

good bedding plant in soils and situations where the violas do well. The seed was sown in shallow boxes, and placed in a heated structure until the plants were well up, and the majority had acquired a moderate degree of strength. As soon as this was the case, they were carefully and gradually hardened off, and then picked out into a bed of moderately rich and friable soil, made up in a cold frame. Here they remained until they were taken up, and planted in the bed at the same time as the other beds were filled with their summer occupants. They were, of course, lifted carefully, and replanted as quickly as possible, and well watered immediately afterwards to prevent their receiving any unnecessary check. The remaining part of the story is soon told, for the plants, as soon as they became established, commenced to flower freely, and remained in full bloom until a very late period. In fact, the bed was almost solid with bloom after all the other bedders had been destroyed by frost. *Viola Perfection*, it must be understood, does not reproduce itself true from seed, and there were nearly as many different varieties as there were plants. Every shade of colour, from pure white to deep bluish purple, and from pure white to deep golden yellow, was well represented, a considerable number of the flowers being of fine form and substance, and a considerable number of the plants were remarkable by the compactness and vigour of the growth, and the wonderful profusion with which the flowers were produced. These several shades, all intermixed together, produced an especially good effect, and the bed for real attractiveness quite surpassed many of its neighbours.

THE CULTIVATION OF ALPINE PLANTS.

(From Wooster's *Alpine Plants*, published by Bell and Daldy.)



THE cultivation of Alpine plants, or, as the term implies, plants which are natives of alpine or mountainous regions in various parts of the globe, but chiefly inhabiting the temperate or frigid zones, has for some years past been mainly confined to gardens strictly botanical. A taste for their possession is, however, now on the increase, and collections are to be found in some of the private gardens of Great Britain and Ireland. These interesting plants are exceedingly well adapted for amateurs having limited accommodation, for they occupy little room, and are not expensive to purchase, and a good many of them are of comparatively easy culture, blooming from early spring till late in the autumn, and some even throughout the winter.

Though a very general assemblage of plants is formed by gardeners under the title of Alpines, these plants ought properly to be limited to such as grow on high mountains. The gardener, however, adds to them all very dwarf herbaceous plants that are somewhat difficult to preserve in a state of cultivation. Some of

these, instead of being alpine, are arenarious, sea-side, or bog-plants. Alpine plants are almost universally very low, bushy, and evergreen. They are very often planted on rockwork, or in other suitable situations, or they may be grown in pots plunged to the rim in sand or coal-ashes, within a cool pit, so constructed that a sufficient protection from frost and wet may be afforded them during winter; for, however strange it may appear, plants from the frozen regions of Spitzbergen, Melville Island, and other parts, will not survive our winters without a certain amount of protection. In their native habitats they are protected from intense frost and damp by thick coverings of snow, during which period they are also confined to total darkness. The atmosphere which surrounds them is of light or thin air, almost always charged with vapour; and the soil in which they grow is generally soft, black, and peat-like, forming a thin stratum on rock, or filling up the chinks of rocks or stones, and always moist. Art imitates these circumstances by putting such plants in small pots of peat or bog earth, well drained by gravel, or scarcely drained at all, or mixed with stones, or with sand, according to the habitation to be imitated. The pots are kept during winter under glass in frames, or pits, in a situation exposed only to the morning sun; and in summer they are removed to a full northern exposure, or screens are placed so as to produce this effect in their winter situation. In further imitation of these conditions, the pits containing alpine plants are covered about the end of November, with thin-boarded or felt shutters, which sufficiently exclude the extent of frost that would be injurious to them, and keep them comparatively dry and nearly deprived of light. Towards spring, air and light must be admitted gradually, as it were in imitation of the progressive melting of the snow, until, by the beginning of March, vegetation begins to revive in the plants, when all the light possible is afforded them, covering them only during very cold or frosty nights: afterwards the covers are removed entirely. During winter, on fine days, the covers should be taken off, that the plants may be examined, and all dampness removed; for, it should be remembered, the artificial covering has a much greater tendency to create damp than the constant covering which the plants have in their native places of growth. This may possibly arise from the variableness of our climate compared with that in which alpiners naturally grow.

In March, yearly, the plants should be re-potted, and such species propagated as are required, by division of the plant, by seed, saved during the previous summer, or by cuttings, according to the nature of the various kinds. The soil used should, for a large number of them, be sandy peat and loam in equal proportions; some, however, are grown in sandy peat alone; others, which are only found amongst the *débris* of micaceous rocks, in a soil of which mica, in a reduced state, forms a part; the true bog-plants, in peat-bog soil; while alpine aquatics should be planted in sheer sand, and submerged in tubs of water. The pots generally used are small or large sixties. These will, no doubt, be found most convenient in many cases; but to grow the majority of alpiners to the greatest

perfection, pots or pans nine inches in diameter, and about five inches in depth, should be used. These should be perforated at the bottom and round the lower part of the sides with numerous small holes, for admitting air to the roots, and in order to secure ample drainage. From one to two inches of drainage should be placed in the bottom of the pots; and, when the potting is finished, small white pebbles should be placed around the plant on the surface of the soil. Upon these many of the creeping and prostrate kinds recline, and are prevented from damping off, as the air passes freely under and amongst the stems and leaves. The stones also tend to keep the soil uniformly moist, by preventing evaporation; and, in many cases, the roots of some of the rarer species luxuriate more under these stones than elsewhere in the pot. At the beginning of the growing season, abundance of water should be given, often twice a day; for it is certain that alpine plants, in their native habitats, are at that stage nearly at the point of saturation, in consequence of the melting of the snow above and around them. In all mountainous regions a great amount of atmospheric moisture exists, and hence the practice of watering alpine plants overhead with a rose watering pot is beneficial to them.*

Perhaps an improvement in the management of alpine plants would be to set the pots, in the summer season, on a frame or grating of cast iron, placed a few inches distant from a cistern or pool of water, by which means a constant evaporation would take place, and a moist cool atmosphere be produced. Or the pots might be arranged in beds, and a pipe, finely pierced with holes, might pass along the centre of each bed, at such a distance above it as that the shower would just cover the bed. A shower might thus be applied at pleasure, and the plants kept moist by prolonged and gentle rain, instead of being deluged by sudden and heavy rain from the watering-pot.

Many alpine plants may be very successfully grown in towns, in back yards, and on house-tops; and it is believed that an extensive collection might be so grown in the centre of London, if placed in frames covered with glass sashes, to protect the plants from the numerous atmospheric impurities.

* For the encouragement of all lovers of alpinists, Messrs. Backhouse, in the new edition of their catalogue for 1871, make the following statement: "A large proportion of the truly alpine species, which find their natural home in the crevices of rocks at a great elevation, grow with perfect ease in an open border, in ordinary loamy soil. And, strange to say, some that succeed with difficulty on artificial rock-work flourish well under such circumstances, and thus bring within the range of every garden a large and varied amount of beauty."

EDUCATIONAL FLORICULTURE.—At several of the schools in which the children of the poor are educated in Manchester, free distributions of hyacinth-bulbs have been made, with directions for their cultivation. In the spring, school exhibitions of hyacinths will be held and prizes awarded; and we may suppose that something good, morally, will follow. There is, we think, a trifle more sense in this procedure than the London practice of distributing late in the autumn the exhausted bedding plants from the public parks. It is well to give plants to the poor, but not particularly well to give them such as the gardeners would otherwise throw away.