Garden and Forest.

shown me, however, that this sympathy is misplaced, for these apparently fragile flowers will brave snow and storms as sturdily as the Snowdrops. Iris Bakeriana, quite the prettiest and daintiest of these flowers—in fact, among the choicest of all flowers—has sometimes had its season prolonged in my garden because its flowers were frozen in position so rigidly that they fell off and then changed to a different color. These little bulbs must have care in the garden or they will fail to make strong new bulbs. Professor Foster recommends that they shall be often pulled, which seems sage advice. They are so hard except I. Histrio, which is unreliable, and may or may not survive. It has flowered here, but usually a late freeze after the leaves are well grown will finish it. However, there are other irises which grow in the garden that are much better. Black Iris are bad. It is well to grow, say, I. histrioles, I. reticulata cyanese, I. Foster, I. Krelaghi, I. Kolpokowksyana, I. Danfordiae, etc. My earliest iris this year was a particularly small form of I. reticulata from Harpoot. These irises are easily increased from offsets and seeds, if one has the patience. The seeds will germinate freely in about twelve months from sowing. The seedlings should be kept in the pots till the bulbs are fairly formed, and in another year they will make blooming bulbs.

Grape Hyacinths are also in evidence, the dark purple kind, which is a gloomy flower. Later we shall have the more cheerful Muscari azurea, which is a real blue flower, which, with another celestial-blue, M. Scovitians, and the white variety of M. botryoides, seem to be the best of these rather pretty, if dumpy, flowers.

The garden is a luxuriant one, but, aside from these flowers, the only color is found on a few Cyclamens, whose red flowers are small, but striking. Altogether these flowers do not make a great impression of color in the prevailing wet desolation of March, when the garden is at its worst.

Elizabeth, N.J.

J. N. Gerard

Notes on Ferns.

THE regular cleaning and replanting of Ferns should be attended to when the new fronds push up in spring. If potting is done too early there is some risk of the new soil becoming saturated. If the case of dry soil is present, and if this occurs a good start is seldom had. Some of the strong-growing kinds, as some of the Adiantums, will bear the removal of all the old foliage before the new growth has started, but, unless the plant is infested with scale or other insects, I prefer to leave the old fronds on the plant, or, at least, all that are in fair condition, until the new growth is fully expanded. A stronger growth is thus secured.

Large specimen plants do not need replanting every season, and a top-dressing in spring and some extra stimuli during the summer are all that is necessary. Elaborate mixtures of compost are not required for the majority of strong-growing Ferns, but a good mixture for all species. A light fibrous loam, moderately enriched with dry cow manure is suitable. The house in which the Ferns are grown should be kept damp for a few weeks after planting and shaded, for while a reasonable amount of light is required so that the spores shall germinate, the young fronds will not succeed if too much sunshine is allowed to bleach the Ferns and thus destroy one of their greatest charms—the deep and restful green that is so characteristic of many species.

The watering of the newly potted plants also needs care, for too little is quite as injurious as too much. The main object is to keep the soil in a moist, but not sodden, condition, and thus tempt the tender young roots to further activity. Adiantum Farleyense sometimes has a reputation for fickleness of growth, but this noble Fern does not deserve this. The mistake is made of giving this plant good rich soil, whereas the soil best adapted for this variety is three parts strong turfy loam and one part of fine dry cow manure well mixed with sand. It is placed in a shaded house with a temperature of seventy degrees, I have grown A. Farleyense from a fair plant in a two and a half inch pot to a good, well-furnished specimen in a ten-inch pan, and with a spread of more than two feet, within one year from the time of the first shift.

The much-advertised so-called Boston Fern, a handsome form of Nephrolepis exaltata, makes remarkable progress in a strong soil, in common with the other strong-growing species of this same genus.

A few cool-house Ferns will give much satisfaction where the temperature is suitable for the collection. The Gleichenias are prominent among these, and are worth the care they need. G. flabellata, G. dicarpa and G. dichotoma are three of the best types, and can be grown well where a temperature of forty-five degrees is maintained during winter. Special cultural directions for Gleichenias have been given in Garden and Forest in former years. But it may be well to repeat that well-drained and rather coarse soil is preferable, and pots are preferable to pots, because these plants are largely surface-rooting.

Pteris scaberula and Hypolepis distans are readily obtained and are highly satisfactory for the cool house, though both these Ferns are nearly quite deciduous, according to the conditions under which they are grown. Another good Fern for the cool house, notwithstanding its deciduous habit, is Asplenium Gonialanum pictum. The foliage is not very showy, but pleasantly variegated. For large specimens Woodwardia radicans, W. orientalis and Todola barbata are excellent, while Cyrtomium falcatum, Camptosorus riehlii, Fadynia prolifera and some of the many Polypodiums sold singularity and variety to the collection.

The worst pest to which the cool-house Ferns are liable is the thrip. This insect multiplies with great rapidity during our hot summers, but with proper care as to moisture, both at the root and in the atmosphere, and careful examination of foliage from time to time, serious injury from this cause may be avoided.

Erythroniums.

I confess I am myself a lover of Erythroniums, or Dog-tooth Violets. They bloom early in the spring when many varieties are in bloom during a long time. Erythroniums are unexcelled among early-flowering plants for beautiful foliage and flowers in which grace and delicately beautiful form happily combine. The plants are hardy perennials, and if their needs are understood are quite easily grown.

Erythroniums are woodland plants and need some shade to develop the leaves and stems. Partial shade by trees will answer. I give my beds with both shade and sun for several years been experimenting with soils for them. They are woodland plants, and, while often found in heavy soils, make better growth in a soil of rocky debris mixed with mold. My best bed of both Violis and Erythroniums has leaves and tall slender stems. Rocky debris has not been available, and I have tried several substitutes. Composts of rotten grass and well-finished manure soon packed. I also experimented with old pine sawdust with good success, but have discarded all for a soil of one-half to one-third half-rotten spent tan-bark with sandy loam. Our tan-bark here is the bark of the Tan-bark Oak, Quercus densifolia, and is ground at the factory. This gives a soil rich in mold and always loose and porous. It suits the needs of Erythroniums exactly and answers well for other bulbs.

Erythroniums should always be planted early. With few exceptions, the better sorts of good flowering plants should be set after the first killing frost. The sooner they are in the ground after the first of October the better. I plant them so that the top of the bulb is about two inches from the surface. The drainage should be perfect. With these essentials a draught, slight wind, and a little water, success is very probable. Although quite hardy, a heavy coat of leaves, such as nature protects them with in their woodland home, would probably be a wise precaution in cold climates. They do not seem to have any peculiar disease, and growing and flowering as early as they do, artificial watering is not necessary.

In the region including the Rocky Mountains and the country westward to the Pacific, fifteen forms are now known, classified as species and varieties. A more charming group of bulbous plants does not exist. Their leaves show a variety of molting, and the flowers, when fully open, are a soft blue, yellow, deep yellow, deep rose, pink, light and deep purple, are represented. To describe all of these forms so that even a thorough botanist could readily identify them by the description that could be easily published, but in the garden there is a charm of leaf, of tint or of form, which endears it to the possessor.

In their native homes they grow throughout a wide range as to altitude and latitude, and in cultivation they maintain their seasons, so that the display which is opened by Erythronium Hartwegii with the Snowdrops and earliest Narcissus, is closed by E. montanum and E. purpurascens when the others have flowered and become stunted. Erythronium Hartwegii is not only the earliest, but also the most easily grown of all, and unique in its habit. It is often seen in dainty colonies of small white flowers. The two to six flowers are borne on a separate slender scape.
and form a sessile umbel. The general effect of a well-grown plant is of a loose bouquet with the two richly marbled leaves as a holder. The segments recurve to the stalk and are bright yellow with an orange centre. Well-grown flowers measure about one half inch across. The bulbs of E. Harveldi are short and solid, produce small offsets, and do not dry out as readily as those of other species. Unlike most sorrels, they retain their vitality until late in the season, and are in great demand in February, while the plants planted earlier are in flower. More care is required to grow most kinds of Sorrelum than the ordinary grower will give, but this species is a flower for every one.

Carl Purdy.

Fertilizers for Forced Roses.

At the last meeting of the Dutchess County Horticultural Society, letters were read from experts in various branches of horticulture in reply to questions sent out by the Secretary, and what follows is the answer given by Mr. John N. May to the question, "What is the best formula for a fertilizer for forcing under glass?"

"I understand this to apply to roses forced for winter flowers, and no one answer can be framed so as to be adapted to all conditions of soil. I must presume that the soil used for forcing is about the same in all cases. What is necessary is that the composition of the soil and manure be such as to produce the best growth. The best fertilizer for this purpose is a mixture of well-decomposed manure and fertilizer, and, of course, manure from well-fed stock is the best. If one part of such manure, thoroughly rotted, is added to and thoroughly mixed with six parts of well-decomposed manure and fertilizer, only the fertilizer needed for roses grown in it is a mulch not more than half an inch thick of well-decomposed manure. This should be put on the soil in a thin layer, and a similar covering every eight or nine weeks toward the end of the season. When the days begin to shorten at the middle of January, the plants are growing vigorously, they may have a watering of weak liquid fertilizer made of the droppings of different animals, used alternately, and applied every two weeks, and nothing more in the way of feeding the plants will be necessary. Of course, there will be cases where the soil is deficient in some elements, and a little potash or phosphoric acid, and this can only be determined by study and experiment by every grower for himself. The first care should be to find out what is lacking, and the next to supply it in proper proportions. This must be left to the judgment of every man, and although such matters may appear of small consequence, it is these small things which insure the highest success, and it is the inattention to them which makes so little of the business of the gardener an uncertain quantity. In a general way I may add that I believe more roses and other plants have been killed and crippled by life for the use of stimulants than by any other cause. At any rate, all fertilizers, both liquid and solid, with the exception of potash, have little value and are injurious, and the formulas that will bring the best results are plenty of fresh air, cleanliness, plain, wholesome food and practical common sense."

W. G. G.

Iris japonica.—This beautiful flower has been in cultivation for nearly a century, and ought to be in every collection of cool-greenhouse plants. It belongs to the rhizomatous section of the genus, and is perhaps better known as I. amethysta. The bright green sword-shaped leaves are from one foot to eighteen inches in length, gradually tapering to a point, and are arranged in fan-like tufts, making an elegant plant even when not in bloom. The pale lilac or bluish flowers are three inches long and borne in the axils of the leaves, the petals are a rich orange-yellow at the throat. The individual flowers are fugitive, but they succeed each other until each spike has produced three or four. The plant blooms better when grown in a very open soil. My experience has been that it is best not to attempt to divide the roots until this is absolutely necessary, as the plant will not blossom till the second season after division.

Thunbergia laurifolia.—This lovely warm greenhouse climber, perhaps better known as Thunbergia Harrii, is a most beautiful object when in full bloom. The plant is a strong and robust one, with opposite simple leaves, oval in outline, seven inches long by three wide, on short pedicels. The beautiful lilac-colored flowers are three inches in diameter, and are borne in axillary and terminal clusters in the ground plane. A continuation of this vine, owing to the extreme delicacy of the petals, a shaded position should be chosen for the vine if possible, as bright sunlight soon causes the flowers to fade. Its season of flowering is from the middle of January to the middle of March.

Botanic Garden, Northampton, Mass.

Edward J. Canning.

Correspondence.

Horticulture in Colleges.

To the Editor of GARDEN AND FOREST:

Sir,—Although not engaged in imparting horticultural instruction in the class-room, my experience has been rather in the line of receiving such instruction, yet I would like to emphasize some of the points brought out by Professor Hanson and Wangard in your last journal.

I am aware that in many of the land-grant colleges there is an urgent demand on the part of the farmers for the practical instruction in agriculture, which is also true of experiment-station work. The situation is in no wise improved when we admit that this demand is made without comprehending those principles which underlie true education. We are only as good in the kind of knowledge which the demand has come for, so far as the present, at least, we must include in the college curriculum a certain number of the practical courses, but I would, indeed, be a sanguine institution where instruction is given only in the practical side of horticulture which could be learned quite as well as from any gardener.

I agree with your correspondent that horticulture, in a certain sense, is an academic study, and it most probably will not be some years before the earlier students in most colleges; it is considered a subject partly or entirely outside the domain of the systematic botanist, so that while the student may acquire a thorough knowledge of the plants, in reality, he may be able to tell you very little regarding the botany of the plants he has cultivated and which he will remember when my professor in botany in college told me that I would not be able to determine a rose which I had brought from a neighboring garden, because it was a "cultivated form, and not a natural species." He was silent in regard to the origin or possible derivation of any of the "cultivated forms," and I was left to grope my way in darkness, or drop the matter as being wholly outside of science. I have since learned that all cultivated plants are to be referred to some natural genus, and that many forms which have been evolved in the garden are not so much distinct species as varieties, and that the peculiarities of these forms are due to the different botanical characters are concerned, as those forms that we may gather from the forest or hillside, meadow or plain.

Plant propagation is a good subject with which to begin instruction in horticulture, so a few lectures on the subject would be of great value. The student should be taught the more important principles of the art, and leaving those phases of these subjects which are usually placed in the foreground, such as cultural methods and varieties, to be made the subjects of minor elective courses. Both cultural methods and varieties are constantly changing, and at the same time may be entirely different in different parts of the country. If a student intends to make a specialty of this profession, he should have instruction in all branches pertaining to it, and all he can get of each, but if horticulture is only added to fill out a more or less general course of training for the various classes of educators, it is far better for them to consider the principles on which the art is founded. It is of far greater moment that a man should be educated that he may be made a fruit grower or a florist.

The subject of horticulture might be placed on the syllabus list. When traveling about the state and observing