

maturation of the wood. In some cases it will be desirable to screen them from the sun during the middle of the day, to prevent the heat scorching them up. This is especially necessary when there is no alternative but to remove them from the shady conservatory or plant-house to the open air. The wood will assume a deep brown colour when well ripened, and the plants should be pruned without further delay, and repotted when they commence to make new growth, in the manner already described.

The following year it will be necessary to stop the shoots in the spring, and to commence a regular system of training to insure well-developed specimens. Very frequently wire hoops are employed, but stakes alone are preferable. After a little practice there will not be much difficulty in training out the shoots in a satisfactory manner. To enter into details upon this point would require more space than, I feel assured, can well be spared—moreover, there would be a difficulty in making oneself understood. The surface of the plant should, when fully grown and in bloom, present the appearance of an ordinary watch-glass, as here portrayed.

In conclusion, it is desirable to state that the plants must at all times be grown in a light and airy house near the glass, for the purpose of maintaining a firm, short-jointed growth. It is also equally important to keep the foliage free from green-fly, which can be readily done by fumigating the plants as soon as the fly makes its appearance.

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## ON THE CONSTRUCTION OF PLANT AND FRUIT HOUSES.

BY A KENTISH GARDENER.



PERSONS who contemplate building glass-houses for the cultivation of fruits or plants should well mature their plans before commencing, so that no expensive alterations may be required, either as the work proceeds, or after the houses have been erected. As a large number of amateurs who have horticultural structures erected in their gardens have but little practical knowledge of the matter, and have not the assistance of an experienced man to advise them, I have thought that a few remarks just now would be of considerable service. There can be no doubt that the first and most important point to consider is, the purpose for which the house is to be erected. This point is only imperfectly considered by many, for, as taste differs in most of us, so also are we subject to prejudices, which exercise a certain amount of influence against this or that particular form of house. A certain amount of taste in arranging a house or any number of houses is desirable, providing the essential features of the design are consistent with the purpose for which the structure is required. But taste in these matters ought always to give way to a reasonable extent when the outlay is ultimately expected to

yield its quota of return. This is referring to those cases where position makes it difficult to combine utility and beauty together; but it does not bear on any instances where both can work harmoniously together, as is sometimes the case. As a rule, give the preference to the form that combines elegance and utility, where no other considerations crop up; for although a house may be handsome in appearance, and useful so far as its form is concerned, yet we have to take into account the probable cost of the working of such a form, according to the uses to which it is to be applied. For instance, no one would prefer a brick-pit to a span-roofed house for pine-growing, if they could maintain the proper temperature in the last-mentioned structure with the same outlay: but the latter would take nearly double the amount of firing to maintain the same temperature as would a brick-pit; hence the preference for it. The same kind of reasoning will apply to the case of those who are engaged in growing large specimen plants for exhibition. The skilful cultivator of these things always gives the preference to a span-roofed house, on account of the more equal distribution of light to all parts of the plants, whereas a lean-to house always presents one dark side to the plants. This, then, shows us that, although a certain amount of taste in arranging horticultural structures is desirable, utility of purpose and a becoming degree of economy in working them must be the paramount object sought. From my own experience, I know it is no trifling matter to decide in all cases which would be the best form to adopt. But, nevertheless, there are certain established forms of houses, adapted for different purposes, that it would not be desirable to alter if we could—such, for instance, as the lean-to form for early vineries, and the span-roofed form for ordinary plant-growing; but still I would, when it was possible, substitute the latter for the former, especially for the fruit-house, the stove, and the orchid-house. But then, against the span-roof, for the two latter purposes, we must place the question of firing. Where this is a question of no moment, then I would advise by all means to build span-roofed houses, and I am satisfied that the result would be most satisfactory. The question of heating plant and fruit-houses is of great importance, now fuel is so expensive, and I prefer to deal with the most weighty matters first; the additional outlay for them in building at the outset is a point of comparatively small importance, when we take into consideration the expense of maintaining the proper temperature.

The advantages of span-roofed houses for all kinds of plant-growing are very considerable, although they are not so clearly made out upon paper as when put into practice. In addition to the more equal distribution of light over all parts of the house, there is a better means of securing a proper current of air; and when we consider how essential these two elements are to success in plant-growing, we have an indication of the superiority of the span over the other form; and those who are aiming to achieve grand results would do well to study the comparative value of the two forms as adapted to their own case. Granting, then, that the span-roofed form is the most suitable for plant-growing, the next question that presents itself is the



size of the structure. In this there are two extremes, and the amateur generally prefers large and lofty houses, while the commercial cultivator is much less pretentious in this matter. To grow plants well, *you must keep them near the glass*, which is impossible in lofty structures. These remarks, it must be understood, are not applicable to conservatories or show-houses; I simply mean houses for *plant-growing*, not for showing. That there is urgent need for improvement in the forms of plant and fruit houses in the present day, I have only to point out the many very valuable additions to our lists of beautiful and costly plants during the last twenty years—plants that really require all the light and the most suitable appliances that it is possible we can give them in this cloudy climate. It is impossible to bring many of them to any degree of perfection in dark lofty houses. It is therefore a subject for serious consideration, because to grow in a satisfactory manner a well-assorted collection of the fine-foliage plants which are now so much prized is impossible when the plants are some six to ten feet from the glass, as very few of them will bring out their colours well if more than two or three feet from it. The rule varies, of course, according to the size and nature of the plants. For the present purpose it is sufficient to establish the understanding that there is little colour produced where there is a defect of light.

Take, for example, the fine-foliage plants which are so universally grown. The best of them require a high degree of temperature, which must be maintained in this country by artificial means for the greater part of the year, and a moment's consideration will show that it is adding considerably to the cost of cultivating them if we have a much larger space of air to heat than the plants actually require. It may be taken for granted that, if there are five or six hundred cubic feet of air to heat over and above the space they actually occupy, there is an absolute waste of fuel, to say nothing of the evil tendencies of so much space above them, which tends to weaken the light. This is not all. If the plants are to be shown off to advantage, and the individual beauties of each to be seen with ease and comfort, they must not stand up eight or ten feet away from the walk which is supposed to enable the visitor to see them. And again, lofty houses have a tendency to make the plants look dwarf and poor. These are not all the arguments I could advance in favour of moderate-sized houses as compared with large ones; but enough has been said to show in the most unmistakable manner that my arguments are not valueless. I therefore hope they may prove of service; for depend upon it we should hear less of the attacks of insects, and drawn and weakly plants, if the stove-plants generally in this country were more bountifully supplied with light, for in many instances the degree of light is not equal to the temperature, and the consequence is that in many cases the organs of the plants are weak and imperfectly matured.

The state of things thus briefly touched upon must remain while the lean-to structures for plants are in use. My idea of a house for stove and greenhouse plants would lead me to choose a neat and substantial span-roof, fourteen feet wide inside measure, with a



raised platform in the centre, and a two and a-half feet shelf round the sides and ends. It is of more importance to have neat and rather low houses for the cultivation of greenhouse plants than for those requiring stove temperature, as it is practically impossible to insure firm short-jointed wood when the plants are far removed from the glass.

The apex of the roof should be nine feet high, with a sunk walk to allow for head-room, and I would have sashes to the two sides fifteen inches deep, resting on a nine-inch brick wall, and the north end should be bricked up to the apex of the roof. The other end to have a brick wall three feet above ground, except under the centre, where the doors would be, and the space above glazed.

The span-roof is also much the best form for orchard-houses; but, to insure successful results, they require to be from eighteen to twenty feet wide, and, if twice or thrice that length, so much the better, as the larger they are they are less liable to be influenced by change of weather, and maintain a more equal temperature inside. Let those, therefore, who are interested in this matter turn their attention to it, that the requirements of the subjects we now cultivate have their due share of consideration. It is not enough to know that they have merely a glass structure to grow in, for if we would see them comfortably housed and cared for, it must be suitably constructed, so that they may enjoy the full benefit of air, heat, and light, according to their requirements, to insure their health and prosperity.

In the case of forcing-houses, lean-to's are the best, provided they have a south aspect. The proper temperature may be maintained in them during severe weather with less difficulty and cost than in any other form. The foliage also will be more fully exposed to the light, and the greatest advantages possible will be derived from the sun at a season of the year when every ray is of value. The vineries and peach-houses in which the earliest crops are brought to maturity should be ten or twelve feet high at the back, about three feet high in front, and about ten feet in width. Houses for strawberries or cucumbers should be about eight feet in height, and the same in width. It is not, however, of much importance to have lean-to strawberry and cucumber houses. Indeed, I should advise their being, in all cases, of the span-roof form. The most useful houses for the above-mentioned subjects, as well as for the cultivation of dwarf-growing plants, such as pelargoniums, primulas, and cyclamens for the conservatory are those ten feet in width, and seven feet in height at the apex, and about four feet in height at the sides. It is desirable in many cases to sink the houses two or three feet below the general level, as the temperature can be maintained more steadily and with less expense than when they are fully exposed to the weather.

The question of heating would take up too much space, were it to be dealt with fully, and I will content myself with saying that forcing-houses should have sufficient piping fixed in them to admit of the temperature being maintained without having to drive the boiler too severely. Orchard-houses and greenhouses may be heated

most satisfactorily with an ordinary flue. Too much importance is attached now-a-days to heating by hot water, for we frequently see expensive apparatuses erected, when a simple brick flue would do just as well.

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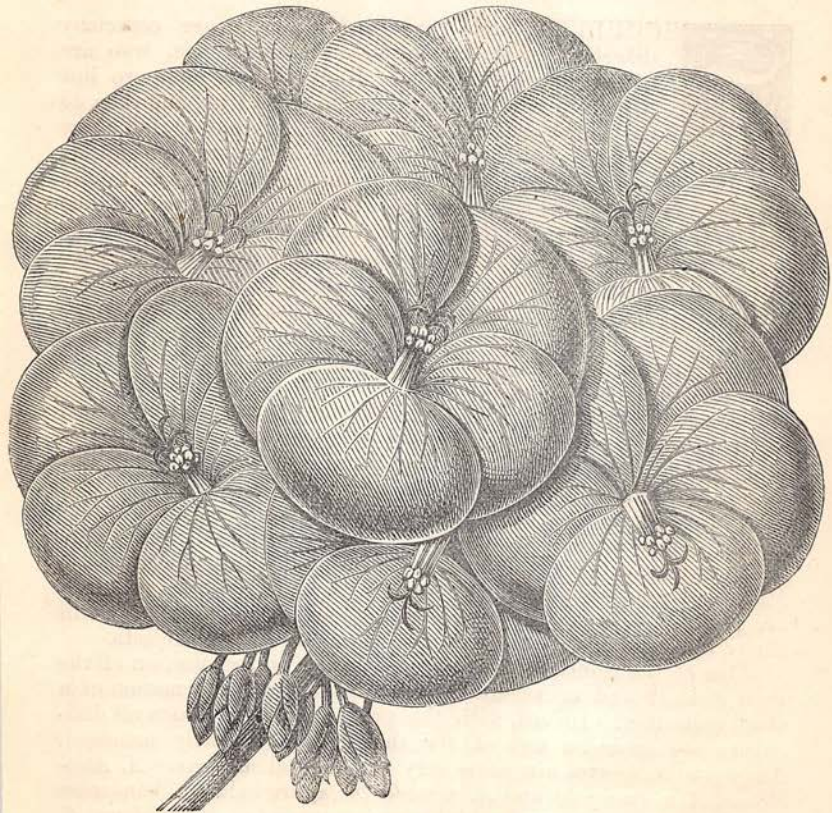


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### PELARGONIUM HARRY KING.



**H**IS splendid zonal pelargonium may be considered one of the finest varieties with scarlet flowers yet introduced for pot culture. The flowers are of very large size and the finest form, and produced throughout the season in huge globular trusses. In the latter respect it differs materially from the other varieties with well-formed



PELARGONIUM HARRY KING.

flowers, for usually those with flowers of the finest form produce trusses of a very small size. The colour of the flowers is a very

September.