

Carnivorous Plants.—The article by Mr. Andrew Murray in the last number of the *Gardeners' Chronicle* presents very clearly and fairly the objections that present themselves to the doctrine of the carnivorous habits of plants. To some of these it must be left to Mr. Darwin or Dr. Hooker to reply; on one or two others I shall be glad to be allowed to make a few remarks. Mr. Murray contrasts the phenomena in *Pinguicula* with those in *Dionæa*; I think more may be gained by comparing them with those in *Drosera*, when the resemblance will be found very striking, which is the more remarkable, seeing that the glands in *Pinguicula* are, I believe, entirely epidermal, while at least the larger number of those of *Drosera* are sub-epidermal, belonging to the tissue of the leaf itself. I am not aware of any statement with regard to the morphology of the hairs on the upper surface of the leaf of *Dionæa*. Mr. Murray remarks that in *Pinguicula* the slight irritability "does not appear to be capable of being exerted injuriously on the insect," in consequence of the long period which elapses before it begins to operate. But precisely the same is the case with the very strong irritability of the glands of *Drosera*. I find from a note of observations made in North Wales this summer, that on placing a piece of cotton-wool soaked with blood on a leaf of *Drosera*, it was from three to four hours before any of the superficial glands had begun to stretch over it, and nearly three days before the greater number of the marginal glands had come into contact with the cotton-wool; and last summer I found very nearly the same phenomena presented in the case of a living insect. The movement of the glands is certainly not excited by the struggles of the insects. Mr. Murray speaks of heavy rain completely washing the insects out of the leaves of *Drosera* and *Pinguicula*. This is not in accordance with my observation in the case of *Drosera* during an exceptionally wet season in Westmoreland last year. I should be inclined to demur to both the clauses of the following sentence in his article:—"Of course there are no flies for the *Pinguicula* to feed on in the winter, and yet it grows then as well as in summer." That the animal substances could be digested by the leaves without the existence of any organs of digestion would be, as Mr. Murray justly remarks, very extraordinary. But the non-existence of such organs must not be taken for granted. I am not in a position to affirm their existence. But I have detected, both in *Drosera* and *Pinguicula*, cells of a very peculiar nature, or containing protoplasm in a very unusual form, in the leaves of these two plants, which I have observed nowhere else except in *Callitriche*, and which I am not aware have been hitherto described. Dr. Hooker tells me that he is acquainted with structures of a similar kind only in *Utricularia*. That there is any connection between these cells and the process of digestion apparently tried on by these plants, I am not, as I said, able to state; but they well merit further investigation, which I hope to be able to give them. The question, what becomes of the dead bodies of the myriads of flies and midges that we see disporting in the air, has often occurred to me; but I am by no means disposed to come hastily to the conclusion arrived at by Mr. Murray that "no one will propose to endow *Sphagnum* and *Polytrichum* with digestive powers." I should be the more inclined to believe that the phenomena remarkably displayed by *Dionæa*, *Drosera*, *Sepenthes*, and *Sarracenia*, are but a well-developed case of a power widely dispensed through the vegetable kingdom, of which we are now gaining by the first glimpse. *Alfred W. Bennett.*

— Allow me to make a qualification upon some of the positions I took in my remarks on carnivorous plants last week. I said that I considered every structure or property in any organised being to be primarily intended for the benefit of the being itself. This reads too broadly. Every structure, Yes; but every property in its wide sense, No! For example, it is for our benefit that we should perspire, and the structure by which perspiration is produced is therefore primarily for our benefit, so is the property of perspiring; but the secretion which is secreted is of no use to us. It is the property

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Cardiocrinon Plants.—The article by Mr. Andrew Murray in the last number of the *Gardener's Chronicle* points very clearly and fairly the objections that point themselves to the doctrine of the cardiovorous habit of plants. To some of these it must be left to Mr. Darwin or Dr. Hooker to reply; on one or two ones I shall be glad to be allowed to make a few remarks. Mr. Murray contrasts the phenomena in *Pinguicula* with those in *Utricularia*; I think more may be gained by comparing them with those in *Drosera*, and the resemblance will be found very striking, such is the more remarkable, seeing that the glands in *Pinguicula* are, I believe, entirely subterranean, while in the larger number of those of *Drosera* are sub-aquarial, belonging to the tissue of the leaf itself. I am not aware of any statement with regard to the morphology of the hairs on the upper surface of the leaf of *Drosera*. Mr. Murray remarks that in *Pinguicula* the slight irritability "does not appear to be suitable of being excited injudiciously on the insect," in consequence of the long period which elapses before it begins to operate. But precisely the same is the case with the very strong irritability of the glands of *Drosera*. I feel from a series of observations made in Irish Wales this summer, that on placing a piece of green-wool soaked with blood on a leaf of *Drosera*, it was from three to four hours before any of the special glands had begun to stretch over it, and only three days before the greater number of the special glands had come into contact with the green-wool; and last summer I found very nearly the same phenomena presented in the case of a living leaf. The movement of the glands is certainly not aided by the struggles of the insects. Mr. Murray speaks of heavy rain completely washing the insects and the leaves of *Drosera* and *Pinguicula*. This is not accordance with my observation in the case of *Drosera* during an exceptionally wet season in West-England last year. I should be inclined to demur at the change of the following sentence in his text:—"Of course there are no flies for the *Pinguicula* feed on in the winter, and yet it grows then and so in summer." That the animal substances must be digested by the leaves without the existence of any organs of digestion would be, as Mr. Murray very remarks, very extraordinary. But the supposition of such organs must not be taken for granted. I am not in a position to affirm their existence. But I am disposed, both in *Drosera* and *Pinguicula*, cells of a peculiar nature, or containing protoplasm in a very unusual form, in the leaves of these two plants, and I have observed nowhere else except in *Callitriche*, and which I am not aware have been before described. Dr. Hooker tells me that he is acquainted with structures of a similar kind only in *Siphonaria*. That there is any connection between the cells and the process of digestion apparently used on by these plants, I am not, as I said, able to say; but they well merit further investigation, and I hope to be able to give them. The question, as to the use of the dead bodies of the vertebrate of land animals that we are disposing in the air, has occurred to me; but I am by no means disposed to give hastily to the conclusion arrived at by Mr. Darwin that "no one will propose to endow *Siphonaria* or *Polychaeta* with digestive powers." I should be more inclined to believe that the phenomena so remarkably displayed by *Utricularia*, *Drosera*, *Callitriche*, and *Sarracenia*, are but a well-developed use of a power widely disseminated through the entire kingdom, of which we are now gaining the first glimpse. *Alfred W. Bennett.*

—Allow me to make a qualification upon one of the positions I took in my remarks on *Drosera* plants last week. I said that I could not every directing or property in any organism be to be primarily intended for the benefit of being itself. This reads too broadly. Every tree, you say; but every property in its wide sense, I for example, it is for our benefit that we eat porridge, and the structure by which porridge is produced is therefore primarily for our benefit, but the property of porridge is not the secretion being wanted is of no use to us. It is the property

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first-rate Orchid pseudobulbs and first-rate Orchid racemes or panicles, with their truly wonderful flowers—wonderful in form, in substance, and in purity and distinctness of colour. *James Anderson, Meadowbank Nursery, Uddingstone, N.B.*

Stung by *Laportea gigas*.—Going through the houses at Kew Gardens the other day with Mr. Smith, I happened to touch a leaf of the *Laportea gigas*, and immediately after felt a stinging sensation in the inner part of my third finger, as if a wasp had stung it. The pain was quite as severe, and continued so for several days. The pain, however, gradually declined, but even now, after a lapse of three weeks, I feel a slight sensation, and the place where stung is still visible on the top of the finger. Of the two I would prefer being stung two or three times by a wasp than once by the treacherous *Laportea gigas*. *Henry Knight, Floors.*

On the Cultivation of the Strawberry for Forcing.—Having been most successful during the past season in growing large quantities of Strawberries of more than average size and quality, I am led to offer you a few remarks on my mode of culture. I may mention that numbers of individual fruit gathered by me weighed over 2 oz., and single plants produced on an average from 8 oz. to 10 oz. of fruit. The mode of culture is as follows:—As soon as the runners have taken root in the open ground, take them up carefully and pot them into 4-inch pots in a compost consisting of three parts good turfy loam and one part of well rotted leaves or even dung. A slight sprinkling of silver sand will be found beneficial. See that the pots are loosely crocked, so that eventually the plants may root through the bottoms of them. Having potted the plants firmly, place the pots at once in a cold frame on a bottom of cinder ash; shade them for a few days from the direct rays of the sun, and for a few weeks let them on no account suffer from want of water. At the end of this period the plants will have rooted firmly in the soil, then remove the lights altogether and water sparingly. A little liquid manure may be given them occasionally, which, however, must be discontinued at the beginning of October. Thence forward, up till the time for forcing, sufficient clear water may be given to prevent the plants from actually flagging. Keep them through the winter in a cold frame, or stack them one upon another in any place where severe frost will not touch them. When forcing is to commence remove the pots to a shelf fixed as near to the glass as possible, and in which have been placed strips of green turf, about three-quarters of an inch thick, the width of the shelf. The plants will soon take root into the turf, and derive immense benefit therefrom. During the forcing period the temperature of the house may vary, as it is not always necessary to force very quickly. Water of the same temperature as the house must be given but sparingly until the plants have set their fruit, when the quantity may be increased. An occasional watering with liquid manure (say, three times a week) will be beneficial. Do not syringe them while in bloom or during the period of ripening. The best kinds for forcing are:—1, Black Prince; 2, Duc de Malakoff, Prince of Wales, and Keens' Seedling; 3, President, Sir Charles Napier, Sir Joseph Paxton, and British Queen. I have no hesitation in saying that success is sure to follow the adoption of this simple mode of culture. *John Rose, Igham, Sevenoaks.*

Dendrobium nobile.—"E. H." asks whether this plant will stand a temperature of 55° in winter? I have very frequently wintered this plant in an ordinary greenhouse not adapted for cool Orchids, and the method I practised was this. When the plant had been grown to a good large size, I ripened the growths in a strong Indian temperature, with as much sun as September and October would give. At the end of the latter month I gradually withheld water, and reduced the temperature, as is always done, or ought to be done at all events, in all well-regulated establishments, and then towards the end of November I had the plant set upon the stage of the greenhouse. There it used to live without water for a month at a time. Of course, if much fire-heat were necessitated by unusually low out-of-door temperature, then the water had to be applied more frequently; but it was not uncommon that during the months of December and January the specimen *Dendrobium nobile* in the greenhouse had not one drop of water from a water-pot. This induced the setting of buds, and the crop of flowers from plants managed in this way is something worth looking at. When I was accustomed to take a place in the competitions at Glasgow, I have invariably shown a good specimen plant in the last week of May, and in one or two cases in the second week of June; and although the plant was to a certain extent punished by lopping off the flowers after the day of competition, and introducing the plant gradually into a moist, high temperature, the young growths were scarcely inferior to those of former years. Those who grow for exhibition in this way will require a set of three plants, and by working

them alternately they will be amply successful. In the same way they may be cultivated for cut-flower purposes, and give off their beautiful flowers in abundance from Christmas onwards; indeed, there is not a more beautiful or a more useful *Dendrobe* in cultivation, and that is saying much when there are hundreds and hundreds of species to draw comparison with. *James Anderson, Meadowbank Nurseries, Uddingstone, N.B.*

The Chestnut Tree.—I have noticed in some of the periodicals that the rafters of the roof of Westminster Abbey, which were supposed to be of Oak, are now proved to be of Chestnut, and have been there 800 years. Do you know what Chestnut it is? I presume the Spanish. If such is the case, it must prove to be one of our best timber trees to plant, as it is one of the most ornamental trees we have. *E. N. M.* [A very old story this. The wood is probably that of the sessile-fruited Oak, and not Chestnut at all. *EDS.*]

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of pig to be appetising to us when roasted, but that property can in no sense be said to be advantageous to the pig itself. The medicinal properties of plants are in like manner, so far as we know, of no benefit to the plants themselves, but are so to other organic beings. It is, therefore, by no means inconsistent with the habitual course of Nature, but rather the reverse, that a plant like *Pinguicula* should produce a secretion which is not directly applied to its own benefit. I noticed the slip I had made immediately after I had posted my MS. to you, but trusted to correcting it when you should send me a proof; but I suppose you had been pressed for time, and omitted that ceremony, and thus the opportunity escaped me, and I have to trouble you now with this. *Andrew Murray.*

Rose Showing and Shows of Roses.—This question, like most others, has branched off into many side issues. These issues are so important to cultivators that they are all worthy of discussion. But it would be more logical, as well as more profitable, to keep to one thing at a time until that is settled. Therefore, without following your able correspondent into the merits of particular Roses, or the measure of skill that may fairly be put into show Roses—as if there could be any limit to this excepting the measure of the knowledge, ability, and love of the cultivator—the use or abuse of Rose shows as tests of average quality, or the effects of locality and soil on particular Roses—a disturbing influence more potent than moral or immoral means to puff out show Roses to unusual size, or paint them with abnormal beauty—I will return to the subject under discussion. How to display Roses to highest artistic advantage. I adhere to all I have said about the advantages of the present system for assessing, rewarding and displaying the merits of individual flowers, absolutely and comparatively in regard to others exhibited in the same numbers and under identical conditions. All this can hardly be changed for the better. To fringe Roses with club-mosses or Ferns, as has been suggested by several correspondents, is simply a libel on the inimitable beauty of Rose foliage, and on Nature for not mossing or "fernising" the Queen of Beauty instead of adorning it with leaves far more beautiful. It does not, however, follow that Rose shows cannot be improved: Mr. Earley suggests an improvement—the intermixture of colour under the present box system. Another great improvement would be the getting rid of the boxes. I never approved of letting Palm pots through dining-tables, but I can see no objection whatever to letting Rose tubes through deal at regular intervals, and thus get rid of the boxes. Doubtless a hue and cry will be raised by exhibitors, especially late ones, who arrive at the last moment and place their box on the table and there it is. Well no doubt they would have to arrive sooner, and set up their Roses on the table instead of in the boxes; still this change would not prove a very serious hardship, for I observe at very great shows more than half the exhibitors set up their flowers in the tent. Under the hole-in-the-table system all would have to do so. But the cut staging could be transferred bodily, and the work would not take many minutes. Of course the holes would be uniform, the tables of one slope, and each exhibitor so far be on a level. Again committees could arrange for *Maréchal Niel*, *Gloire de Dijon*, *Devoniensis*, *Baronne de Rothschild*, and other golden, light, white or brilliant coloured Roses to come in as buffers between the long lines of mixed colours. The colour of the tables might also be changed. Let the green baize be abolished—the long everlasting lengths of this give frequent visitors at shows baize on the brain and in the eye for weeks. If baize must be used, try blue. Perhaps cream and light straw colour, or even white, would be preferable. If any cry out against the glare of white, remember that each Rose is supposed to be shown on a cushion of its own leaves, and the glare is to be otherwise toned down by other means to be suggested presently. A space, for instance, along the front of the table—say a foot wide—might be measured off into lengths, to be furnished with garden Roses for effect in any way the exhibitor chooses, or for exhibiting dwarf baskets of Roses, so long as not to interfere with the view of the prize flowers. I advance this fringe with considerable diffidence, and proceed with much more confidence to deal with other parts of the table. One-half or two-thirds in the centre should be reserved for Roses in pots of all sizes and of all forms, as standards, pyramids, bushes, dwarfs, massing Roses, and of all the leading varieties. No one with taste could fail to arrange such magnificent material so as to please the eye. Afford perfect background for the glowing masses in front, and elevate the Rose tent to the highest rank of art and place of beauty in the show. Neither have we done with it yet. One great objection to the present Rose shows is the continuous lines of Roses—stiffness, formality, and I know not how many more deprecatory adjectives, have been shot off at these lines; still, up till now, neither the artillery of ridicule nor shafts of satire have succeeded in breaking them. Personally, I