NEW PUBLICATIONS.

DARWIN'S INSECTIVOROUS PLANTS.

INSECTIVOROUS PLANTS. By CHARLES DARWIN. 12mo. pp. 462. D. Appleton & Co.

The researches of Mr. Darwin which have resulted in the discovery of exceptional properties in certain plants, confirming the fact previously observed that contrary to received traditions they possess a carnivorous nature, were commenced in the Summer of 1860. Upon examining the leaves of the common sundew, or drosera, he was surprised to find a large number of insects entangled in their hairs, or tentacles. He gathered by chance a dozen plants, bearing fifty-six fully expanded leaves, to thirty-one of which were attached the remains of dead insects. On one plant all six leaves had caught their prey, and on several plants many leaves had caught more than a single insect. On one large leaf, there were the remains of thirteen distinct insects. Of these, flies were the most numerous. The largest kind observed by Mr. Darwin himself was a small butterfly, but he has been informed of the capture of a large living dragon-fly, with its body firmly held by two leaves.

The plant (drosera) which was the subject of his investigations bears from two or three to five or six leaves, generally extended more or less horizontally, but sometimes standing vertically upwards. The whole upper surface is covered with gland-bearing filaments, or tentacles, so called from their manner of acting. The average number of glands on thirty-one leaves, many of which, however, were of unusually large size, was 192, the greatest number being 260, and the least 130. The glands are each surrounded by large drops of extremely viscid secretion, which, glittering in the sun, have given rise to the plant's poetical name of sundew. A tentacle consists of a thin, straight, hair-like pedicel, carrying a gland on the summit. The pedicel is formed of several rows of elongated cells, filled with purple fluid or granular matter. There is a narrow zone close beneath the glands of the longer tentacles, and a broader zone near their bases, of a green tint. Spiral vessels, accompanied by simple vascular tissue, branch off from the vascular bundles in the blade of the leaf, and run up all the tentacles into the glands. The tentacles on the central part of the leaf are short and stand upright, and their pedicels are green. Towards the margin they become longer and longer and more inclined outwards with their pedicels of a purple color. The glands, with the exception of those borne by the extreme marginal tentacles, are oval, and of about 1/500 of an inch in length. They consist of an outer layer of small polygonal cells, containing purple granular matter or fluid. Within this layer of cells there is an inner one of differently shaped ones, likewise filled with purple fluid, but of a slightly different tint. The purple fluid or granular matter which fills the cells of the glands differs to a certain extent from that within the cells of the pedicels.

The action of the several parts of the plant in the capture of an insect may be briefly described as follows: If a small object be placed on the glands in the center of a leaf, these transmit an impulse to the marginal tentacles. The nearer ones are first affected and slowly bend towards the center, and then those further 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, as the size and nature of the object, that is, whether it contains soluble matter of the proper kind, the vigor and age of the leaf, and, as seems most probable, on the temperature of the day. 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, like the 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 the 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. If the glands on the disk are repeatedly touched or irritated, all the tentacles curve inwards; where the marginal tentacles are thus touched, the marginal fluids are placed on the central glands, the same result follows. Very minute particles of any resistance, such as a bit of thread or hair, or a splinter of glass, if placed in actual contact with the surface of a gland, will suffice to cause the tentacle to bend. Very minute particles of any subst

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The researches of Mr. Darwin which have resulted in the discovery of exceptional properties in certain plants, confirming the fact previously observed that contrary to received traditions they possess a carnivorous nature, are recorded in this volume. Bonnet of 1860. Upon examining the leaves of the common sundew, or dionæa, he found a fly, which in a large number of insects entangled in their hairs, or bristles. He perceived that the dionæa is a carnivorous plant, which feeds on living animals, and that the leaves of which were structurally formed, or fitted, for the purpose of so, leaves had caught their prey, and on several plants may have been found more than a single insect, the leaves, or large leaf, they were the remains of thirteen distinct insects. Upon these, then, the sundew, or dionæa, had lived observed by Mr. Darwin himself was a small Dorbirdy, but in the leaves indicated the remains of a large living creature, with its body firmly held by two leaves.

The plant (dionæa) which was the subject of his investigations has been known for ages, and its leaves, generally considered more or less horizontally, but occasionally standing vertically upward, which upper surface is covered with glandular hairs, or bristles, or rather, with the ends of the organs of action. The average number of glands on thirty-one leaves, many of which, however, were much larger, was 260, the greatest number being 200, and the least 190. The glands are thus surrounded by large cells, or extremely viscid secretion, which, glittering in the sun, have given to the plant's appearance, the name of the "sundew" consists of a thin, straight, line like pedicel, rather but extremely viscid, the pedicel is formed of several rows of elongated cells, filled with protoplasm and granules, and, at the top, a pyriform mass close beneath the glands of the large secretion, which is formed of two main layers, of a green tint. Spiral vessels, accompanied by a single nerve, ramify through the vascular bundles in the blade of the leaf, and pass into the pedicel of the glands. The glands also on the central part of the leaf are short and stand upright, and are thicker than those on the margin they become longer and lower and more inclined, and finally, at the margin, they are quite recent. The glands, with the exception of those between the large secretion, are formed of a layer of about four of an inch in length. The pressure of an outer layer of small cells, which are filled with a single granular nucleus or fluid. Within the layer of cells there is an inner one, which is formed of elongated cells, filled with purple fluid, but of a slightly different tint. The purple fluid or granules, the matter which, in the glands, differs in a certain manner from that within the cells of the pedicel.

The action of the several parts of the plant in the capture of its prey may be briefly described as follows: It a small object be placed on the glands, the leaves will be seen to contract as in fact with the marginal tentacles. The tentacles are first inflected and curved, the leaves are then inflected, and then further, if, until it and all because closely inflected, and the tentacles are then bent more or less or five or more leaves. The difference in the time required for the inflection depends on the size and nature of the object, that is, whether it contains, or is composed of, the proper kind of vigor and age of the leaf, and, as seems most probable, on the nature of the prey. The leaf will not be more inflected after then a dead one, as in strongly nitrogenous substances, and, in fact, more effected in crushed, powdered, and inert matter, and in the tentacles. The tentacles of the tentacles are inflected, and the plant is not only the tentacles, but the plant is not only the mechanical movement of secretion, but the plant is not only the mechanical movement of secretion, but the plant is not only the mechanical movement of secretion