NEW BOOK.

Insectivorous Plants. *By* CHARLES DARWIN, M.A., F.R.S., &c. *With illustrations.* London: J. Murray.

THIS, like all the writings of Mr. Darwin, is very interesting and exhaustive. All who are conversant with plants know that the leaves of the Venus's Fly-trap, Dionæa muscipula, and of the Sundew, Drosera rotundifolia, have the power to close over any insect that alights upon their upper surface; but no one has examined the phenomena so accurately as Mr. Darwin. We will combine several extracts from his pages relative to the Sundew:—

"If a small organic or inorganic object be placed on the

glands in the centre of a leaf, these transmit a motor impulse to the marginal tentacles. The nearer ones are first affected, and slowly bend towards the centre, and then those farther off, until at last all become closely inflected over the object. This takes place in from one hour to four or five or more hours. The difference in the time required depends on many circumstances —namely, on the size of the object and on its nature—that is, whether it contains soluble matter of the proper kind; on the vigour and age of the leaf; whether it has lately been in action, and, according to Nitschke,* on the temperature of the day; as likewise seemed to me to be the case. A living insect is a more efficient object than a dead one, as in struggling it presses against the glands of many tentacles. An insect such as a fly, with thin integuments, through which animal matter in solution can readily pass into the surrounding dense secretion, is more efficient in causing prolonged inflection than an insect with a thick coat, such as a beetle. The inflection of the tentacles takes place indifferently in the light and darkness; and the plant is not subject to any nocturnal movement of so-called sleep."

"I have repeatedly found that the tentacles remain clasped for a much longer average time over objects which yield soluble nitrogenous matter than over those, whether organic or inorganic, which yield no such matter. After a period varying from one to seven days the tentacles and blade re-expand, and are then ready to act again. I have seen the same leaf inflected three successive times over insects placed on the disc; and it would probably have acted a greater number of times. . . . . Particles of carbonate and phosphate of ammonia and of some other salts, for instance sulphate of zinc, likewise increase the secretion."

"The absorption of animal matter from captured insects explains how Drosera can flourish in extremely poor peaty soil, in some cases where nothing but Sphagnum Moss grows, and Mosses depend altogether on the atmosphere for their nourishment. Although the leaves at a hasty glance do not appear green, owing to the purple colour of the tentacles, yet the upper and lower surfaces of the blade, the pedicels of the central tentacles and the petioles contain chlorophyll, so that, no doubt, the plant obtains and assimilates carbonic acid from the air. Nevertheless, considering the nature of the soil where it grows, the supply of nitrogen would be extremely limited, or quite deficient, unless the plant had the power of obtaining this important element from captured insects. . . . . A plant of Drosera, with the edges of its leaves curled inwards, so as to form a temporary stomach, with the glands of the closely-inflected tentacles pouring forth their acid secretion, which dissolves animal matter, afterwards to be absorbed, may be said to feed like an animal. But, differently from an animal, it drinks by means of its roots; and it must drink largely, so as to retain many drops of viscid fluid round the glands, sometimes as many as 260, exposed during the whole day to a glaring sun."

"The glands alone in all ordinary cases are susceptible to excitement. When excited they do not themselves move or change form, but transmit a motor impulse to the bending part of their own and adjoining tentacles, and are thus carried towards the centre of the leaf. Strictly speaking, the glands ought to be called irritable, as the term sensitive generally implies consciousness; but no one supposes that the Sensitive Plant is conscious, and as I have found the term convenient I shall use it without scruple."

We pause over the last sentence, for we cannot comprehend how a plant can be irritable without being sensitive, nor how it can be sensitive without being aware of a sensation. There are too many phenomena evidence that they are sensitive—that they are conscious of what will benefit and what will injure them—for us to conclude otherwise. How else can it be explained that they direct their roots to the surface if this be manured? How else can it be explained that they extend their stem and branches towards the light?

"Everybody must have observed that they bend towards the point whence its brightest influence proceeds. M. Bonnet, the French botanist, demonstrated this by some very satisfactory experiments, in which plants growing in a dark cellar all extended themselves towards the same small orifice admitting a few illuminating rays.

"Almost every flower has a particular degree of light requisite for its full expansion. The blossoms of the Pea and other papilionaceous plants spread out their wings in fine weather to admit the solar rays, and again close them at the approach of night. Plants requiring powerful stimulants do not expand their flowers until noon, whilst some would be destroyed if compelled to open in the meridian sun—of such is the Night-blooming Cereus, the flowers of which speedily droop, even if exposed to the blaze of light attendant on Indian festivities.

"These and other facts surely demonstrate sensation to exist in plants as acute as that possessed by the superior or more perfect classes of animals, yet they certainly are satisfactory evidence that some plants possess it to a degree nearly as high as that with which the zoophytes, or even the polypus and leech, are gifted. Some of these animals may be cut into pieces, and each section will become a perfect individual; of others, their heads being taken off may be grafted upon other bodies; and a third class of them may be turned with their insides outwards without any apparent inconvenience."—(*Science and Practice of Gardening.*)

* "Bot. Zeitung," 1860, p. 243.

THE OLD MARKET GARDENS AND NURSERIES OF LONDON.—No. 4.

No, I am not prepared to vouch for the truth of the story that Clerkenwell received its name from the circumstance that an early apostle of teetotalism had there a ducking from the unappreciative mob, which declared that the clerk should have enough of water if he so much commended it, while the lads ran away from the watch with the cry, "The clerk's in the well! the clerk's in the well!" And to some extent the description given of the place by an enthusiastic writer of several centuries ago is also open to doubt, for he dilates on pleasant fountains, cool valleys, breezy hills, and beautiful gardens, which, if ever they existed, have left no trace, or next to none, in Clerkenwell of the present. But his narrative is not a pure romance, and the history of some of our earliest nursery gardens at least is closely connected with that of Clerkenwell—that is, using the word in a qualified sense, for hardly a nursery approaching in its character to what we now understand by that term can be pointed out until the Stuart period. In the early English attempts at methodical gardening there was very little "nursing;" it was thought sufficient to sow the seeds or insert the slips, and Nature was left to do the rest. And yet in some things our ancestors were rather particular, not to say fussy, as appears from a rare pamphlet written by a citizen in the form of a dialogue, the object being the commendation of the beauties of Moorfields. He chronicles the exact number of trees within the enclosure, amounting to two hundred, fourscore, and eleven. Outside, he says, there were a few more, which he roughly estimates at about thirty or forty. It would not have been a very serious piece of business for one wealthy citizen to have planted all these trees, but it seems they were the gift of various persons, and so they were distinguished as they grew by the names of the donors, or by some event in their history, so that most of these trees (Elms I suspect) had their proper names. One of them, writes our author, is called "Stubbs his tree," since it was planted by Christopher Stubbs, a principal porter of Blackwell Hall. O William Shakespeare! there is much in a name, even in the case of a tree.

Having alluded to the name of the district, once undoubtedly rural, but now far too near the centres of London activity to present any attractions except to the man of business or the antiquarian, I might add that the clerks' well really had its designation from an annual custom of the clerks, who would meet close by this well to enact miracle plays. The well or spring, with another close to it, lay in a little valley, and as the ground rose gradually to the south and west spectators could conveniently group themselves on the slopes, these same slopes being subsequently found to be admirably suited for gardens. Since there was scarcely any notion amongst early gardeners of such a thing as artificial drainage, they frequently made choice of hills, for, especially near London, they had large experience of the disadvantages arising from marshy or swampy ground. As London increased during the fifteenth and sixteenth centuries the well-to-do citizens were led to go farther afield, and as they could not have garden plots to their taste in the city they went out to Clerkenwell, or to the adjacent manor of Finsbury, and took land there. And those who are curious in these matters may still inspect an old document which contains a minute specification of the way in which the great garden and orchards of the manor of Halliwell (*alias* Finsbury) was subdivided into allotments during the reign of Queen Elizabeth. There is a long list of various citizens, whose trades or occupations are duly specified—a goodly number of them are merchant tailors; but in the account of one plot of land, called Benhil Field, abutting south on a highway known as Chiswell Street, and north on the highway from Wenlock Barn to the well of St. Agnes le Clere, the whole amounting to 23 acres, we discover, with several others, one William Gill, gardener, the only person seemingly,