



posed in it." The phrase "at other times" refers to the idea that there were those who had not had these on, and as a great deal depends upon this point, it would be well that the matter should be put out of doubt by actual observation. This can easily be done. Whomsoever a plant should be able easily to do is without doubt. All that he has to ascertain is—1, whether the secretion is ever present until after an insect has been captured; and, 2, whether it is always present after one has. If it is not so, then it leaves Dionaea in the same category as *Pinguicula*; but if it should be so it is a strong argument in the carnivorous side, but still by no means conclusive. The fact of the pouring out of the secretion after a fly has been taken leaves us with a long way from digestion; but it seems all but conclusive in favour of an insect being to die with the fly in some way and for some purpose or other. It may be a mechanical consequence of the movement of the leaf in catching the fly, but although it may be intended to nourish the leaf, it by no means follows that it is intended to digest it; still, such a secretion looks as like the operations of *Nereis* in the adaptation of structure to purpose, that it is quite out that the result of the movement of the leaf is to press out a certain amount of fluid secretion; I do not see how it can

appreciate of epithelial cells, the foliolar, the villous coat, and all for the purpose of assimilation? It is perfectly plain that Dr. Hooker only sees the comparison with the human stomach as analogous and not identical; and even here he will scarcely deny that, yet it may very be like, the analogy is of the leaflet.

Again, assuming that there is such an apparatus, although we cannot discover any trace of it, or anything different in the minute anatomy of *Dionaea* and *Pinguicula* from that of any other plant, I think it is too to assume that it will be a complicated apparatus—seeing that the supposed commencement of the operation is on the surface of the human stomach, and the biological arrangement of the human stomach is extremely complicated. Would it not be an anomaly in the economy of Nature if a complicated apparatus should be provided to do something which it is of no advantage to the plant, and which it seems to be able to do quite well without? Of course there are no flies for the *Pinguicula* to feed on in winter, and yet it grows as well then as in summer. You have said of the time I observed it we had a great deal of rain, and the leaves were washed free from all remains of flies—the plants seemed to flourish better, and better leaves were in the same condition, and I presume *Dionaea* must be so too.

acquire, propose to endow them with digestive powers. It may be that the action of both is the same, and produces the same result, viz., that of averting, if we reflect on the myriads upon myriads of flies and midges that we see disporting in the air, and it is to be true that the duration of life of most of them is, as we are told, only a few hours, it must be evident of course that we see no trace of their remains. Where do their dead bodies go? If they are thrown by the wind on acid-dwelling vegetation or on plants whose succrotes are sold, we can understand how they soon disappear, and why we do not see them except when they undergo the dissolution of their elements on something whose colour or form allows them to be easily seen,—that is, I suppose for a moment that the primary purpose or intention of the secretion on the leaf of *Pinguicula* was for any such purpose, for I regard it as a rule without exception that the primary object of every secretion or property which a plant is endowed in for its own advantage, and only secondarily and indirectly for that of others, or for the general benefit. But there are an immense number of properties and structures whose advantage to the creature possessing them we cannot see. What advantage do any of the medicinal or poisonous properties of plants confer on the plants



FIG. 76.—*PINGUICULA LUSITANA*.—a, Portion and cut of leaf; b, Scale from vertex of one leaf; c, Flower in bud; d, Developing spongium in profile; e, Spore in profile.

will be supposed that it is done for a purpose, and that purpose apparently the digestion of the fly.

I now come to the last of the stages of the supposed carnivorous operation, the digestion of the fly or other insects matter by the plant. I have held one such as Dr. Hooker carried this length, but here I must leave him. I cannot believe in feeding without a mouth or digestion without a stomach. We are not dealing with an animal but with an organism whose operation Dr. Hooker compares to those of the human stomach. His position is that it digests "the same substances and exactly in the same way that the human stomach does." As to the substances being the same is none to me. There are two points at universal work all over world, regarded continually in describing what can be dissolved—the animals and the agents of natural decay; their action is similar and their process limited by the same bounds. But when we come to the plant digesting in exactly the same way as the human stomach does I am entitled to ask, where is the apparatus by which it does so? Had he said in some way analogous to the operation of digestion in a sponge or in a leech, I might have, from my ignorance of how they do it, been known to hold my peace; but when the human stomach is given as the type, I am entitled to ask, where is the apparatus for digestion?—something more than gastric juice is needed for that purpose; where are the complement

There is, however, a stimulation of the process of digestion in *Pinguicula*, which doubtless also occurs in *Dionaea*, and which, I think, is probably the circumstance which has had most weight in leading Mr. Darwin and his supporters to the carnivorous view. The entangled insects do not arise under the influence of the secretion, but no more, I apprehend, than they would do under the influence of any other fluid—most quite so much as the juice of the plant itself, but will slightly so. The juice of most plants are acid. If you break a blade of grass, and apply a piece of litmus paper to it, you get a slightly acid reaction. It is the same with most other plants, with sometimes a surprising intensity, as in the case of horseradish; so, if you break a leaf of *Pinguicula*, you find that the juice litmus paper to it, you get a slightly acid reaction. It is the same with most other plants, with sometimes a surprising intensity, as in the case of horseradish; so, if you break a leaf of *Pinguicula*, you find that the juice litmus paper to it, you get a slightly acid reaction. It is the same with most other plants, with sometimes a surprising intensity, as in the case of horseradish; so, if you break a leaf of *Pinguicula*, you find that the juice litmus paper to it, you get a slightly acid reaction.

themselves? Why should it seem more extraordinary to us that we cannot define the benefit conferred on *Pinguicula* by the special secretion of the leaf than that on the *Fucus* by the fugacious gaseous secretion of its stalk—and I do not believe that, had the question not been complicated by the curious machinery of *Dionaea*, for which it is so difficult to find a purpose, we should ever have heard of carnivorous plants or digesting vegetables; and of course the ordinary character of the example aggravates the difficulty of believing that a special digesting apparatus would be provided for the doubtful advantage of one species at one season. But all this is no help to me. I advance no theory on the subject. All that I have to do is to give my reasons why I cannot accept the theory propounded by Mr. Darwin. *London Mirror*.

EASTER MANGLIANTS AND HERB FODDERS.

Certainly a pleasing-sounding name, and one which it is difficult to explain satisfactorily, but not so uncommon as the *Fidibus* series in that, although it has seldom appeared in print. Through Cumberland it is in general use, though, as far as I know, it does not occur in other counties. The word retains a short—at least, as I am informed by a friend who is familiar with the name in Cumberland—and it is