the tendril be displaced, it is acted on by the force of gravity and rights itself. It is acted on by the light, and bends toward or from it or disregards it, whichever may be most advantageous. During several days the tendrils or internodes, or both, spontaneously revolve with a steady motion. The tendril strikes some object and quickly curls round and firmly grasps it. In the course of some hours it contracts into a spire, dragging up the stem and forming an excellent spring. All movements now cease. By growth the tissues soon become wonderfully strong and durable. The tendril has done its work, and has done it in an admirable manner."

We may remark that the investigation which Mr. Darwin has described in this volume is capable of being very widely extended; that, too, by any ordinary, but careful, observer. The material exists in abundance among a large number of plants, of which some at least, but often many, are to be found in our gardens. Several instances came under our notice last Summer of some of the movements of these plants, as well as of the gradations alluded to by Mr. Darwin as observable in individual examples between the twining plants and tendril-bearers, and we cannot doubt but that a little careful attention during the ensuing season by those who really love flowers would lead to the accumulation of a number of facts which would be of value in the further elucidation of a very interesting subject. Mr. Darwin's inquiries have taken a wide range, but if other observers would restrict their inquiries within the limits of any given natural order, and so classify their investigations, it is likely that yet more important data would be obtained. For those who are not already familiar with the subject there can be no better guide than a perusal of this volume would supply.