uncouth-looking acres of quarry debris, and perfume the air for several months in the year; while the same bold outline of the crags being preserved, assisted by the few pines dropped in as proposed, would render the entire scene very different in appearance from what it is at present. Of course some labour and expense would be incurred in accomplishing these improvements, but both would be well bestowed. It would he necessary, in clearing out the shivers, to form pits and fill them with good soil for planting, which would give the trees a fair start, and I have no doubt they would continue to thrive extremely well.

Extending up the hill beyond the crags, but before entering on the higher slope, the larch and Scotch fir (*P. sylvestris*) could be massed in solid squares, so to speak, according as the several levels or inequalities occurred, and following the whole circle of the hill in one mass of Pinus Austriaca and Scotch fir, leaving the poll or summit bare and open, as at present, that the magnificent view from it may not be interfered with.

(*To be continued.*)

HEATING SMALL PLANT-HOUSES.

BY WILLIAM COLE,

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IN making a few remarks on heating small plant-houses, I shall say but little about portable contrivances for keeping the frost out of these structures, for I have had no occasion to make myself acquainted with them. Moreover, I believe them to cost more money and trouble than the results justify. I can well understand the anxiety of people with small gardens to have a little house in which to keep a few plants during the winter, but I would steadily set my face against the erection of houses which will not afford accommodation for sufficient plants to compensate for the cost of fuel and the trouble of attending to the fire. I would also strongly advise those about to build, to either erect a house of sufficient size to be of service, or leave it alone. It would not be difficult to explain my reasons for so doing, but it will suffice on the present occasion to say that little houses are such a constant source of worry and vexation and anxiety, that but little pleasure can be experienced in attending to the plants. The erection of plant structures in a position near the dwelling-house where it is a work of extreme difficulty to fix a heating apparatus, cannot be condemned too strongly. It is as well to face these matters boldly, and say at once that all portable contrivances require quite as much attention as a properly-constructed flue, or a service of hot-water pipes, and are moreover less economical in working.

For plant-houses of all kinds there can be no doubt that a hot-water apparatus is the best, for the pipes take up but little room, and the heat diffused is of a most genial character. It must also be added that houses fitted with a service of hot-water pipes may be

heated by gas or ordinary fuel, provided the boiler is of a proper character. A very large number of amateurs suppose that in heating plant houses by gas the gas is burnt in the house; but notwithstanding the fact, that the combustion of the gas is most injurious to plant life, has been frequently pointed out in the most prominent manner possible, gas heating has considerable advantage, for the only attention required is to turn it on and shut it off as required. It can thus be left for an indefinite period without any attention, and on lighting it on the appearance of frost, it will be simply necessary to ascertain the force of gas required to keep out the frost, and then regulate it accordingly. Gas is more expensive than fuel, but in the case of small houses the difference in the cost will hardly be appreciable, and the bother of stoking is done away with. Added to this, there is no danger of the plants suffering in frosty weather, owing to the fire burning out. For large houses gas is too costly, and fuel is preferable.

Although a hot-water apparatus is unquestionably the best means of heating plant houses, it is well the amateur who cannot afford its erection should know that the structures may be most effectually heated by a flue. The cost of flues, comparatively speaking, is very little, and if built properly, so that the smoke cannot find its way into the house, they act most efficiently and are perfectly safe. In the case of large houses they should extend round the house, but for small houses a single flue on one side will suffice. It will not, however, be practicable to carry the flue round the house, if there is a door at each end, because the rise from the fire to the chimney must be gradual and continuous to ensure a good draught. Flues are perhaps the most economical, as the brickwork of which they consist is soon made hot, and it also retains the heat for a considerable period after the fire has gone out.

With regard to the management of the fires during the winter season, there is not much to be said, although it is most important to employ fire-heat judiciously. The only occasions upon which fire-heat will be required are during frosty and damp weather. As sudden changes are most injurious to plants of all kinds, the fire should on the appearance of frost be started early, and allowed to burn gradually, so that the temperature of the house may be maintained at its proper height, without undergoing any appreciable change. The usual way of starting a fire on a frosty night is to allow the temperature to fall to within a degree or two of the freezing point, and then light the fire and drive it as fast as possible until the glass stands at or about forty-five degrees, and as the temperature will continue to rise for some time after the fire is checked, the plants will most probably experience a change of not less than twenty degrees within an hour or so. This is not only objectionable as regards the health of the plants, but it is exceedingly wasteful, for it is impossible to drive fire hard without a great loss of heat. The temperature will of necessity decline considerably towards the morning, and some degree of caution is necessary in starting the fire. Should the weather be bright, no more fire-heat than is absolutely necessary to keep out the frost should be employed, for if a huge fire is made

up a short time before the sun shines upon the house, the apparatus will be at its greatest heat just as the temperature will be influenced by the sun, and unless air is admitted will soon rise to sixty or seventy degrees. This is especially the case during January and March. These remarks do not of course apply when the fires are attended early in the morning. It may also be well to add that in no case is it desirable to leave the fires for a very long period, and in severe weather they should receive attention as late as twelve o'clock, and again at five or six in the morning. Much of course will depend upon the weather and the character of the house, and the manner in which it is heated, but there is no means by which the inmates can be kept safely in frosty weather, without frequently attending to the fires; and unless the amateur is prepared to bestow this attention, it will be far better to devote his whole attention to plants requiring no artificial heat.

Artificial heat is occasionally necessary to dry up superfluous moisture, and for maintaining a pure atmosphere in dull weather by promoting a circulation of air. In applying fire-heat for either of these purposes, advantage should be taken of a day when the ventilators may be opened freely, for the application of artificial heat with closed ventilators, excepting in cases of frost, will do more harm than good. In foggy weather the house should be kept close, for the admission of the fog into the house cannot possibly do any good. As a rule, the fire for drying up moisture should be lighted rather early in the day, and be made to burn steadily until about two o'clock in the afternoon, when it may be allowed to go out.

WINTERING TENDER PLANTS WITHOUT FIRE-HEAT.

BY GEORGE SMITH.

THE difficulties of wintering successfully a stock of bedding plants in a cold pit are by no means light, yet with care and good management so much can be done in this direction that a few suggestions relative to the management of these structures during the winter will probably be of considerable service just now.

With regard to the construction of cold pits, it will suffice to say that they should be about six feet in width, two feet in depth in the front, and three feet at the back, and not less than twenty feet in length. A pit or frame of these dimensions will be found most useful; but if the stock of plants is large the length can of course be increased, the only limit being the space at disposal and the question of expense. At the same time it may be said that a pit of a smaller size than the one here mentioned will be of little real service, as the number of plants it will be capable of holding will be very small. The walls may be made of turf sods, bricks or boards, according as the proprietor of the garden may determine. Brick walls are of course preferable as they have a neater appearance and are more